

# TEST REPORT



**DT&C Co., Ltd.**

42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042  
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No. : DREFCC1808-0257
2. Client / Applicant
  - Name : LG Electronics USA, Inc.
  - Address : 1000 Sylvan Ave. Englewood Cliffs NJ 07632 United States
3. Use of Report : Grant of Certification
4. Product Name / Model Name : Mobile Phone / LM-Q850FA
5. Test Standard : ANSI C 63.4 : 2014  
FCC Part 15 Subpart B  
(Class B personal computers and peripherals)
6. Date of Test : Aug. 11. 2018
7. Testing Environment : Temperature (21 ~ 23) °C , Humidity (54 ~ 56) % R.H.
8. Test Result : Refer to the attached Test Result

|             |                               |                                 |
|-------------|-------------------------------|---------------------------------|
| Affirmation | Tested by                     | Reviewed by                     |
|             | Name : YongKi Kim (Signature) | Name : HyungJun Kim (Signature) |

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose.  
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**Aug. 16. 2018**

**DT&C Co., Ltd.**

If this report is required to confirmation of authenticity, please contact to [report@dtnc.net](mailto:report@dtnc.net)

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## 1. General Remarks

This report contains the result of tests performed by :

**DT&C Co., Ltd.**

42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042

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## 2. Test Laboratory

DT&C Co., Ltd. has been accredited / filed / authorized by the agencies listed in the following table;

| Certificate   | Nation       | Agency | Code                                                                                             | Remark                         |
|---------------|--------------|--------|--------------------------------------------------------------------------------------------------|--------------------------------|
| Accreditation | Korea        | KOLAS  | 393                                                                                              | ISO/IEC 17025                  |
|               | South Africa | SABS   | 0006                                                                                             | ISO/IEC 17025                  |
| Site Filing   | USA          | FCC    | KR0034<br>101842<br>678747, 596748,<br>804488, 165783                                            | Accredited<br><br>2.948 Listed |
|               | Canada       | IC     | 5740A-3<br>5740A-4                                                                               | Registered                     |
|               | Japan        | VCCI   | C-1427<br>R-1364, R-3385,<br>R-4076, R-4180,<br>R-4496,<br>T-1442,<br>G-10338, G-754,<br>G-10815 | Registered                     |
| Certification | Korea        | KC     | KR0034                                                                                           | Designation                    |
|               | Germany      | TUV    | CARAT 17 11<br>89112 005                                                                         | ISO/IEC 17025                  |

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competent of calibration and testing laboratory".

### 3. General Information of EUT

|                |                                                                                                                                                                                                                                                                      |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant      | LG Electronics USA, Inc.<br>1000 Sylvan Ave. Englewood Cliffs NJ 07632 United States                                                                                                                                                                                 |
| Manufacturer   | LG Electronics USA, Inc.<br>1000 Sylvan Ave. Englewood Cliffs NJ 07632 United States                                                                                                                                                                                 |
| Factory        | LG Electronics USA, Inc.<br>1000 Sylvan Ave. Englewood Cliffs NJ 07632 United States                                                                                                                                                                                 |
| Product Name   | Mobile Phone                                                                                                                                                                                                                                                         |
| Model Name     | LM-Q850FA                                                                                                                                                                                                                                                            |
| Add Model Name | LMQ850FA, Q850FA, LM-Q850FM, LMQ850FM, Q850FM, LM-Q850EA, LMQ850EA, Q850EA, LM-Q850EM, LMQ850EM, Q850EM, LM-Q850EAW, LMQ850EAW, Q850EAW, LM-Q850EMW, LMQ850EMW, Q850EMW                                                                                              |
| FCC ID         | ZNFQ850FA                                                                                                                                                                                                                                                            |
| Rated Power    | DC 3.85 V                                                                                                                                                                                                                                                            |
| Remarks        | Earphone1<br>1. Manufacturer : CRESYN<br>2. S/N : EAB63728251<br>Earphone2<br>1. Manufacturer : BUJEON<br>2. S/N : EAB63728252<br>USB Cable1<br>1. Manufacturer : NINGBO<br>2. S/N : EAD64746101<br>USB Cable2<br>1. Manufacturer : LUXSHARE<br>2. S/N : EAD64746102 |

**Related Submittal(s) / Grant(s)**  
**Original submittal only**

## 4. EUT Operations and Test Configurations

### 4.1 Principle of Configuration Selection

#### Emission :

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use. For each testing mode different configurations were used, Refer to the individual tests.

### 4.2 EUT Operation Mode

| No. | Mode                                                           | Description                                               |
|-----|----------------------------------------------------------------|-----------------------------------------------------------|
| 1   | PC LINK<br>(Earphone : EAB63728251,<br>USB Cable: EAD64746101) | The EUT is reading, writing, and erasing internal storage |
| 2   | PC LINK<br>(Earphone : EAB63728252,<br>USB Cable: EAD64746102) | The EUT is reading, writing, and erasing internal storage |

### 4.3 Test Configuration Mode

| No. | Mode                                                           | Description                                                 |
|-----|----------------------------------------------------------------|-------------------------------------------------------------|
| 1   | PC LINK<br>(Earphone : EAB63728251,<br>USB Cable: EAD64746101) | EUT was connected PC by USB cable and continuously operated |
| 2   | PC LINK<br>(Earphone : EAB63728252,<br>USB Cable: EAD64746102) | EUT was connected PC by USB cable and continuously operated |

### 4.4 Supported Equipment

| Used*                                                                         | Product Type | Manufacturer | Model      | Remarks |
|-------------------------------------------------------------------------------|--------------|--------------|------------|---------|
| AE                                                                            | KEYBOARD     | DELL         | KB212-B    | DOC     |
| AE                                                                            | MOUSE        | LG           | SM-9023    | DOC     |
| AE                                                                            | LCD MONITOR  | DELL         | UP2414Qt   | DOC     |
| AE                                                                            | PC           | DELL         | DCNE       | DOC     |
| AE                                                                            | SSD 3.0      | SAMSUNG      | MU-PT250B  | DOC     |
| AE                                                                            | PRINTER      | Bixolon      | SRP-770    | DOC     |
| AE                                                                            | Headset      | SAMSUNG      | SHS-150V/M | DOC     |
| *Abbreviations:<br>AE - Auxiliary/Associated Equipment, or<br>SIM - Simulator |              |              |            |         |

## 4.5 EUT In/Output Port

| Name                                                                                                                                                         | Type* | Cable<br>Max. >3 m | Cable<br>Shielded | Cable<br>Back shell | Remarks     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------|-------------------|---------------------|-------------|
| USB                                                                                                                                                          | I/O   | 1.7                | Shield            | Plastic             | KEYBOARD    |
| USB                                                                                                                                                          | I/O   | 1.7                | Shield            | Plastic             | MOUSE       |
| POWER IN                                                                                                                                                     | AC    | 1.8                | Non Shield        | Plastic             | LCD MONITOR |
| DSUB OUT                                                                                                                                                     | I/O   | 1.8                | Shield            | Plastic             |             |
| POWER IN                                                                                                                                                     | AC    | 1.8                | Non Shield        | Plastic             | PC          |
| DSUB IN                                                                                                                                                      | I/O   | 1.8                | Shield            | Plastic             |             |
| PARALLEL IN                                                                                                                                                  | I/O   | 2.0                | Shield            | Plastic             |             |
| SERIAL IN                                                                                                                                                    | I/O   | 1.9                | Shield            | Plastic             |             |
| USB                                                                                                                                                          | I/O   | 1.7                | Shield            | Plastic             |             |
| USB                                                                                                                                                          | I/O   | 1.7                | Shield            | Plastic             |             |
| USB                                                                                                                                                          | I/O   | 1.0                | Shield            | Plastic             |             |
| STEREO IN/OUT                                                                                                                                                | I/O   | 2.0                | Non Shield        | Plastic             |             |
| USB                                                                                                                                                          | I/O   | 1.0                | Shield            | Plastic             | SSD 3.0     |
| POWER IN                                                                                                                                                     | DC    | 1.8                | Non Shield        | Plastic             | PRINTER     |
| PARALLEL OUT                                                                                                                                                 | I/O   | 2.0                | Shield            | Plastic             |             |
| SERIAL OUT                                                                                                                                                   | I/O   | 1.9                | Shield            | Plastic             |             |
| STEREO IN/OUT                                                                                                                                                | I/O   | 2.0                | Non Shield        | Plastic             | Headset     |
| AUX                                                                                                                                                          | I/O   | 1.8                | Non Shield        | Plastic             | EUT         |
| USB                                                                                                                                                          | I/O   | 1.0                | Shield            | Plastic             | EUT         |
| *Abbreviations:<br>AC = AC Power Port      DC = DC Power Port      N/E = Non-Electrical<br>I/O = Signal Input or Output Port<br>TP = Telecommunication Ports |       |                    |                   |                     |             |

## 4.6 Test Voltage and Frequency

| Case | Voltage<br>(V) | Frequency<br>(Hz) | Phases | Remarks |
|------|----------------|-------------------|--------|---------|
| 1    | AC 120         | 60 Hz             | Single | None    |

## 5. Test Summary

| Test Items                                                         | Applied Standards | Results |
|--------------------------------------------------------------------|-------------------|---------|
| Conducted Disturbance                                              | ANSI C63.4 : 2014 | C       |
| Radiated Disturbance                                               | ANSI C63.4 : 2014 | C       |
| C=Comply    N/C=Not Comply    N/T=Not Tested    N/A=Not Applicable |                   |         |

The data in this test report are traceable to the national or international standards.

-Conducted Disturbance

| Frequency [MHz] | Phase | Result [dBμV] | Detector | Limit [dBμV] | Margin [dB] |
|-----------------|-------|---------------|----------|--------------|-------------|
| 0.77358         | N     | 35.92         | CAV      | 46.00        | 10.08       |

-Radiated Disturbance

| Frequency [MHz] | Pol. | Result [dBμV/m] | Detector | Limit [dBμV/m] | Margin [dB] |
|-----------------|------|-----------------|----------|----------------|-------------|
| 749.665         | H    | 42.51           | QP       | 40.00          | 3.49        |

## 6. Test Environment

| Test Items            | Test date (YYYY-MM-DD) | Temp. (°C) | Humidity (% R.H.) | Pressure (kPa) |
|-----------------------|------------------------|------------|-------------------|----------------|
| Conducted Disturbance | 2018-08-11             | 23         | 54                | -              |
| Radiated Disturbance  | 2018-08-11             | 21         | 56                |                |
|                       | 2018-08-11             | 21         | 55                |                |

## 7. Test Results : Emission

### 7.1 Conducted Disturbance

| ANSI C63.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Mains terminal disturbance voltage   |                   | Result |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-------------------|--------|
| <u>Method:</u> The AMN placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0,8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN. The measuring port of the LISN for EUT was connected to spectrum analyzer. Using conducted emission test software, the emissions were scanned with peak detector mode. After scanning over the frequency range, suspected emissions were selected to perform final measurement. When performing final measurement, the receiver was used which has Quasi-Peak detector and CISPR Average detector. For (0.15 ~ 30) MHz frequency range, Quasi-Peak detector with 10 kHz RBW and 30 kHz VBW was used. By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission. |                                      |                   | Comply |
| Fully configured sample scanned over the following frequency range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Frequency range on each side of line | Measurement Point |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 150 kHz to 30 MHz                    | Mains             |        |
| EUT mode<br>(Refer to clauses 4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Test configuration mode              | 1, 2              |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | EUT Operation mode                   | 1, 2              |        |
| Limits – Class A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      |                   |        |
| Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Limit dBµV                           |                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quasi-Peak                           | Average           |        |
| 0.15 to 0.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 79                                   | 66                |        |
| 0.50 to 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 73                                   | 60                |        |
| Limits – Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      |                   |        |
| Frequency (MHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Limit dBµV                           |                   |        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quasi-Peak                           | Average           |        |
| 0.15 to 0.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 66 to 56                             | 56 to 46          |        |
| 0.50 to 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 56                                   | 46                |        |
| 5 to 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 60                                   | 50                |        |

| Measurement uncertainty                                        |         |
|----------------------------------------------------------------|---------|
| Expended uncertainty $U$<br>(95 %, Confidence level, $k = 2$ ) | 2.36 dB |

| Measurement Instrument |                      |               |            |            |            |
|------------------------|----------------------|---------------|------------|------------|------------|
| Description            | Model                | Manufacturer  | Identifier | Cal. Date  | Cal. Due   |
| MEASUREMENT SOFTWARE   | EMI-C VER. 2.00.0171 | TSJ           | N/A        | N/A        | N/A        |
| EMI TEST RECEIVER      | ESR7                 | ROHDE&SCHWARZ | 101109     | 2017.11.16 | 2018.11.16 |
| TWO-LINE V-NETWORK     | ENV216               | ROHDE&SCHWARZ | 101979     | 2017.12.18 | 2018.12.18 |
| LISN                   | LISN1600             | TTI           | 197204     | 2018.06.07 | 2019.06.07 |
| TRANSIENT LIMITER      | TL-B0930A            | EMCIS         | 11002      | 2017.09.07 | 2018.09.07 |

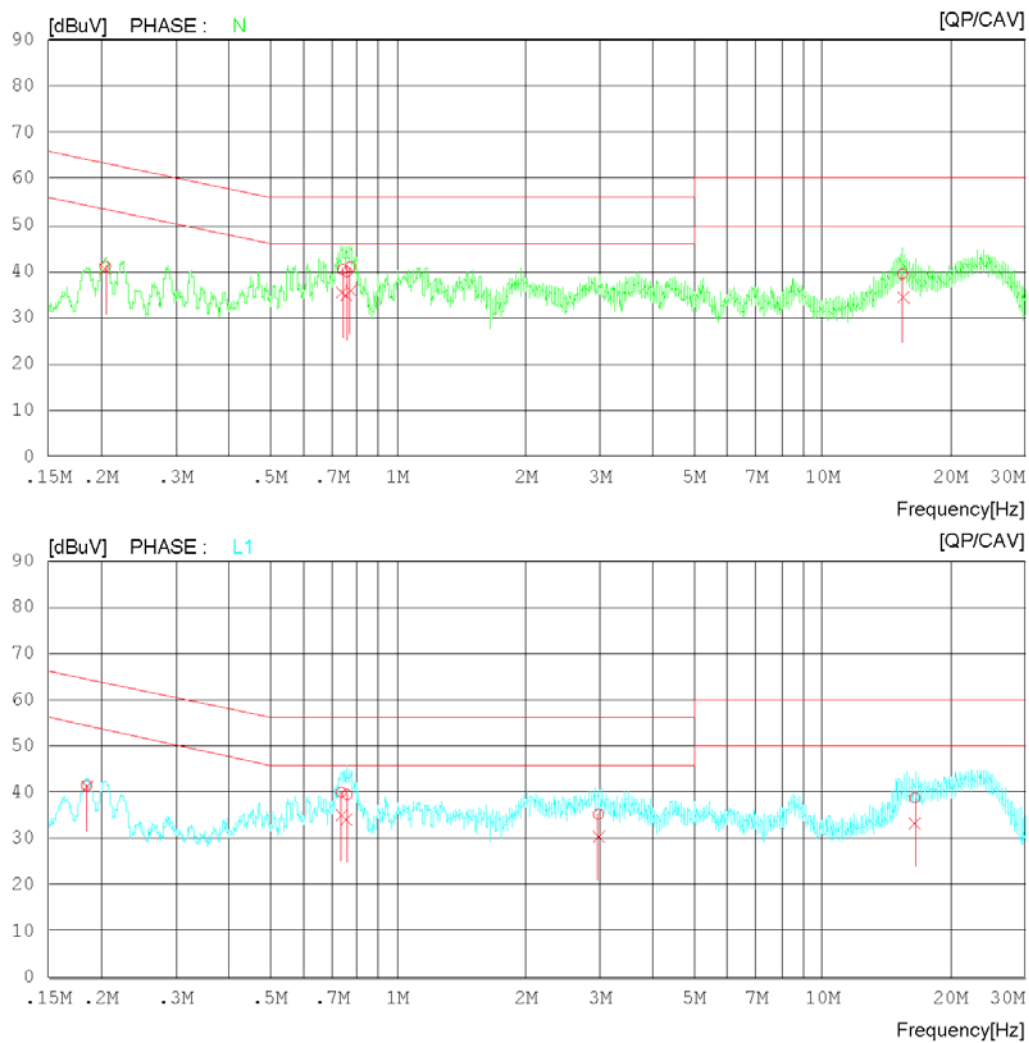


| Mains terminal disturbance voltage _ Measurement data |     |                     |    |
|-------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                               | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                      | 120 | Test Frequency (Hz) | 60 |

## Results of Conducted Emission

DT&C  
Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi/Atm 23 °C 54 % R.H.  
Test Condition PC Link  
S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : CISPR32\_B QP  
CISPR32\_B AV


## Results of Conducted Emission

DT&C  
Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi/Atm 23 °C 54 % R.H.  
Test Condition PC Link  
S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : CISPR32\_B QP  
CISPR32\_B AV

| NO | FREQ<br>[MHz] | READING      |               | C.FACTOR<br>[dB] | RESULT       |               | LIMIT        |               | MARGIN       |               | PHASE |
|----|---------------|--------------|---------------|------------------|--------------|---------------|--------------|---------------|--------------|---------------|-------|
|    |               | QP<br>[dBuV] | CAV<br>[dBuV] |                  | QP<br>[dBuV] | CAV<br>[dBuV] | QP<br>[dBuV] | CAV<br>[dBuV] | QP<br>[dBuV] | CAV<br>[dBuV] |       |
| 1  | 0.20438       | 21.07        | 20.48         | 20.02            | 41.09        | 40.50         | 63.43        | 53.43         | 22.34        | 12.93         | N     |
| 2  | 0.74150       | 20.29        | 15.19         | 20.11            | 40.40        | 35.30         | 56.00        | 46.00         | 15.60        | 10.70         | N     |
| 3  | 0.75903       | 19.82        | 14.60         | 20.09            | 39.91        | 34.69         | 56.00        | 46.00         | 16.09        | 11.31         | N     |
| 4  | 0.77358       | 20.86        | 15.84         | 20.08            | 40.94        | 35.92         | 56.00        | 46.00         | 15.06        | 10.08         | N     |
| 5  | 15.46066      | 18.27        | 13.11         | 21.17            | 39.44        | 34.28         | 60.00        | 50.00         | 20.56        | 15.72         | N     |
| 6  | 0.18497       | 21.45        | 21.03         | 20.04            | 41.49        | 41.07         | 64.26        | 54.26         | 22.77        | 13.19         | L1    |
| 7  | 0.73592       | 19.80        | 14.87         | 20.21            | 40.01        | 35.08         | 56.00        | 46.00         | 15.99        | 10.92         | L1    |
| 8  | 0.75950       | 19.30        | 14.04         | 20.19            | 39.49        | 34.23         | 56.00        | 46.00         | 16.51        | 11.77         | L1    |
| 9  | 2.97122       | 15.06        | 10.41         | 20.18            | 35.24        | 30.59         | 56.00        | 46.00         | 20.76        | 15.41         | L1    |
| 10 | 16.54386      | 17.58        | 12.10         | 21.16            | 38.74        | 33.26         | 60.00        | 50.00         | 21.26        | 16.74         | L1    |

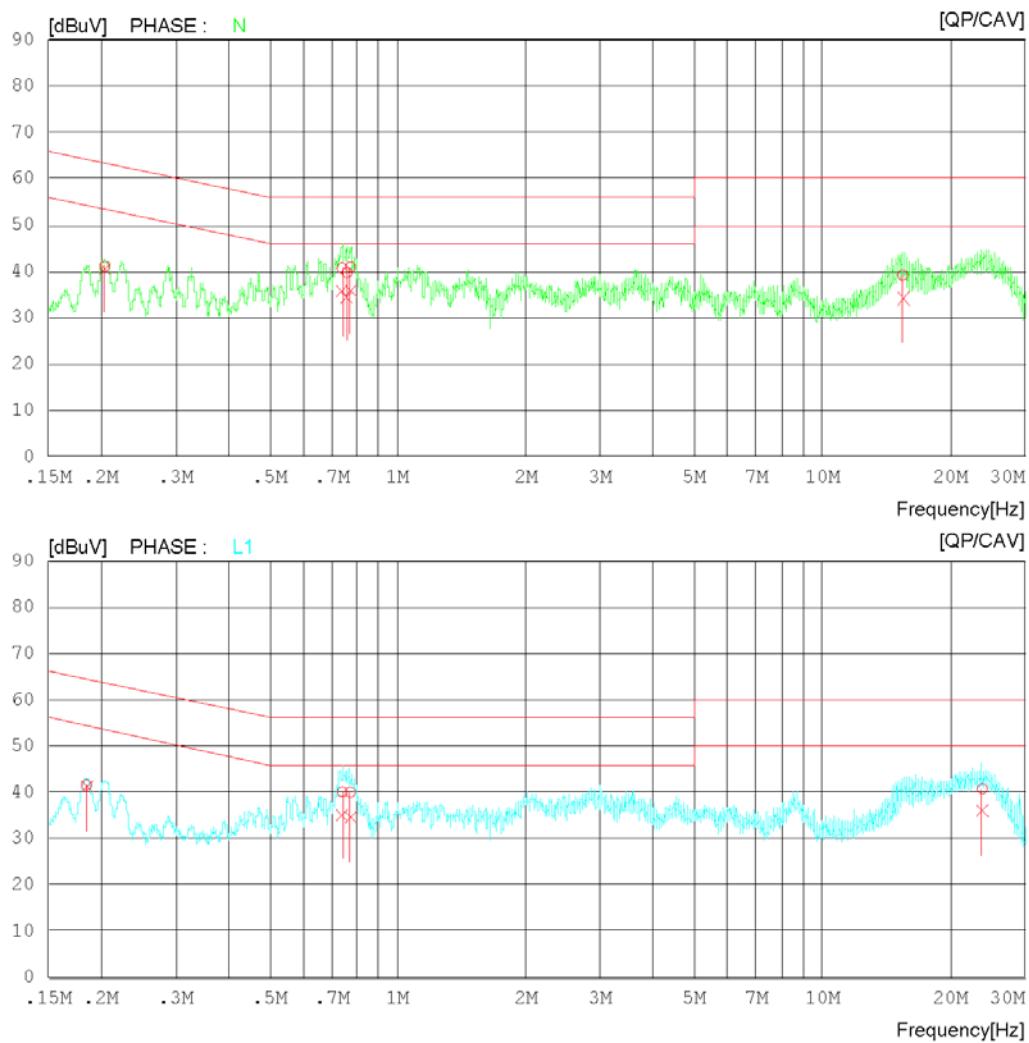
| Mains terminal disturbance voltage _ Measurement data |     |                     |    |
|-------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                               | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                      | 120 | Test Frequency (Hz) | 60 |

## Results of Conducted Emission

DT&C  
Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi/Atm 23 °C 54 % R.H.  
Test Condition PC Link  
S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : CISPR32\_B QP  
CISPR32\_B AV



## Results of Conducted Emission

DT&C  
Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi/Atm 23 °C 54 % R.H.  
Test Condition PC Link  
S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : CISPR32\_B QP  
CISPR32\_B AV

| NO | FREQ<br>[MHz] | READING      |               | C.FACTOR<br>[dB] | RESULT       |               | LIMIT        |               | MARGIN       |               | PHASE |
|----|---------------|--------------|---------------|------------------|--------------|---------------|--------------|---------------|--------------|---------------|-------|
|    |               | QP<br>[dBuV] | CAV<br>[dBuV] |                  | QP<br>[dBuV] | CAV<br>[dBuV] | QP<br>[dBuV] | CAV<br>[dBuV] | QP<br>[dBuV] | CAV<br>[dBuV] |       |
| 1  | 0.20420       | 21.08        | 20.53         | 20.02            | 41.10        | 40.55         | 63.44        | 53.44         | 22.34        | 12.89         | N     |
| 2  | 0.73906       | 20.62        | 15.58         | 20.11            | 40.73        | 35.69         | 56.00        | 46.00         | 15.27        | 10.31         | N     |
| 3  | 0.76014       | 19.63        | 14.39         | 20.09            | 39.72        | 34.48         | 56.00        | 46.00         | 16.28        | 11.52         | N     |
| 4  | 0.77347       | 20.89        | 15.83         | 20.08            | 40.97        | 35.91         | 56.00        | 46.00         | 15.03        | 10.09         | N     |
| 5  | 15.46041      | 18.02        | 12.98         | 21.17            | 39.19        | 34.15         | 60.00        | 50.00         | 20.81        | 15.85         | N     |
| 6  | 0.18487       | 21.51        | 21.10         | 20.04            | 41.55        | 41.14         | 64.26        | 54.26         | 22.71        | 13.12         | L1    |
| 7  | 0.73978       | 19.84        | 14.91         | 20.21            | 40.05        | 35.12         | 56.00        | 46.00         | 15.95        | 10.88         | L1    |
| 8  | 0.77337       | 19.83        | 14.44         | 20.18            | 40.01        | 34.62         | 56.00        | 46.00         | 15.99        | 11.38         | L1    |
| 9  | 23.82976      | 19.91        | 15.24         | 20.78            | 40.69        | 36.02         | 60.00        | 50.00         | 19.31        | 13.98         | L1    |

### Calculation

|                                                                                |
|--------------------------------------------------------------------------------|
| N : Neutral phase, L1 : Live phase                                             |
| C.FACTOR(dB) : Pulse Limiter(dB) + Cable loss(dB) + Insertion loss of LISN(dB) |
| Result(dBμV) : Reading Value(dBμV) + C.FACTOR(dB)                              |
| Margin(dB) : Limit(dBμV) - Result(dBμV)                                        |

## 7.2 Radiated Disturbance

| ANSI C63.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Radiated disturbance 30 MHz –18 GHz |                |                                                                                 | Result         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------------|---------------------------------------------------------------------------------|----------------|
| <b>Method:</b> Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10 or 3 meter below 1GHz and 3 meter above 1GHz. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. For final measurement below 1 GHz frequency range, Quasi-Peak detector with (RBW = 120 kHz Bandwidth) was used. For final measurement above 1 GHz frequency range, Peak detector with (RBW = 1 MHz Bandwidth) and CISPR Average detector with (RBW = 1 MHz Bandwidth) were used. |                                     |                |                                                                                 | <b>Comply</b>  |
| <b>EUT mode</b><br><br><b>(Refer to clauses 4)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Test configuration mode</b>      |                | <b>1, 2</b>                                                                     |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>EUT Operation mode</b>           |                | <b>1, 2</b>                                                                     |                |
| <b>Radiated Disturbance below 1 000 MHz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                |                                                                                 |                |
| <b>Frequency range</b><br><br><b>(MHz)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Quasi-peak limit dBµV/m</b>      |                |                                                                                 |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Class A (10 m distance)</b>      |                | <b>Class B (3 m distance)</b>                                                   |                |
| 30 to 88                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 39.1                                |                | 40                                                                              |                |
| 88 to 216                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 43.5                                |                | 43.5                                                                            |                |
| 216 to 960                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 46.4                                |                | 46                                                                              |                |
| 960 to 1 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 49.5                                |                | 54                                                                              |                |
| According to 15.109(g), as an alternative to the radiated emission limit shown above, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22 shown.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                |                                                                                 |                |
| <b>Frequency range</b><br><br><b>(MHz)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Quasi-peak limit dBµV/m</b>      |                |                                                                                 |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Class A (10 m distance)</b>      |                | <b>Class B (10 m distance)</b>                                                  |                |
| 30 to 230                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 40                                  |                | 30                                                                              |                |
| 230 to 1 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 47                                  |                | 37                                                                              |                |
| <b>Radiated Disturbance for above 1 000 MHz at a measurement distance of 3 m</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |                |                                                                                 |                |
| <b>Frequency range</b><br><br><b>(GHz)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Peak limit dBµV/m</b>            |                | <b>Average limit dBµV/m</b>                                                     |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Class A</b>                      | <b>Class B</b> | <b>Class A</b>                                                                  | <b>Class B</b> |
| 1 to 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 80                                  | 74             | 60                                                                              | 54             |
| <b>The test frequency range of Radiated Disturbance measurements are listed below.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                |                                                                                 |                |
| <b>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                | <b>Upper frequency of measurement range (MHz)</b>                               |                |
| Below 108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                | 1 000                                                                           |                |
| 108 – 500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                | 2 000                                                                           |                |
| 500 – 1 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                | 5 000                                                                           |                |
| Above 1 000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                | 5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower |                |
| <b>Measurement uncertainty</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |                |                                                                                 |                |
| Expended uncertainty <i>U</i><br>(95 %, Confidence level, <i>k</i> = 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                | 4.16 dB, (30 ~ 1 000) MHz<br>3.74 dB, (1 ~ 6) GHz                               |                |

| Measurement Instrument                                                                             |                                |                                  |                       |            |            |
|----------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|-----------------------|------------|------------|
| Description                                                                                        | Model                          | Manufacturer                     | Identifier            | Cal. Date  | Cal. Due   |
| MEASUREMENT SOFTWARE                                                                               | EMI-R VER. 2.00.0177           | TSJ                              | N/A                   | N/A        | N/A        |
| EMI TEST RECEIVER                                                                                  | ESU                            | ROHDE&SCHWARZ                    | 100538                | 2018.01.29 | 2019.01.29 |
| BILOG ANTENNA                                                                                      | VULB 9160                      | SCHWARZBECK                      | 3359                  | 2017.09.14 | 2019.09.14 |
| LOW NOISE PRE AMPLIFIER                                                                            | MLA-100K01-B01-26              | TSJ                              | 1252741               | 2018.02.19 | 2019.02.19 |
| HORN ANTENNA                                                                                       | 3117                           | ETS-LINDGREN                     | 00152093              | 2018.03.26 | 2020.03.26 |
| HORN ANTENNA WITH PREAMPLIFIER                                                                     | EM-6969/<br>MLA-0618-B03-34    | ELECTRO-METRICS/<br>TSJ          | 156/<br>1785642       | 2017.02.10 | 2019.02.10 |
| PREAMPLIFIER                                                                                       | 8449B                          | AGILENT TECHNOLOGIES             | 3008A01590            | 2018.02.20 | 2019.02.20 |
| HORN ANTENNA WITH PREAMPLIFIER                                                                     | 3116C /<br>JS44-18004000-35-8P | ETS-LINDGREN /<br>L3 NARDA-MITEQ | 00213177 /<br>2046884 | 2017.12.05 | 2019.12.05 |
| (NOTE : THE MEASUREMENT ANTENNAS WERE CALIBRATED IN ACCORDANCE TO THE REQUIREMENTS OF C63.5-2017.) |                                |                                  |                       |            |            |

| Radiated disturbance at (30 ~ 1000) MHz _Measurement data |     |                     |    |
|-----------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                   | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                          | 120 | Test Frequency (Hz) | 60 |

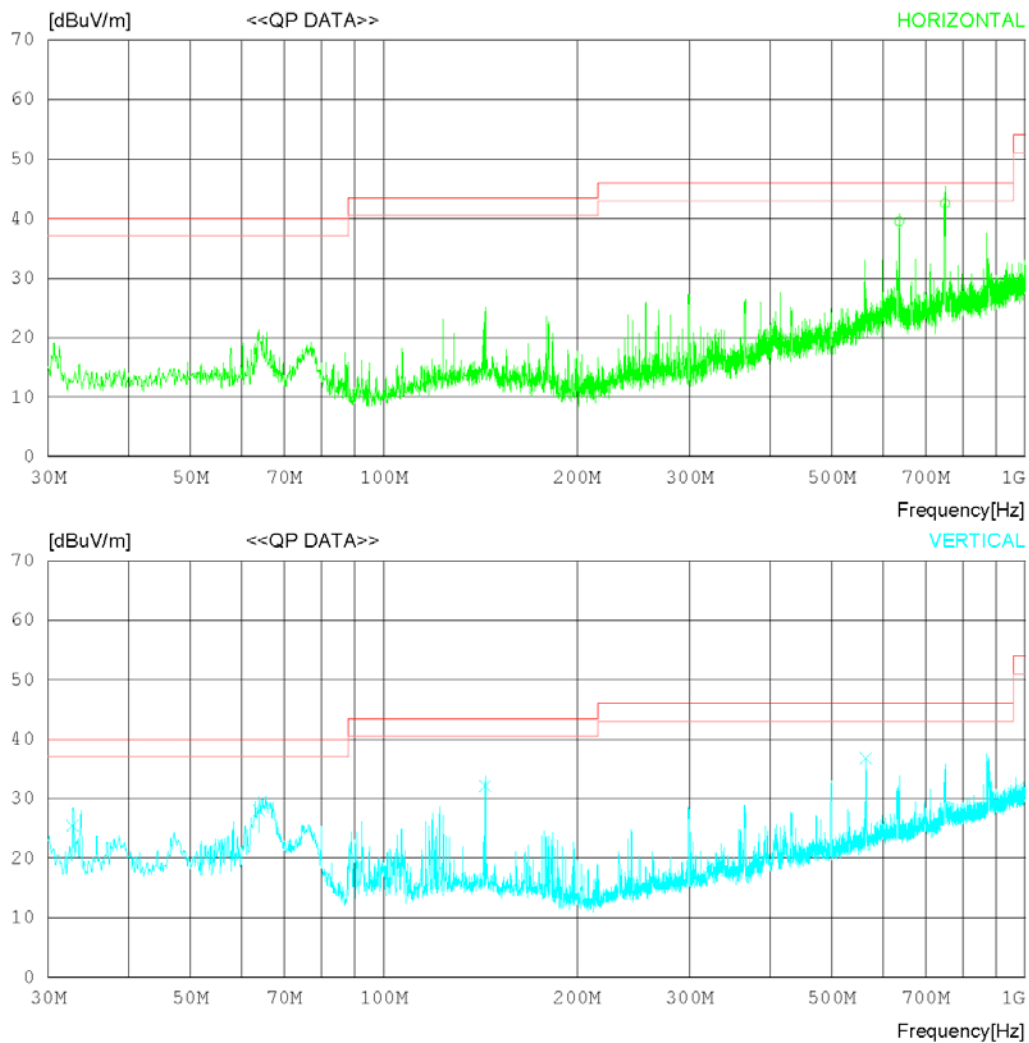
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC-1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 56 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable : EAD64746101

LIMIT : FCC Part15 Subpart B Class B (3m)  
MARGIN: 3 dB



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC-1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 56 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable : EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m)  
MARGIN: 3 dB

| No.                    | FREQ    | READING | ANT    | LOSS | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|---------|---------|--------|------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]   | QP      | FACTOR |      |       |          |          |        |         |       |
|                        |         | [dBuV]  | [dB]   | [dB] | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |         |         |        |      |       |          |          |        |         |       |
| 1                      | 636.874 | 33.94   | 26.40  | 4.44 | 25.24 | 39.54    | 46.00    | 6.46   | 100     | 348   |
| 2                      | 749.665 | 34.77   | 28.19  | 4.90 | 25.35 | 42.51    | 46.00    | 3.49   | 100     | 293   |
| ----- Vertical -----   |         |         |        |      |       |          |          |        |         |       |
| 3                      | 32.781  | 32.20   | 17.91  | 0.87 | 25.48 | 25.50    | 40.00    | 14.50  | 100     | 234   |
| 4                      | 63.940  | 35.10   | 17.15  | 1.27 | 25.52 | 28.00    | 40.00    | 12.00  | 177     | 250   |
| 5                      | 143.913 | 36.50   | 19.36  | 1.94 | 25.58 | 32.22    | 43.50    | 11.28  | 100     | 87    |
| 6                      | 564.154 | 32.70   | 25.17  | 4.22 | 25.30 | 36.79    | 46.00    | 9.21   | 100     | 327   |



| Radiated disturbance at (1 ~ 6) GHz _Peak measurement data |     |                     |    |
|------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                    | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                           | 120 | Test Frequency (Hz) | 60 |

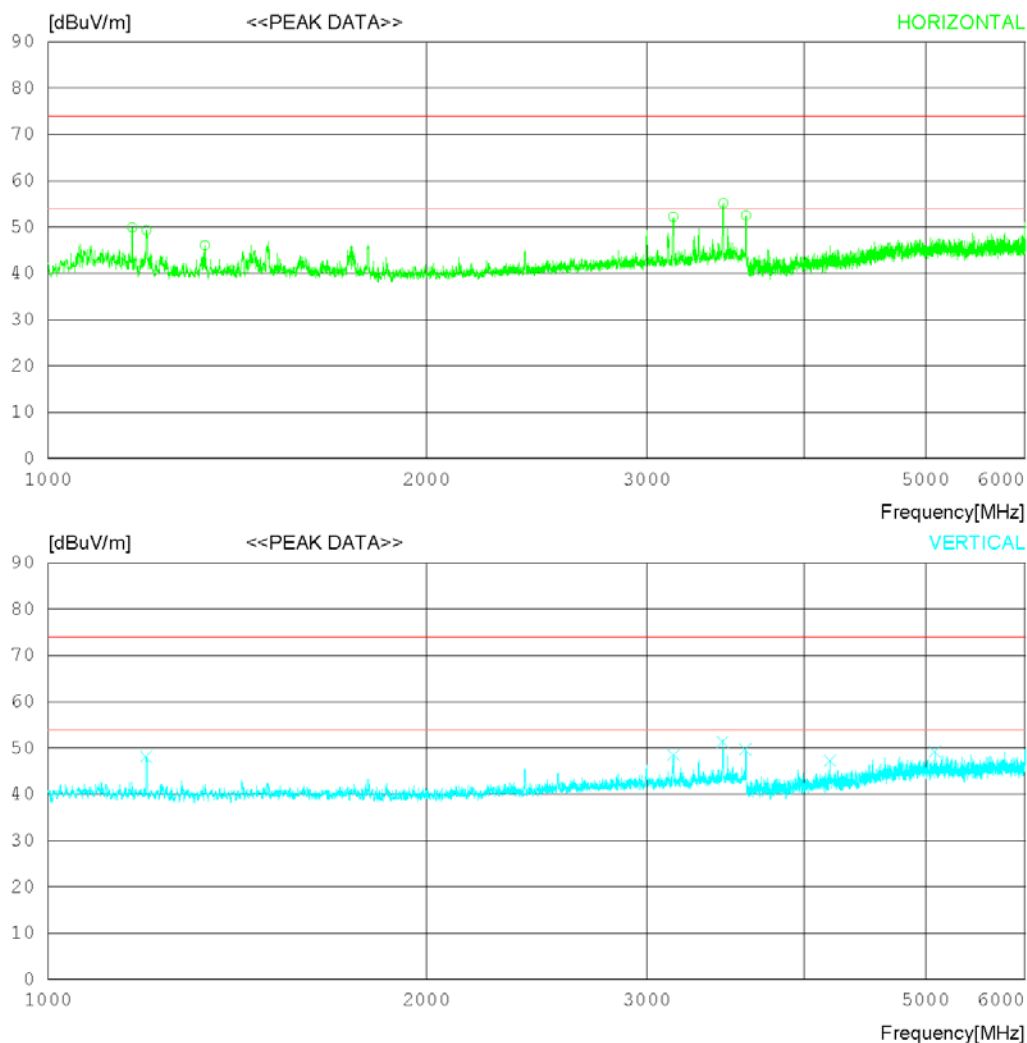
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

| No.                    | FREQ     | READING        | ANT            | LOSS | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|----------|----------------|----------------|------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]    | PEAK<br>[dBuV] | FACTOR<br>[dB] | [dB] | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |          |                |                |      |       |          |          |        |         |       |
| 1                      | 1166.875 | 53.10          | 25.32          | 3.64 | 32.17 | 49.89    | 74.0     | 24.11  | 100     | 178   |
| 2                      | 1197.500 | 52.40          | 25.35          | 3.71 | 32.18 | 49.28    | 74.0     | 24.72  | 100     | 308   |
| 3                      | 1333.125 | 48.90          | 25.49          | 3.88 | 32.24 | 46.03    | 74.0     | 27.97  | 188     | 1     |
| 4                      | 3148.125 | 51.00          | 28.11          | 5.67 | 32.59 | 52.19    | 74.0     | 21.81  | 100     | 1     |
| 5                      | 3448.750 | 53.30          | 28.42          | 6.09 | 32.62 | 55.19    | 74.0     | 18.81  | 385     | 1     |
| 6                      | 3595.000 | 50.40          | 28.61          | 6.14 | 32.63 | 52.52    | 74.0     | 21.48  | 312     | 27    |
| ----- Vertical -----   |          |                |                |      |       |          |          |        |         |       |
| 7                      | 1196.875 | 51.20          | 25.35          | 3.71 | 32.18 | 48.08    | 74.0     | 25.92  | 220     | 358   |
| 8                      | 3148.750 | 47.30          | 28.11          | 5.67 | 32.59 | 48.49    | 74.0     | 25.51  | 100     | 358   |
| 9                      | 3444.375 | 49.40          | 28.41          | 6.09 | 32.62 | 51.28    | 74.0     | 22.72  | 100     | 358   |
| 10                     | 3591.875 | 47.60          | 28.60          | 6.14 | 32.63 | 49.71    | 74.0     | 24.29  | 100     | 151   |
| 11                     | 4193.750 | 43.60          | 29.58          | 6.66 | 32.58 | 47.26    | 74.0     | 26.74  | 100     | 358   |
| 12                     | 5084.375 | 42.90          | 31.34          | 7.29 | 32.29 | 49.24    | 74.0     | 24.76  | 100     | 358   |

| Radiated disturbance at (1 ~ 6) GHz _Average measurement data |     |                     |    |
|---------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                       | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                              | 120 | Test Frequency (Hz) | 60 |

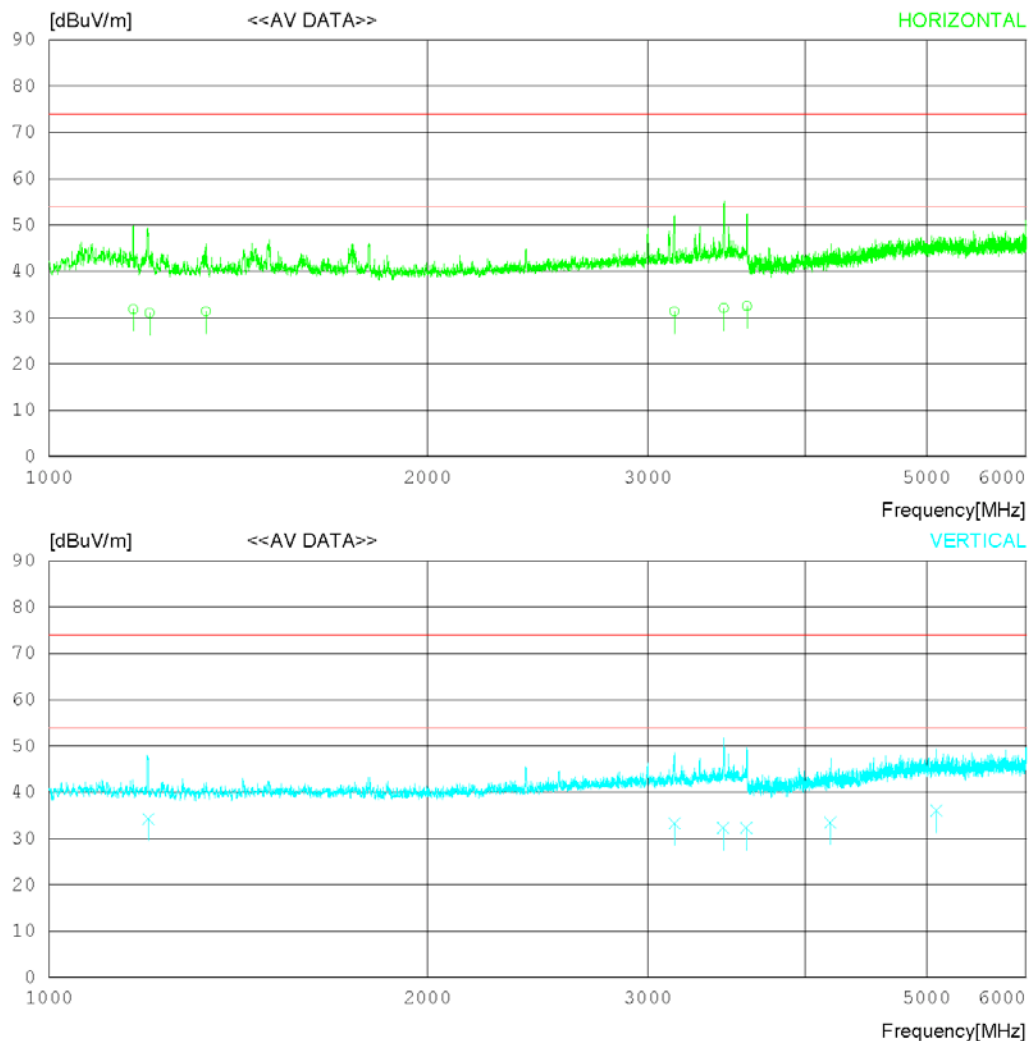
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

| No.                    | FREQ     | READING       | ANT            | LOSS | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|----------|---------------|----------------|------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]    | CAV<br>[dBuV] | FACTOR<br>[dB] | [dB] | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |          |               |                |      |       |          |          |        |         |       |
| 1                      | 1166.687 | 35.10         | 25.32          | 3.64 | 32.17 | 31.89    | 54.00    | 22.11  | 100     | 220   |
| 2                      | 1202.391 | 34.10         | 25.36          | 3.71 | 32.19 | 30.98    | 54.00    | 23.02  | 100     | 110   |
| 3                      | 1333.340 | 34.20         | 25.49          | 3.88 | 32.24 | 31.33    | 54.00    | 22.67  | 188     | 170   |
| 4                      | 3147.743 | 30.20         | 28.11          | 5.67 | 32.59 | 31.39    | 54.00    | 22.61  | 100     | 90    |
| 5                      | 3445.905 | 30.20         | 28.41          | 6.09 | 32.62 | 32.08    | 54.00    | 21.92  | 385     | 80    |
| 6                      | 3596.110 | 30.40         | 28.61          | 6.14 | 32.63 | 32.52    | 54.00    | 21.48  | 312     | 140   |
| ----- Vertical -----   |          |               |                |      |       |          |          |        |         |       |
| 7                      | 1199.765 | 37.30         | 25.36          | 3.71 | 32.18 | 34.19    | 54.00    | 19.81  | 220     | 120   |
| 8                      | 3147.236 | 32.10         | 28.11          | 5.67 | 32.59 | 33.29    | 54.00    | 20.71  | 100     | 84    |
| 9                      | 3441.452 | 30.40         | 28.41          | 6.09 | 32.62 | 32.28    | 54.00    | 21.72  | 100     | 280   |
| 10                     | 3590.802 | 30.20         | 28.60          | 6.14 | 32.63 | 32.31    | 54.00    | 21.69  | 100     | 180   |
| 11                     | 4190.338 | 29.80         | 29.57          | 6.66 | 32.59 | 33.44    | 54.00    | 20.56  | 100     | 210   |
| 12                     | 5088.103 | 29.70         | 31.34          | 7.30 | 32.29 | 36.05    | 54.00    | 17.95  | 100     | 340   |

| Radiated disturbance at (6 ~ 18) GHz _Peak measurement data |     |                     |    |
|-------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                     | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                            | 120 | Test Frequency (Hz) | 60 |

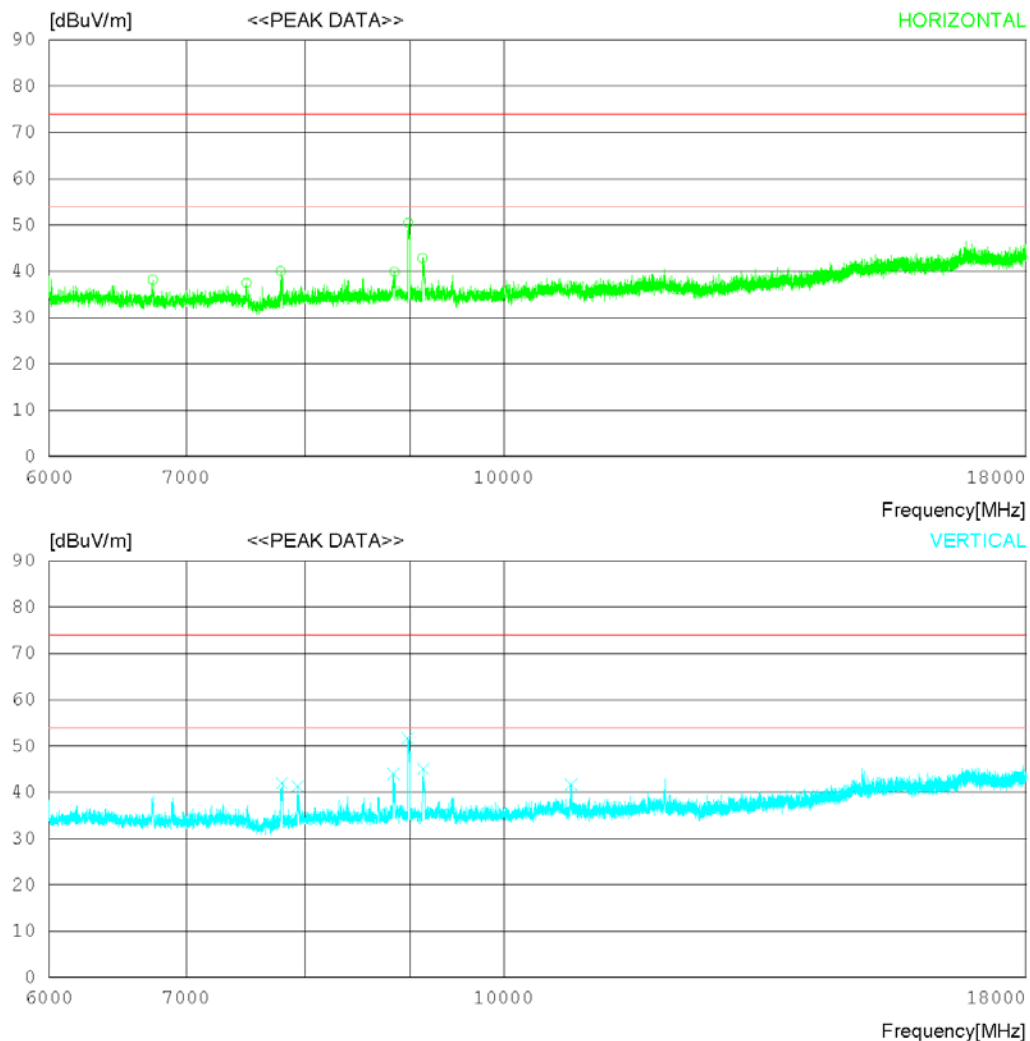
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)



\* The measurement is performed above 18 GHz up to 30 GHz and not found emissions above 18 GHz.

## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

| No.                    | FREQ      | READING        | ANT            | LOSS  | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|-----------|----------------|----------------|-------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]     | PEAK<br>[dBuV] | FACTOR<br>[dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |           |                |                |       |       |          |          |        |         |       |
| 1                      | 6744.000  | 37.70          | 31.40          | 7.88  | 38.77 | 38.21    | 74.0     | 35.79  | 100     | 358   |
| 2                      | 7491.750  | 36.60          | 31.37          | 8.36  | 38.79 | 37.54    | 74.0     | 36.46  | 150     | 176   |
| 3                      | 7785.750  | 38.30          | 31.36          | 8.66  | 38.32 | 40.00    | 74.0     | 34     | 222     | 24    |
| 4                      | 8847.750  | 36.20          | 31.75          | 9.69  | 37.70 | 39.94    | 74.0     | 34.06  | 100     | 358   |
| 5                      | 8988.000  | 46.90          | 31.81          | 9.44  | 37.64 | 50.51    | 74.0     | 23.49  | 390     | 29    |
| 6                      | 9132.750  | 39.10          | 31.88          | 9.54  | 37.72 | 42.80    | 74.0     | 31.2   | 312     | 97    |
| ----- Vertical -----   |           |                |                |       |       |          |          |        |         |       |
| 7                      | 7798.500  | 40.20          | 31.36          | 8.68  | 38.27 | 41.97    | 74.0     | 32.03  | 190     | 136   |
| 8                      | 7933.500  | 39.20          | 31.35          | 8.71  | 37.96 | 41.30    | 74.0     | 32.7   | 100     | 359   |
| 9                      | 8836.500  | 40.30          | 31.74          | 9.70  | 37.70 | 44.04    | 74.0     | 29.96  | 100     | 204   |
| 10                     | 8979.750  | 48.10          | 31.81          | 9.45  | 37.65 | 51.71    | 74.0     | 22.29  | 100     | 204   |
| 11                     | 9137.250  | 41.30          | 31.88          | 9.54  | 37.72 | 45.00    | 74.0     | 29     | 100     | 209   |
| 12                     | 10789.500 | 35.30          | 32.57          | 11.53 | 37.76 | 41.64    | 74.0     | 32.36  | 100     | 1     |

| Radiated disturbance at (6 ~ 18) GHz _Average measurement data |     |                     |    |
|----------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                        | 1   | EUT Operation mode  | 1  |
| Test voltage (V)                                               | 120 | Test Frequency (Hz) | 60 |

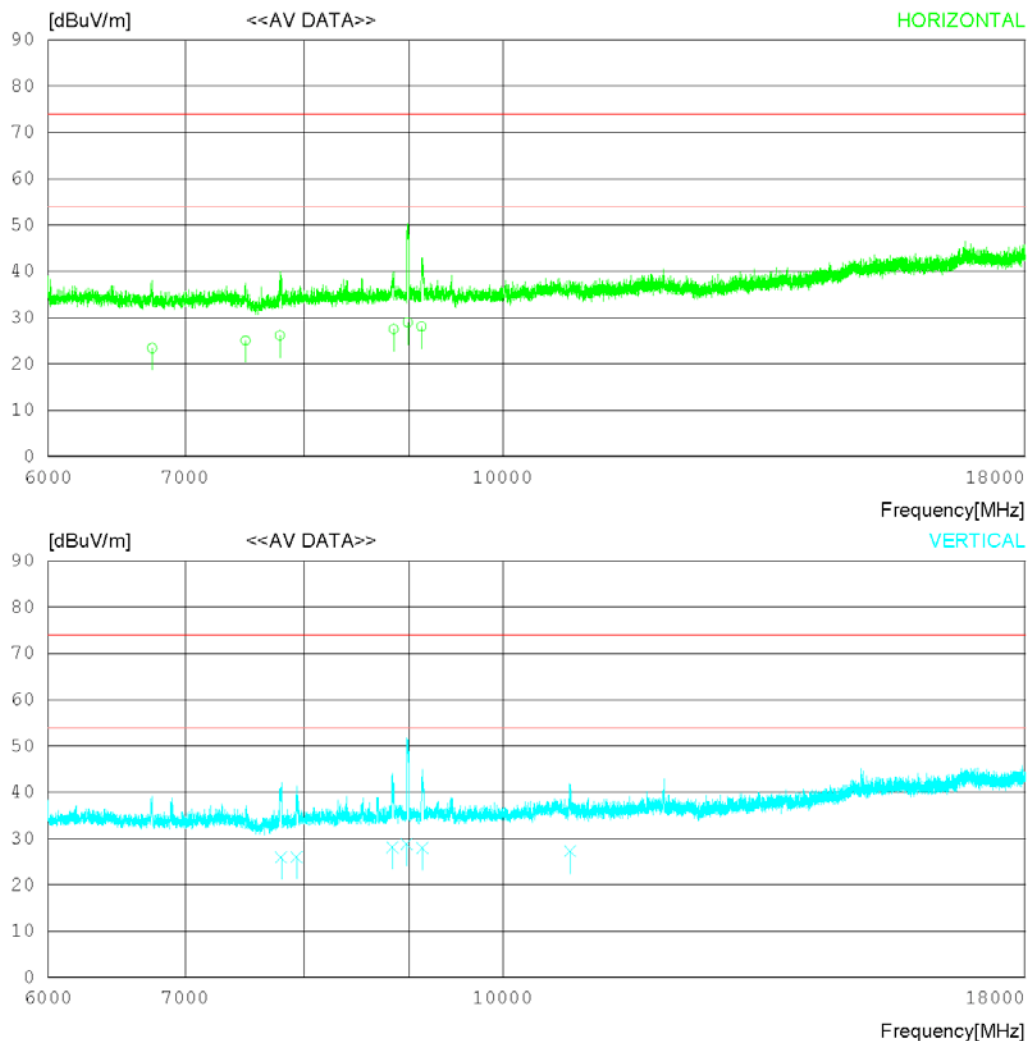
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)



\* The measurement is performed above 18 GHz up to 30 GHz and not found emissions above 18 GHz.

## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728251, USB Cable: EAD64746101

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

| No.                    | FREQ      | READING       | ANT            | LOSS  | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|-----------|---------------|----------------|-------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]     | CAV<br>[dBuV] | FACTOR<br>[dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |           |               |                |       |       |          |          |        |         |       |
| 1                      | 6745.210  | 22.90         | 31.40          | 7.88  | 38.77 | 23.41    | 54.00    | 30.59  | 100     | 320   |
| 2                      | 7490.450  | 24.11         | 31.37          | 8.36  | 38.79 | 25.05    | 54.00    | 28.95  | 150     | 240   |
| 3                      | 7785.350  | 24.40         | 31.36          | 8.66  | 38.32 | 26.10    | 54.00    | 27.90  | 222     | 230   |
| 4                      | 8848.450  | 23.80         | 31.75          | 9.68  | 37.70 | 27.53    | 54.00    | 26.47  | 100     | 330   |
| 5                      | 8990.110  | 25.40         | 31.82          | 9.42  | 37.64 | 29.00    | 54.00    | 25.00  | 390     | 70    |
| 6                      | 9132.950  | 24.31         | 31.88          | 9.54  | 37.72 | 28.01    | 54.00    | 25.99  | 312     | 110   |
| ----- Vertical -----   |           |               |                |       |       |          |          |        |         |       |
| 7                      | 7798.884  | 24.10         | 31.36          | 8.68  | 38.26 | 25.88    | 54.00    | 28.12  | 190     | 178   |
| 8                      | 7934.345  | 23.90         | 31.35          | 8.71  | 37.96 | 26.00    | 54.00    | 28.00  | 100     | 310   |
| 9                      | 8837.221  | 24.32         | 31.74          | 9.70  | 37.70 | 28.06    | 54.00    | 25.94  | 100     | 240   |
| 10                     | 8980.250  | 25.31         | 31.81          | 9.45  | 37.65 | 28.92    | 54.00    | 25.08  | 100     | 264   |
| 11                     | 9138.150  | 24.24         | 31.88          | 9.54  | 37.72 | 27.94    | 54.00    | 26.06  | 100     | 190   |
| 12                     | 10790.300 | 20.90         | 32.57          | 11.53 | 37.76 | 27.24    | 54.00    | 26.76  | 100     | 30    |



| Radiated disturbance at (30 ~ 1000) MHz _Measurement data |     |                     |    |
|-----------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                   | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                          | 120 | Test Frequency (Hz) | 60 |

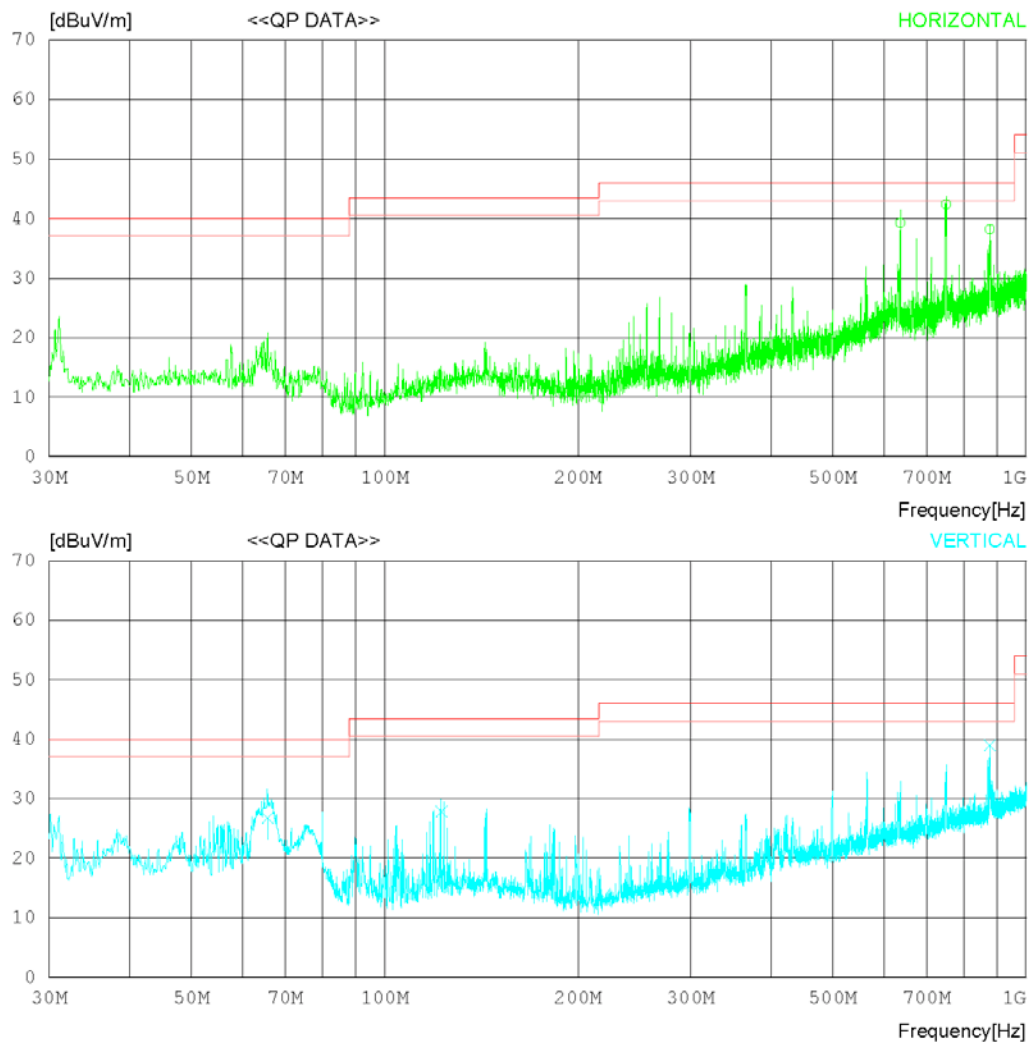
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC-1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 'C 56 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable : EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m)  
MARGIN: 3 dB



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC-1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 56 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable : EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m)  
MARGIN: 3 dB

| No.                    | FREQ<br>[MHz] | READING<br>QP<br>[dBuV] | ANT<br>FACTOR<br>[dB] | LOSS<br>[dB] | GAIN<br>[dB] | RESULT<br>[dBuV/m] | LIMIT<br>[dBuV/m] | MARGIN<br>[dB] | ANTENNA<br>[cm] | TABLE<br>[DEG] |
|------------------------|---------------|-------------------------|-----------------------|--------------|--------------|--------------------|-------------------|----------------|-----------------|----------------|
| ----- Horizontal ----- |               |                         |                       |              |              |                    |                   |                |                 |                |
| 1                      | 637.102       | 33.70                   | 26.40                 | 4.44         | 25.24        | 39.30              | 46.00             | 6.70           | 110             | 341            |
| 2                      | 749.515       | 34.60                   | 28.19                 | 4.90         | 25.35        | 42.34              | 46.00             | 3.66           | 100             | 300            |
| 3                      | 877.826       | 29.10                   | 29.38                 | 5.30         | 25.59        | 38.19              | 46.00             | 7.81           | 100             | 36             |
| ----- Vertical -----   |               |                         |                       |              |              |                    |                   |                |                 |                |
| 4                      | 65.771        | 34.10                   | 16.88                 | 1.30         | 25.52        | 26.76              | 40.00             | 13.24          | 100             | 121            |
| 5                      | 122.491       | 33.50                   | 18.15                 | 1.80         | 25.56        | 27.89              | 43.50             | 15.61          | 187             | 35             |
| 6                      | 877.705       | 29.90                   | 29.38                 | 5.30         | 25.59        | 38.99              | 46.00             | 7.01           | 100             | 106            |

| Radiated disturbance at (1 ~ 6) GHz _Peak measurement data |     |                     |    |
|------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                    | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                           | 120 | Test Frequency (Hz) | 60 |

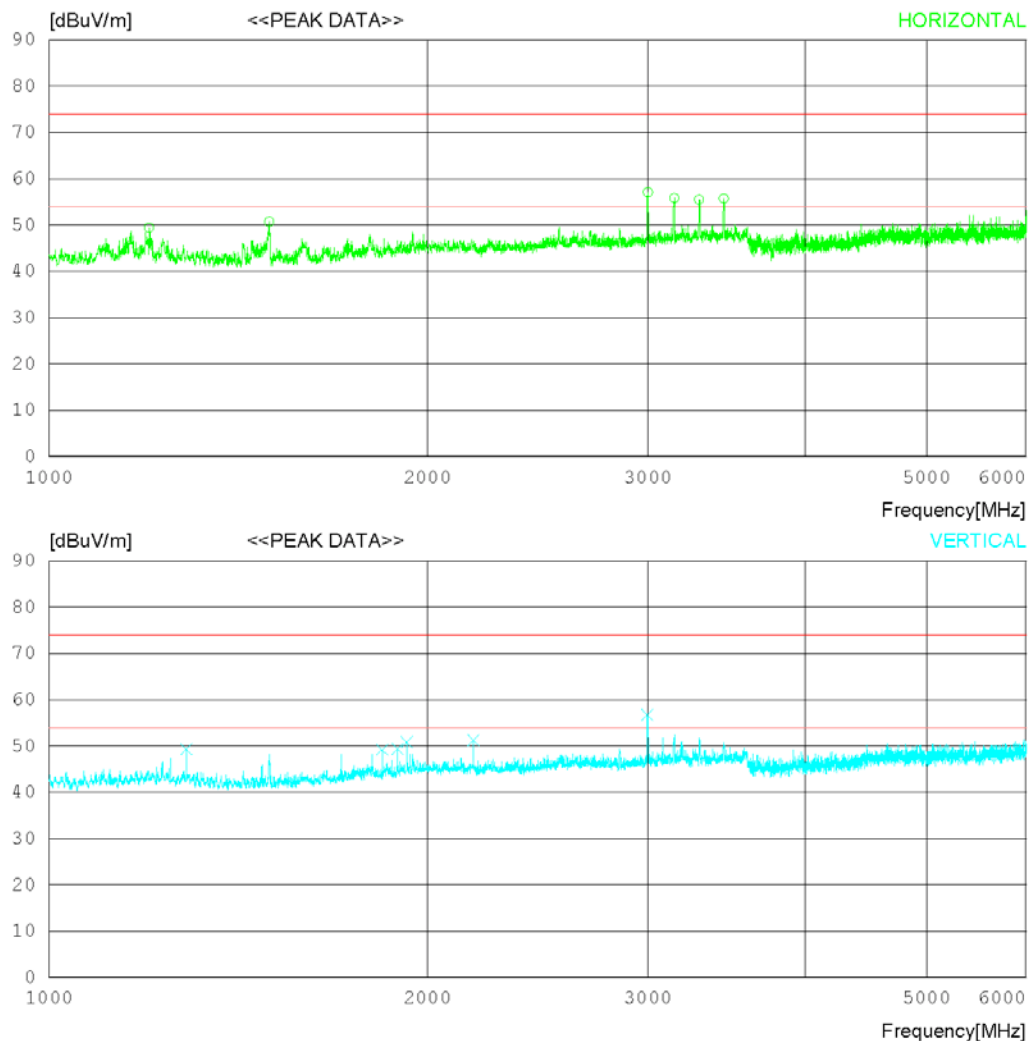
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

| No.                    | FREQ     | READING        | ANT            | LOSS | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|----------|----------------|----------------|------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]    | PEAK<br>[dBuV] | FACTOR<br>[dB] | [dB] | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |          |                |                |      |       |          |          |        |         |       |
| 1                      | 1201.875 | 49.10          | 28.80          | 3.76 | 32.18 | 49.48    | 74.0     | 24.52  | 100     | 266   |
| 2                      | 1497.500 | 50.90          | 27.90          | 4.18 | 32.31 | 50.67    | 74.0     | 23.33  | 120     | 144   |
| 3                      | 2999.375 | 51.30          | 32.50          | 5.84 | 32.58 | 57.06    | 74.0     | 16.94  | 220     | 0     |
| 4                      | 3146.875 | 49.60          | 32.99          | 5.79 | 32.59 | 55.79    | 74.0     | 18.21  | 100     | 0     |
| 5                      | 3291.875 | 49.20          | 32.92          | 5.92 | 32.61 | 55.43    | 74.0     | 18.57  | 400     | 194   |
| 6                      | 3446.250 | 49.40          | 32.80          | 6.16 | 32.62 | 55.74    | 74.0     | 18.26  | 312     | 0     |
| ----- Vertical -----   |          |                |                |      |       |          |          |        |         |       |
| 7                      | 1285.625 | 48.90          | 28.77          | 3.85 | 32.22 | 49.30    | 74.0     | 24.7   | 156     | 248   |
| 8                      | 1841.250 | 46.60          | 30.57          | 4.45 | 32.45 | 49.17    | 74.0     | 24.83  | 100     | 358   |
| 9                      | 1894.375 | 46.20          | 31.04          | 4.55 | 32.48 | 49.31    | 74.0     | 24.69  | 100     | 285   |
| 10                     | 1927.500 | 47.40          | 31.32          | 4.61 | 32.49 | 50.84    | 74.0     | 23.16  | 100     | 358   |
| 11                     | 2176.875 | 47.20          | 31.70          | 4.85 | 32.53 | 51.22    | 74.0     | 22.78  | 100     | 358   |
| 12                     | 2994.375 | 51.00          | 32.49          | 5.83 | 32.58 | 56.74    | 74.0     | 17.26  | 100     | 358   |

| Radiated disturbance at (1 ~ 6) GHz _Average measurement data |     |                     |    |
|---------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                       | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                              | 120 | Test Frequency (Hz) | 60 |

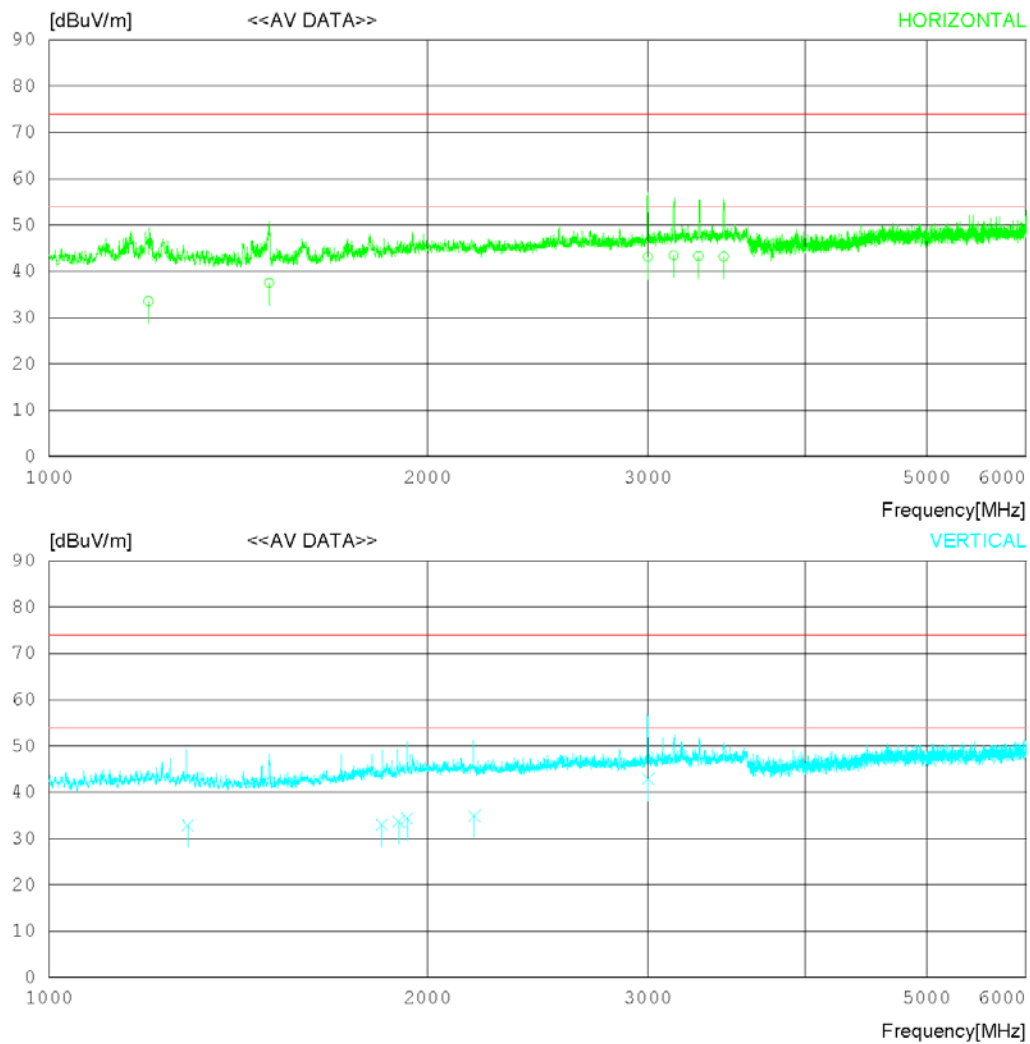
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)



## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

| No.                    | FREQ     | READING       | ANT            | LOSS | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|----------|---------------|----------------|------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]    | CAV<br>[dBuV] | FACTOR<br>[dB] | [dB] | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |          |               |                |      |       |          |          |        |         |       |
| 1                      | 1200.301 | 33.10         | 28.80          | 3.76 | 32.18 | 33.48    | 54.00    | 20.52  | 100     | 240   |
| 2                      | 1496.626 | 37.70         | 27.90          | 4.18 | 32.31 | 37.47    | 54.00    | 16.53  | 120     | 160   |
| 3                      | 2999.405 | 37.30         | 32.50          | 5.84 | 32.58 | 43.06    | 54.00    | 10.94  | 220     | 210   |
| 4                      | 3145.894 | 37.21         | 32.99          | 5.79 | 32.59 | 43.40    | 54.00    | 10.60  | 100     | 90    |
| 5                      | 3291.021 | 37.10         | 32.92          | 5.92 | 32.61 | 43.33    | 54.00    | 10.67  | 400     | 110   |
| 6                      | 3445.754 | 36.90         | 32.80          | 6.16 | 32.62 | 43.24    | 54.00    | 10.76  | 312     | 80    |
| ----- Vertical -----   |          |               |                |      |       |          |          |        |         |       |
| 7                      | 1289.058 | 32.40         | 28.78          | 3.86 | 32.22 | 32.82    | 54.00    | 21.18  | 156     | 310   |
| 8                      | 1839.761 | 30.40         | 30.56          | 4.44 | 32.45 | 32.95    | 54.00    | 21.05  | 110     | 210   |
| 9                      | 1898.336 | 30.50         | 31.08          | 4.55 | 32.48 | 33.65    | 54.00    | 20.35  | 100     | 240   |
| 10                     | 1928.237 | 30.90         | 31.33          | 4.61 | 32.49 | 34.35    | 54.00    | 19.65  | 100     | 170   |
| 11                     | 2180.330 | 30.90         | 31.70          | 4.85 | 32.53 | 34.92    | 54.00    | 19.08  | 100     | 310   |
| 12                     | 2999.250 | 37.10         | 32.50          | 5.84 | 32.58 | 42.86    | 54.00    | 11.14  | 100     | 110   |

| Radiated disturbance at (6 ~ 18) GHz _Peak measurement data |     |                     |    |
|-------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                     | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                            | 120 | Test Frequency (Hz) | 60 |

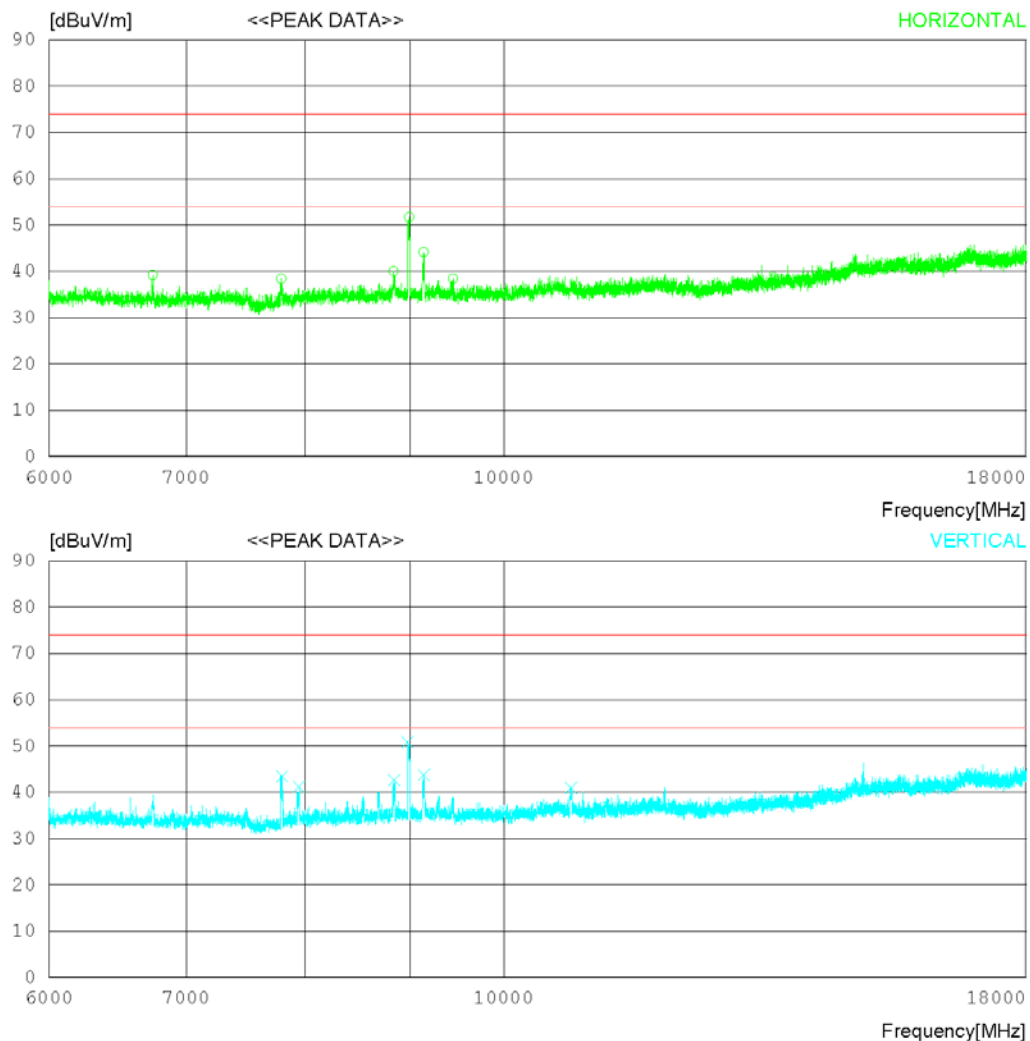
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)



\* The measurement is performed above 18 GHz up to 30 GHz and not found emissions above 18 GHz.

## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Peak)  
FCC Part15 Subpart.B Class B (3m) - 18G(Avg)

| No.                    | FREQ      | READING        | ANT            | LOSS  | GAIN  | RESULT   | LIMIT    | MARGIN | ANTENNA | TABLE |
|------------------------|-----------|----------------|----------------|-------|-------|----------|----------|--------|---------|-------|
|                        | [MHz]     | PEAK<br>[dBuV] | FACTOR<br>[dB] | [dB]  | [dB]  | [dBuV/m] | [dBuV/m] | [dB]   | [cm]    | [DEG] |
| ----- Horizontal ----- |           |                |                |       |       |          |          |        |         |       |
| 1                      | 6744.000  | 38.70          | 31.40          | 7.88  | 38.77 | 39.21    | 74.0     | 34.79  | 140     | 62    |
| 2                      | 7791.000  | 36.70          | 31.36          | 8.67  | 38.30 | 38.43    | 74.0     | 35.57  | 100     | 84    |
| 3                      | 8835.750  | 36.30          | 31.74          | 9.70  | 37.70 | 40.04    | 74.0     | 33.96  | 215     | 40    |
| 4                      | 8997.750  | 48.10          | 31.82          | 9.41  | 37.64 | 51.69    | 74.0     | 22.31  | 100     | 40    |
| 5                      | 9142.500  | 40.40          | 31.89          | 9.54  | 37.72 | 44.11    | 74.0     | 29.89  | 310     | 73    |
| 6                      | 9447.750  | 34.70          | 32.03          | 9.64  | 37.90 | 38.47    | 74.0     | 35.53  | 240     | 358   |
| ----- Vertical -----   |           |                |                |       |       |          |          |        |         |       |
| 7                      | 7796.250  | 41.70          | 31.36          | 8.68  | 38.28 | 43.46    | 74.0     | 30.54  | 188     | 25    |
| 8                      | 7947.750  | 39.00          | 31.35          | 8.71  | 37.93 | 41.13    | 74.0     | 32.87  | 100     | 358   |
| 9                      | 8847.000  | 38.90          | 31.75          | 9.69  | 37.70 | 42.64    | 74.0     | 31.36  | 100     | 142   |
| 10                     | 8979.000  | 47.20          | 31.81          | 9.45  | 37.65 | 50.81    | 74.0     | 23.19  | 100     | 142   |
| 11                     | 9144.000  | 40.10          | 31.89          | 9.55  | 37.72 | 43.82    | 74.0     | 30.18  | 100     | 25    |
| 12                     | 10786.500 | 34.60          | 32.57          | 11.53 | 37.76 | 40.94    | 74.0     | 33.06  | 100     | 358   |



| Radiated disturbance at (6 ~ 18) GHz _Average measurement data |     |                     |    |
|----------------------------------------------------------------|-----|---------------------|----|
| Test configuration mode                                        | 2   | EUT Operation mode  | 2  |
| Test voltage (V)                                               | 120 | Test Frequency (Hz) | 60 |

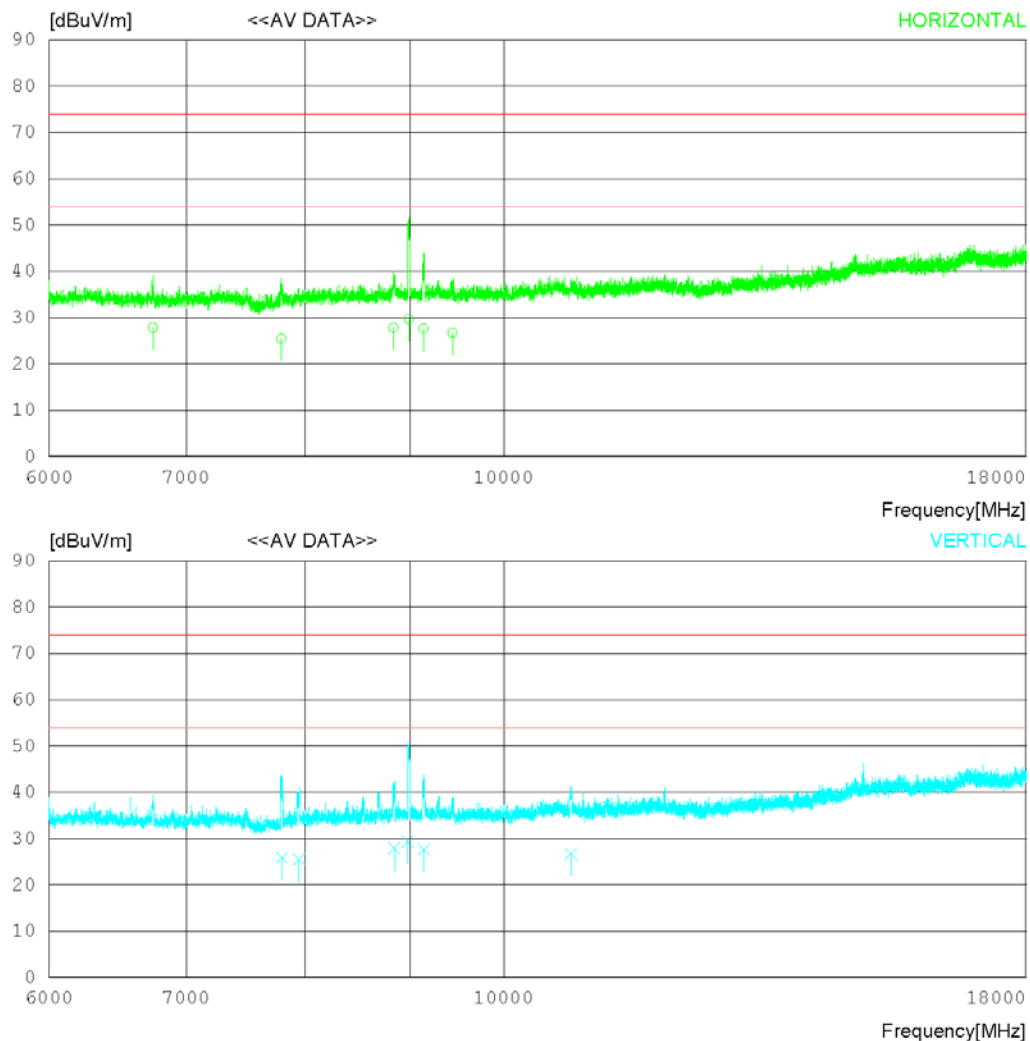
## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 % R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)



\* The measurement is performed above 18 GHz up to 30 GHz and not found emissions above 18 GHz.

## RADIATED EMISSION

Date 2018-08-11

Order No. DTNC1807-05832  
Power Supply 120 VAC 60 Hz  
Temp/Humi 21 °C 55 %R.H.  
Test Condition PC Link

S/N Earphone : EAB63728252, USB Cable: EAD64746102

LIMIT : FCC Part15 Subpart.B Class B (3m) - 18G(Avg)  
FCC Part15 Subpart.B Class B (3m) - 18G(Peak)

| No.                    | FREQ<br>[MHz] | READING<br>CAV<br>[dBuV] | ANT<br>FACTOR<br>[dB] | LOSS<br>[dB] | GAIN<br>[dB] | RESULT<br>[dBuV/m] | LIMIT<br>[dBuV/m] | MARGIN<br>[dB] | ANTENNA<br>[cm] | TABLE<br>[DEG] |
|------------------------|---------------|--------------------------|-----------------------|--------------|--------------|--------------------|-------------------|----------------|-----------------|----------------|
| ----- Horizontal ----- |               |                          |                       |              |              |                    |                   |                |                 |                |
| 1                      | 6743.270      | 27.40                    | 31.40                 | 7.88         | 38.77        | 27.91              | 54.00             | 26.09          | 140             | 90             |
| 2                      | 7791.331      | 23.78                    | 31.36                 | 8.67         | 38.30        | 25.51              | 54.00             | 28.49          | 100             | 110            |
| 3                      | 8836.250      | 24.11                    | 31.74                 | 9.70         | 37.70        | 27.85              | 54.00             | 26.15          | 215             | 90             |
| 4                      | 8993.450      | 26.10                    | 31.82                 | 9.42         | 37.64        | 29.70              | 54.00             | 24.30          | 100             | 154            |
| 5                      | 9143.400      | 23.90                    | 31.89                 | 9.54         | 37.72        | 27.61              | 54.00             | 26.39          | 310             | 234            |
| 6                      | 9446.150      | 22.90                    | 32.03                 | 9.63         | 37.90        | 26.66              | 54.00             | 27.34          | 240             | 311            |
| ----- Vertical -----   |               |                          |                       |              |              |                    |                   |                |                 |                |
| 7                      | 7797.140      | 24.10                    | 31.36                 | 8.68         | 38.27        | 25.87              | 54.00             | 28.13          | 188             | 75             |
| 8                      | 7946.551      | 23.40                    | 31.35                 | 8.71         | 37.93        | 25.53              | 54.00             | 28.47          | 100             | 311            |
| 9                      | 8848.224      | 24.20                    | 31.75                 | 9.68         | 37.70        | 27.93              | 54.00             | 26.07          | 100             | 160            |
| 10                     | 8980.100      | 25.70                    | 31.81                 | 9.45         | 37.65        | 29.31              | 54.00             | 24.69          | 100             | 195            |
| 11                     | 9144.110      | 23.90                    | 31.89                 | 9.55         | 37.72        | 27.62              | 54.00             | 26.38          | 100             | 135            |
| 12                     | 10788.340     | 20.40                    | 32.57                 | 11.53        | 37.76        | 26.74              | 54.00             | 27.26          | 100             | 270            |

### Calculation

|                                                                                |
|--------------------------------------------------------------------------------|
| N : Neutral phase, L1 : Live phase                                             |
| C.FACTOR(dB) : Pulse Limiter(dB) + Cable loss(dB) + Insertion loss of LISN(dB) |
| Result(dBuV) : Reading Value(dBuV) + C.FACTOR(dB)                              |
| Margin(dB) : Limit(dBuV) - Result(dBuV)                                        |

## 8. Revision History

| Date          | Description    | Revised By | Reviewed By  |
|---------------|----------------|------------|--------------|
| Aug. 16. 2018 | Initial report | YongKi Kim | HyungJun Kim |
|               |                |            |              |
|               |                |            |              |
|               |                |            |              |
|               |                |            |              |
|               |                |            |              |
|               |                |            |              |
|               |                |            |              |

-End of test report-