



# 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 : DREFCC1709-0247
2. Customer
  - Name : SENA TECHNOLOGIES.Inc
  - Address : 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul
3. Product Name / Model Name : 30K / SP46
4. Test Method Used : ANSI C 63.4:2014  
FCC Part 15 Subpart B (All other devices)  
ICES-003:2016  
CAN/CSA-CISPR 22-10
5. Date of Test : 2017-09-08 ~ 2017-09-11
6. Testing Environment : Temperature 24 °C , Humidity (37 ~ 48) % R.H.
7. Test Result : Refer to the attached Test Result

Affirmation	Tested by	Technical Manager
	Name : MinChul Kim 	Name : HyunSuk Ko 

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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**2017. 09. 18.**

**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.**

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

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Tel: +82-31-321-2664 Fax: +82-31-321-1664

## 2. Test Laboratory

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

Certificate	Nation	Agency	Code	Mark
Accreditation	Korea	KOLAS	393	ISO/IEC 17025
Site Filing	USA	FCC	KR0034 101842 678747, 596748, 804488, 165783	Accredited  2.948 Listed
	Canada	IC	5740A-1 5740A-2	Registered
	Japan	VCCI	C-1427 R-1364, R-3385, R-4076, R-4180, T-1442, G-10338, G-754, G-815	Registered
Certification	Korea	KC	KR0034	Designation
	Germany	TUV	CARAT 17 01 89112 004	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

Kind of Equipment	30K
Model Name	SP46
Add Model Name	None
Serial No.	None
Type of Sample Tested	Pre-Production
Supplied Power for Test	AC 120 V, 60 Hz
Rating Power	Battery
Clock Frequency	240 MHz
Applicant	SENA TECHNOLOGIES.Inc 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul
Manufacturer	SENA TECHNOLOGIES.Inc 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul
Factory	SENA TECHNOLOGIES.Inc 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul

#### Related Submittal(s) / Grant(s)

Original submittal only.

## 4. Test Summary

### 4.1 Applied standards and test results

Test Items	Applied Standards	Results
Conducted Disturbance	ANSI C 63.4:2014 CAN/CSA-CISPR 22-10	<b>C</b>
Radiated Disturbance	ANSI C 63.4:2014 CAN/CSA-CISPR 22-10	<b>C</b>
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.

### 4.2 Test environment and conditions

Test Items	Test date (YYYY-MM-DD)	Temp (°C)	Humidity (% R.H.)
Conducted Disturbance	2017-09-11	24	38
Radiated Disturbance	2017-09-08	24	48
	2017-09-11	24	37



## 5. Test Set-up and operation mode

### 5.1 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.

### 5.2 Test Operation Mode

- CHARGING + FM MODE : The EUT can be operated during charging, and the test of FM MODE has been tested by setting to FM MODE.
- AUX MODE: The EUT is connected to the tablet PC with an AUX cable and outputs a 1kHz sound source.
- HEADSET MODE : The EUT is connected to the headset and outputs a 1kHz sound source.

### 5.3 Support Equipment Used

Unit	Model No.	Serial No.	Manufacturer	CABLE			Backshell	FCC ID
				Connect type	Length (m)	Shield		
tablet PC	NVIDIA SHEILD	N/A	NVIDIA.INC	AUX	2.8	Non-Shield	Plastic	COC
ADAPTER	A1205	N/A	Fugang Electronics (donguan)Co.,Ltd	DC IN	1.4	Non-Shield	Plastic	DOC
HEADSET	N/A	N/A	N/A	EARJACK	2.6	Non-Shield	Plastic	DOC

#### NOTE

- See "APPENDIX 2 Photographs" for actual system test setup

## 6. Test Results : Emission

### 6.1 Conducted Disturbance

#### 6.1.1 Measurement Procedure

In the range of 0.15 MHz to 30 MHz, the conducted disturbance was measured and set-up was made accordance with **ANSI C 63.4** and **CAN/CSA-CISPR 22**.

If the EUT is table top equipment, it was placed on a wooden table with a height of 0.8 m above the reference ground plane and 0.4 m from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15m above the reference ground plane. Connect the EUT's power source lines to the appropriate power mains / peripherals through the LISN. All the other peripherals are connected to the 2<sup>nd</sup> LISN, if any. Unused measuring port of the LISN was resistively terminated by 50 ohm terminator.

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 Average detector. By varying the configuration of the test sample and the cable routing it was attempted to maximize the emission. For further description of the configuration refer to the picture of the test set-up.

#### 6.1.2 Limit for Conducted Disturbance

(1) Conducted disturbance at mains ports.

Frequency range (MHz)	Limits dB(μV)			
	Quasi-peak		Average	
	Class A	Class B	Class A	Class B
0.15 to 0.50	79	66 to 56	66	56 to 46
0.50 to 5	73	56	60	46
5 to 30		60		50

Note 1 The lower limit shall apply at the transition frequencies.  
 Note 2 The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

- Note) 1. Emission Level = Reading Value + Correction Factor.  
 2. Correction Factor = Cable Loss + Insertion Loss of LISN  
 3. Margin = Limit - Emission level

**Test Result**

< Main ports \_ CHARGING + FM MODE >

**Results of Conducted Emission**

DT&C Date : 2017-09-11

Order No. : DTNC1707-05727, DTNC1707-05728

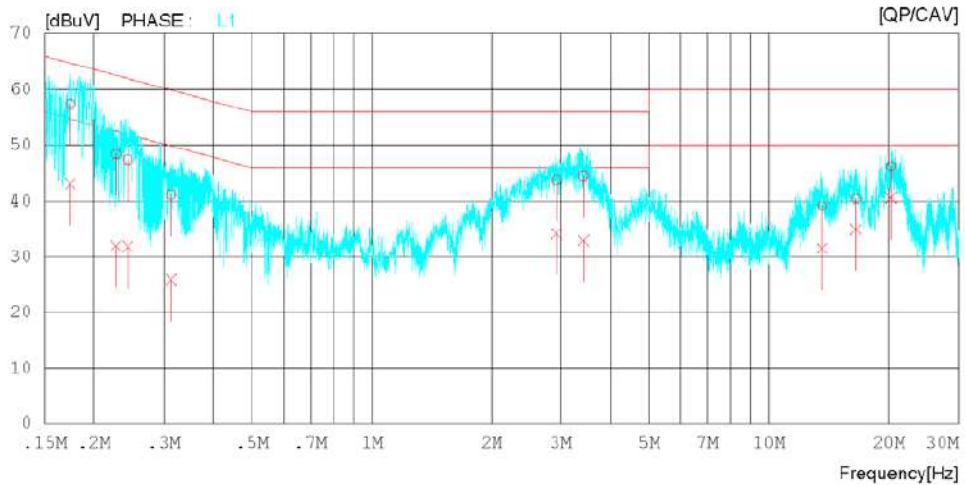
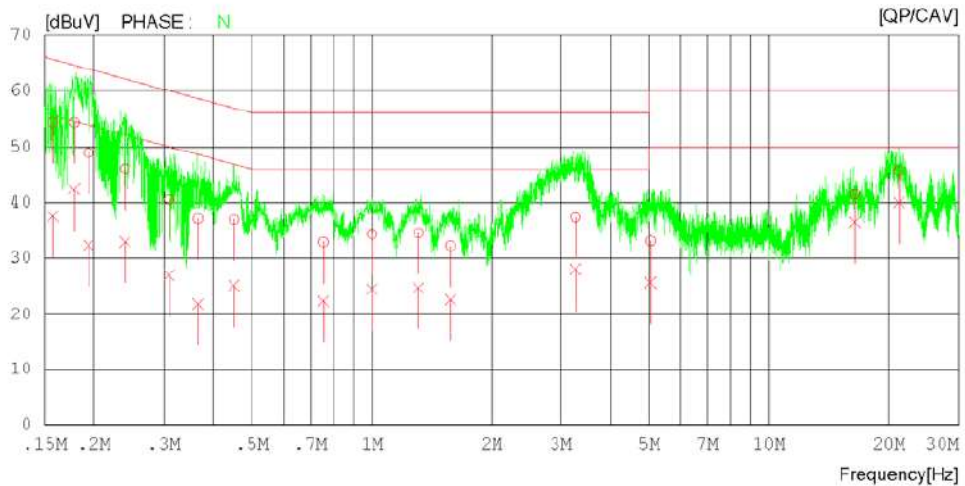
Power Supply : 120 V 60 Hz

Temp/Humi. : 24 'C 38 % R.H.

Test Condition :

Memo : CHARGING,FM

LIMIT : CISPR32\_B QP  
CISPR32\_B AV





## Results of Conducted Emission

DT&amp;C

Date : 2017-09-11

Order No. : DTNC1707-05727, DTNC1707-05728 :  
 Power Supply : 120 V 60 Hz :  
 Temp/Humi. : 24 'C 38 % R.H. :  
 Test Condition :

Memo : CHARGING,FM

LIMIT : CISPR22\_B QP  
 CISPR22\_B AV

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	CAV [dBuV]		QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	QP [dBuV]	CAV [dBuV]	
1	0.15750	44.38	27.55	9.97	54.35	37.52	65.59	55.59	11.24	18.07	N
2	0.17839	44.39	32.40	9.98	54.37	42.38	64.56	54.56	10.19	12.18	N
3	0.19350	38.93	22.37	9.98	48.91	32.35	63.88	53.88	14.97	21.53	N
4	0.23937	36.04	22.99	9.98	46.02	32.97	62.12	52.12	16.10	19.15	N
5	0.30850	30.53	16.97	9.98	40.51	26.95	60.01	50.01	19.50	23.06	N
6	0.36542	27.15	11.85	9.99	37.14	21.84	58.60	48.60	21.46	26.76	N
7	0.44988	26.94	15.14	10.00	36.94	25.14	56.88	46.88	19.94	21.74	N
8	0.75465	22.89	12.31	10.01	32.90	22.32	56.00	46.00	23.10	23.68	N
9	1.00134	24.28	14.41	10.05	34.33	24.46	56.00	46.00	21.67	21.54	N
10	1.31042	24.51	14.71	10.06	34.57	24.77	56.00	46.00	21.43	21.23	N
11	1.57612	22.16	12.49	10.06	32.22	22.55	56.00	46.00	23.78	23.45	N
12	3.26672	27.23	17.93	10.13	37.36	28.06	56.00	46.00	18.64	17.94	N
13	5.04003	22.95	15.45	10.19	33.14	25.64	60.00	50.00	26.86	24.36	N
14	16.42394	31.05	25.99	10.49	41.54	36.48	60.00	50.00	18.46	13.52	N
15	21.22276	35.06	29.50	10.55	45.61	40.05	60.00	50.00	14.39	9.95	N
16	0.17436	47.47	33.11	9.97	57.44	43.08	64.75	54.75	7.31	11.67	L1
17	0.22750	38.43	22.05	9.98	48.41	32.03	62.54	52.54	14.13	20.51	L1
18	0.24350	37.45	21.86	9.98	47.43	31.84	61.98	51.98	14.55	20.14	L1
19	0.31253	31.12	15.89	9.98	41.10	25.87	59.90	49.90	18.80	24.03	L1
20	2.92461	33.75	24.03	10.12	43.87	34.15	56.00	46.00	12.13	11.85	L1
21	3.42241	34.34	22.82	10.13	44.47	32.95	56.00	46.00	11.53	13.05	L1
22	13.61876	28.75	21.12	10.42	39.17	31.54	60.00	50.00	20.83	18.46	L1
23	16.54376	30.03	24.50	10.47	40.50	34.97	60.00	50.00	19.50	15.03	L1
24	20.30292	35.71	30.07	10.51	46.22	40.58	60.00	50.00	13.78	9.42	L1

## 6.2 Radiated Disturbance

### 6.2.1 Measurement Procedure

The radiated disturbance was measured and set-up was made accordance with **ANSI C 63.4 and CAN/CSA-CISPR 22**.

If the EUT is tabletop equipment, it was placed on a wooden table with a height of 0.8 m above the reference ground plane and 3 m or 10 m away from the interference receiving antenna in the **3m semi-anechoic chamber**. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height up to 0.15 m above the reference ground plane. Rotate the EUT from (0 - 360)° and position the receiving antenna at heights from (1 - 4) m above the reference ground plane continuously to determine associated with higher emission levels and record them. The measurement was made in both the vertical and horizontal polarization, and the maximum value is presented in the report. For below 1 GHz frequency range, Quasi-Peak detector with 120 kHz RBW was used. Also Peak and Average detector with 1 MHz RBW were used for above 1 GHz frequency range. For further description of the configuration refer to the picture of the test set-up.

## 6.2.2 Limit for Radiated Disturbance

- The test frequency range of Radiated Disturbance measurements are listed below.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
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

### (1) Limit for Radiated Emission below 1 000MHz

Frequency range (MHz)	Class A Equipment (10 m distance)	Class B Equipment (3 m distance)
	Quasi-peak (dB $\mu$ V/m)	Quasi-peak (dB $\mu$ V/m)
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

Note 1 The lower limit shall apply at the transition frequency.

Note 2 Additional provisions may be required for cases where interference occurs.

Note 3 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(CISPR), Pub. 22 shown as below.

Frequency range (MHz)	Class A Equipment (10 m distance)	Class B Equipment (10 m distance)
	Quasi-peak (dB $\mu$ V/m)	Quasi-peak (dB $\mu$ V/m)
30 to 230	40	30
230 to 1 000	47	37

### (2) Limits for Radiated Emission above 1 000MHz at a measuring distance of 3 m

Frequency (GHz)	Class A Equipment		Class B Equipment	
	Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)	Peak (dB $\mu$ V/m)	Average (dB $\mu$ V/m)
1 to 40	80	60	74	54

Note) 1. Emission Level = Reading Value + loss - gain + Ant Factor

2. Margin = Limit - Emission level

3. loss = Cable loss, gain = Amp gain, Ant Factor = Antenna Factor

Test Result

< 30 MHz ~ 1 GHz \_ CHARGING + FM MODE >

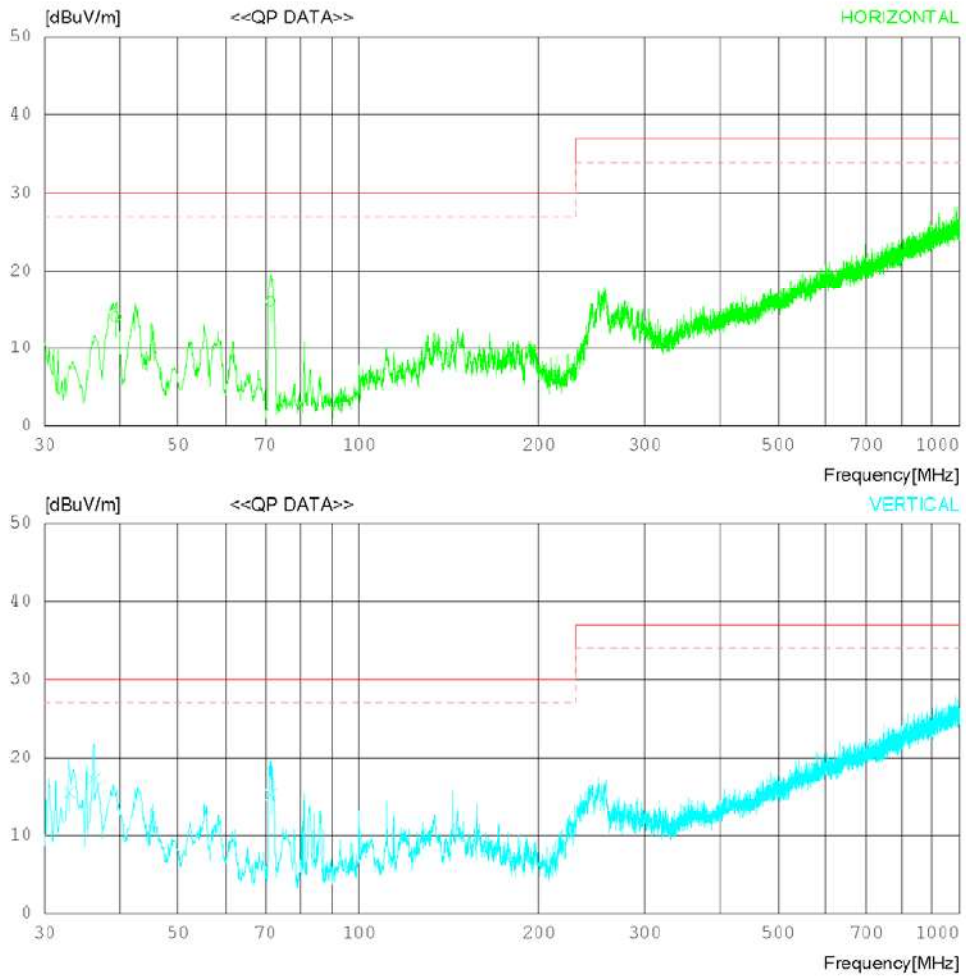
RADIATED EMISSION

Date 2017-09-08

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply 120 V 60 Hz  
Temp/Humi 24 'C 48 % R.H.  
Test Condition

Memo CHARGING,FM

LIMIT : CISPR Pub.32 Class B (10m)  
MARGIN: 3 dB





## RADIATED EMISSION

Date 2017-09-08

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply 120 V 60 Hz  
 Temp/Humi 24 °C 48 % R.H.  
 Test Condition

Memo CHARGING,FM

LIMIT : CISPR Pub.32 Class B (10m)  
 MARGIN: 3 dB

No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	39.458	31.65	11.30	1.47	30.49	13.93	30.00	16.07	201	1
2	71.346	35.20	9.15	1.98	30.40	15.93	30.00	14.07	201	1
----- Vertical -----										
3	33.031	34.12	10.69	1.34	30.52	15.63	30.00	14.37	199	16
4	36.305	35.40	10.98	1.41	30.50	17.29	30.00	12.71	199	101
5	71.346	34.56	9.15	1.98	30.40	15.29	30.00	14.71	299	349

< (1 ~ 6) GHz \_ Peak \_ CHARGING + FM MODE >

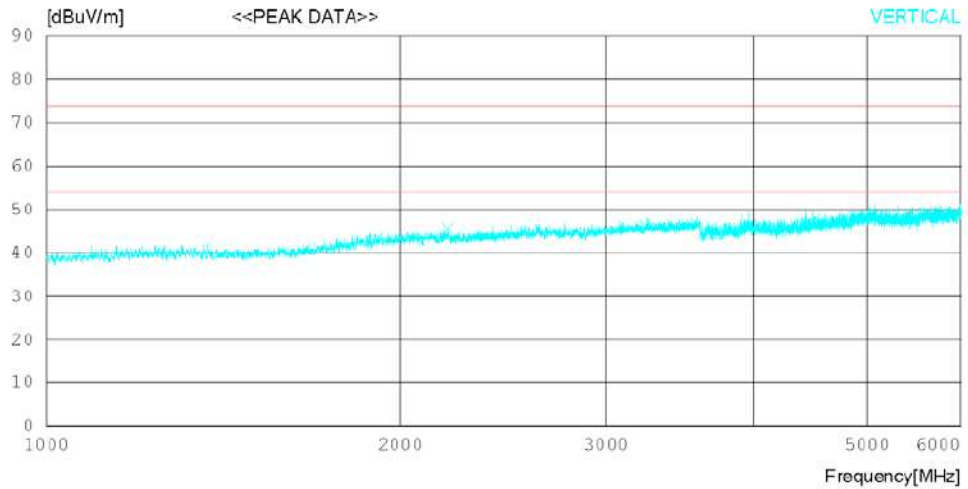
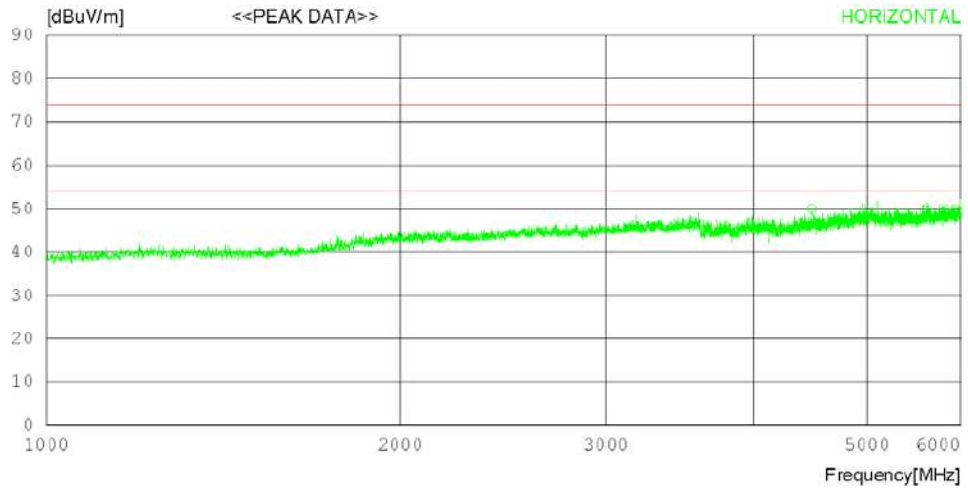
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply 120 V 60 Hz  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo CHARGING,FM

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply 120 V 60 Hz  
 Temp/Humi 24 °C 37 % R.H.  
 Test Condition

Memo CHARGING,FM

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	4484.375	46.00	33.77	7.87	37.67	49.97	74.0	24.03	100	178
----- Vertical -----										
2	2195.625	47.70	31.61	4.95	38.67	45.59	74.0	28.41	100	1

< (1 ~ 6) GHz \_ Average \_ CHARGING + FM MODE >

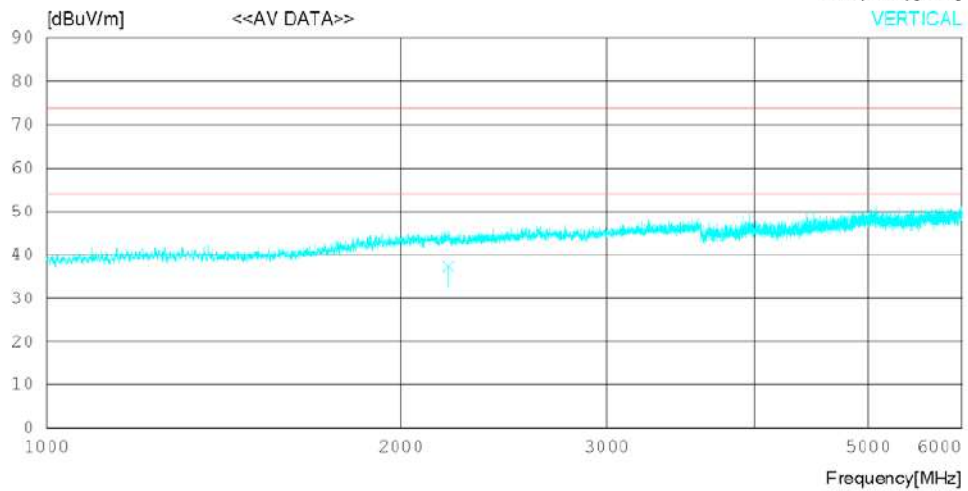
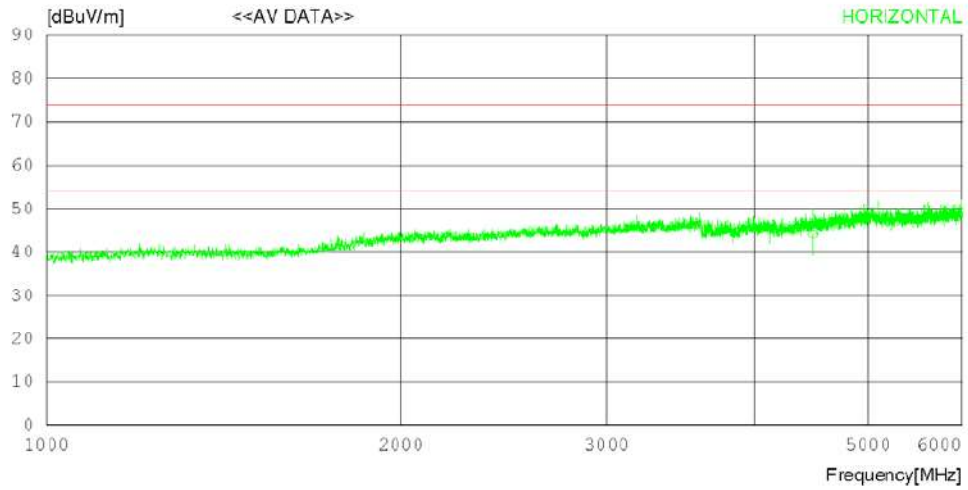
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply 120 V 60 Hz  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo CHARGING,FM

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





## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply 120 V 60 Hz  
 Temp/Humi 24 'C 37 % R.H.  
 Test Condition

Memo CHARGING,FM

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	4484.333	40.12	33.77	7.87	37.67	44.09	54.00	9.91	100	178
----- Vertical -----										
2	2195.610	39.45	31.61	4.95	38.67	37.34	54.00	16.66	100	1

< (6 ~ 18) GHz \_ Peak \_ CHARGING + FM MODE >

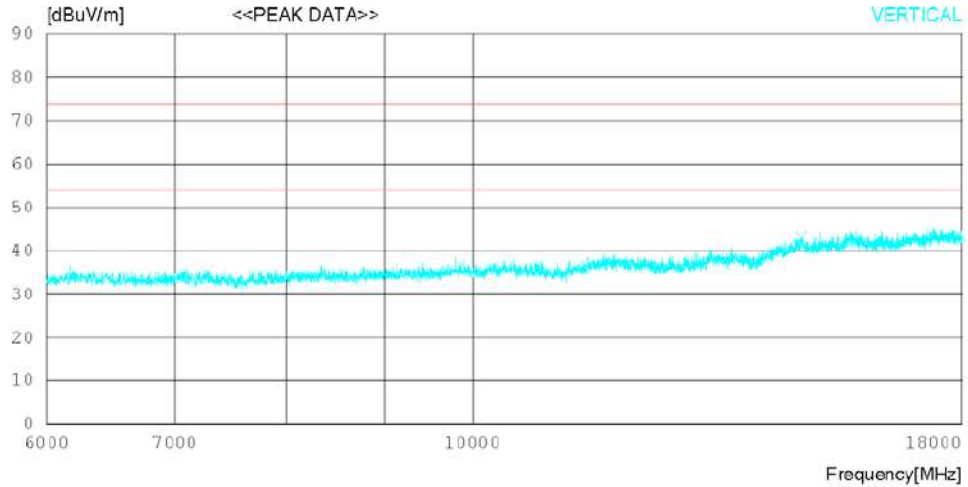
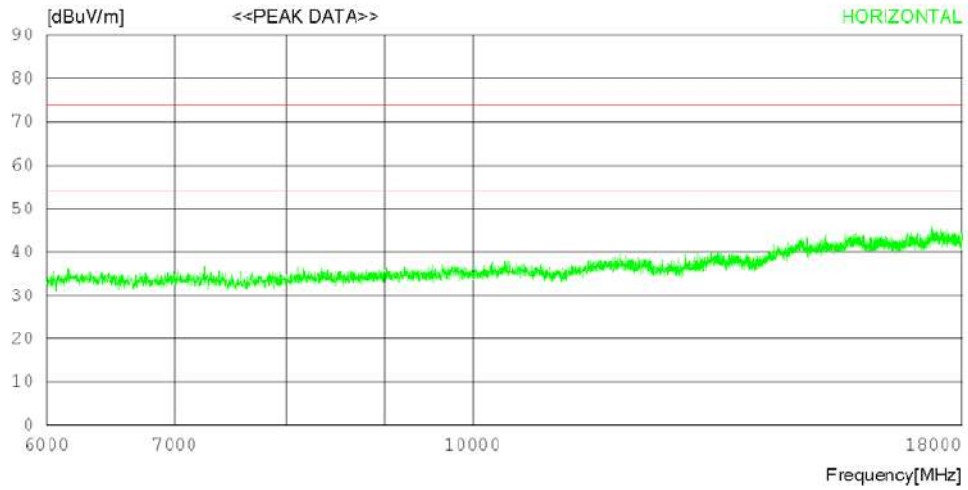
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply 120 V 60 Hz  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo CHARGING,FM

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727DTNC1707-05728  
 Power Supply 120 V 60 Hz  
 Temp/Humi 24 °C 37 % R.H.  
 Test Condition

Memo CHARGING,FM

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	15940.880	27.80	-1.04	15.93	0.00	42.69	74.0	31.31	100	357
----- Vertical -----										
2	14850.750	29.80	-2.27	15.61	0.00	43.14	74.0	30.86	100	358

< (6 ~ 18) GHz \_ Average \_ CHARGING + FM MODE >

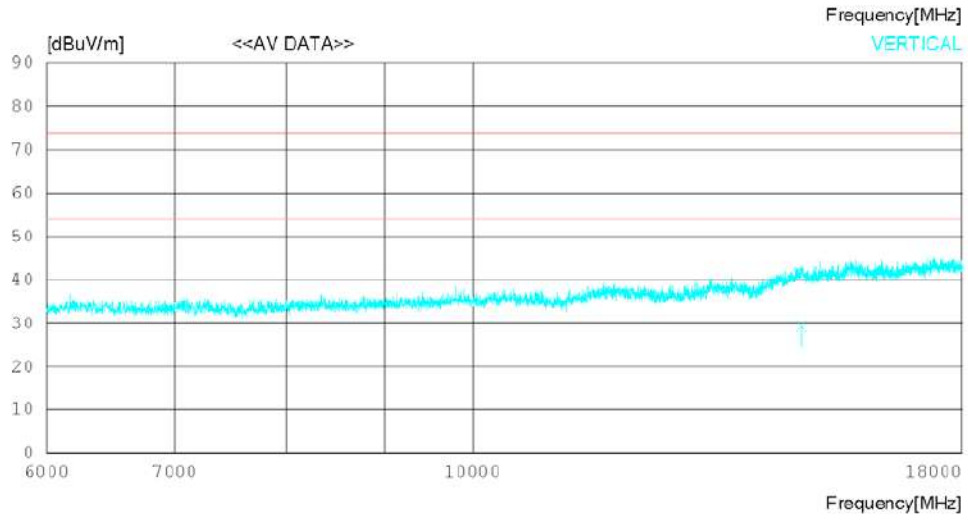
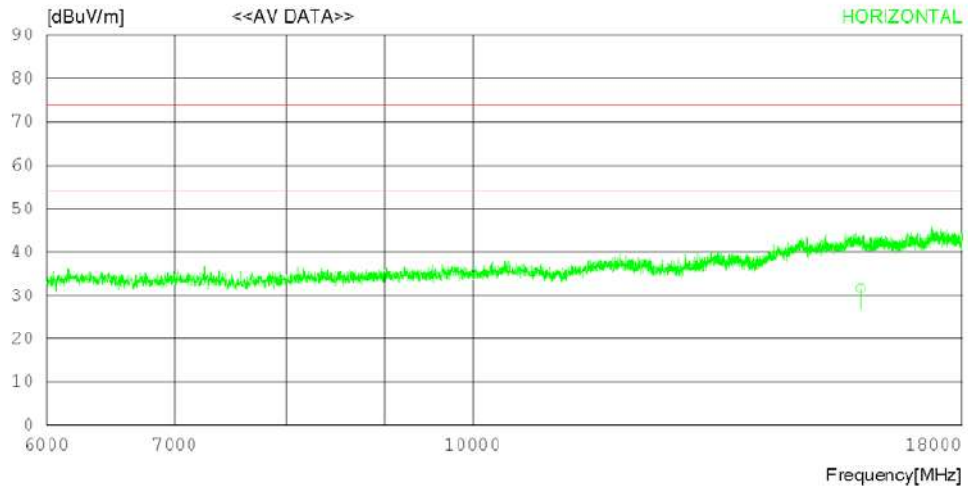
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727/DTNC1707-05728  
Power Supply 120 V 60 Hz  
Temp/Humi 24 °C 37 % R.H.  
Test Condition

Memo CHARGING,FM

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





## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727DTNC1707-05728  
 Power Supply 120 V 60 Hz  
 Temp/Humi 24 °C 37 % R.H.  
 Test Condition

Memo CHARGING,FM

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	15940.870	16.84	-1.04	15.93	0.00	31.73	54.00	22.27	100	357
----- Vertical -----										
2	14850.720	15.87	-2.27	15.61	0.00	29.21	54.00	24.79	100	358

< 30 MHz ~ 1 GHz \_ AUX MODE >

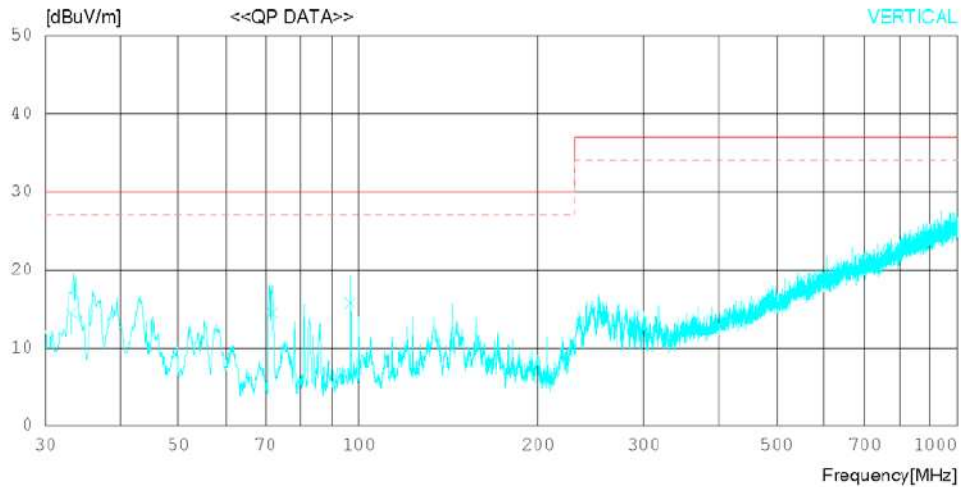
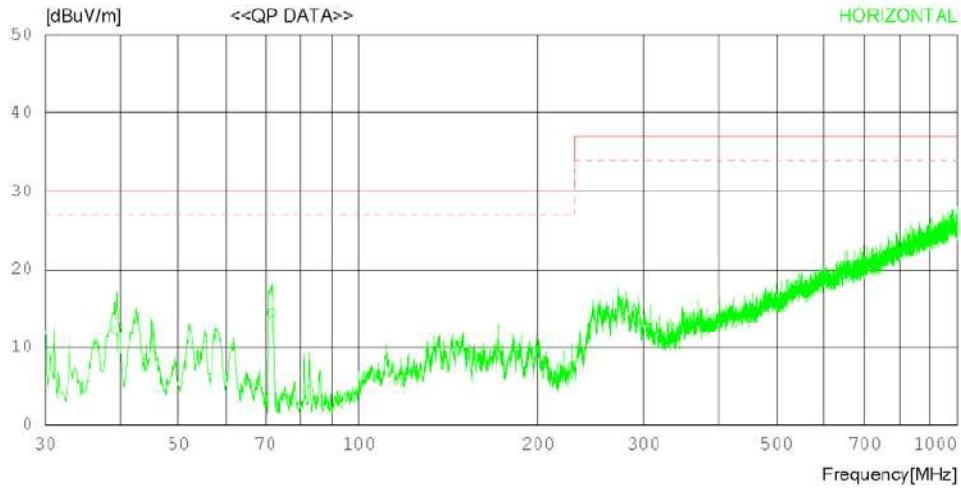
RADIATED EMISSION

Date 2017-09-08

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 48 % R.H.  
Test Condition

Memo AUX

LIMIT : CISPR Pub.32 Class B (10m)  
MARGIN: 3 dB



## RADIATED EMISSION

Date 2017-09-08

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 °C 48 % R.H.  
 Test Condition

Memo AUX

LIMIT : CISPR Pub.32 Class B (10m)  
 MARGIN: 3 dB

No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	39.546	29.77	11.31	1.48	30.49	12.07	30.00	17.93	122	157
2	71.566	33.77	9.12	1.98	30.40	14.47	30.00	15.53	359	292
----- Vertical -----										
3	33.194	33.01	10.70	1.34	30.52	14.53	30.00	15.47	172	300
4	71.810	33.82	9.10	2.00	30.40	14.52	30.00	15.48	286	51
5	96.808	35.19	8.58	2.33	30.35	15.75	30.00	14.25	199	358

< (1 ~ 6) GHz \_ Peak \_ AUX MODE >

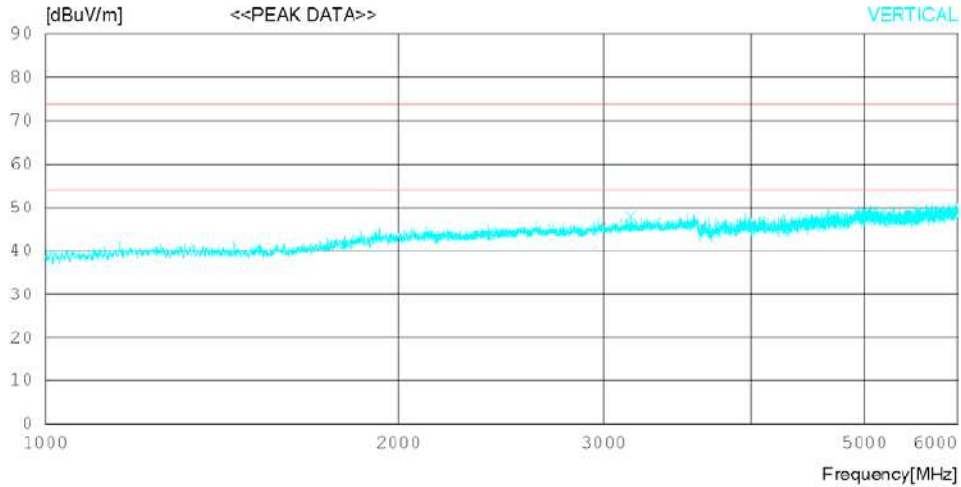
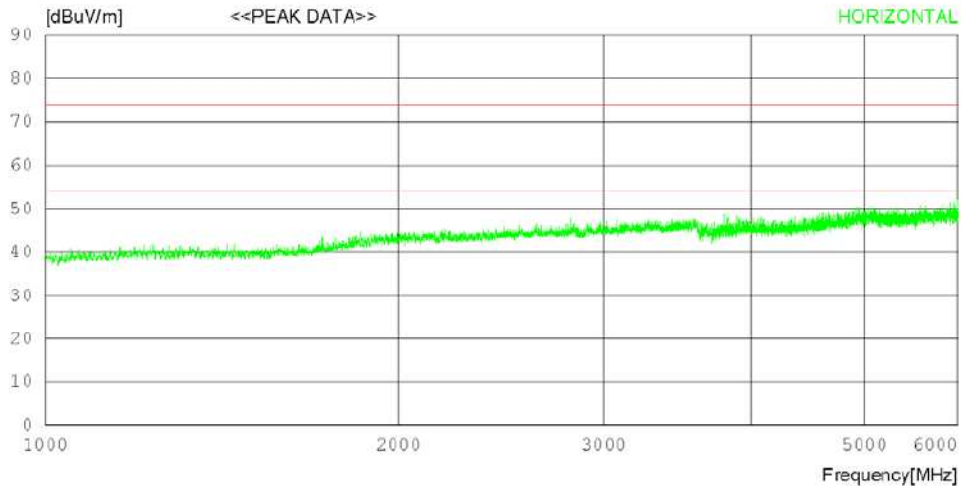
### RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 °C 48 % R.H.  
Test Condition

Memo AUX

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 'C 37 % R.H.  
 Test Condition

Memo AUX

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	3867.500	42.60	33.27	7.36	37.60	45.63	74.0	28.37	100	358
----- Vertical -----										
2	3159.375	47.50	32.66	6.12	38.42	47.86	74.0	26.14	100	168



< (1 ~ 6) GHz \_ Average \_ AUX MODE >

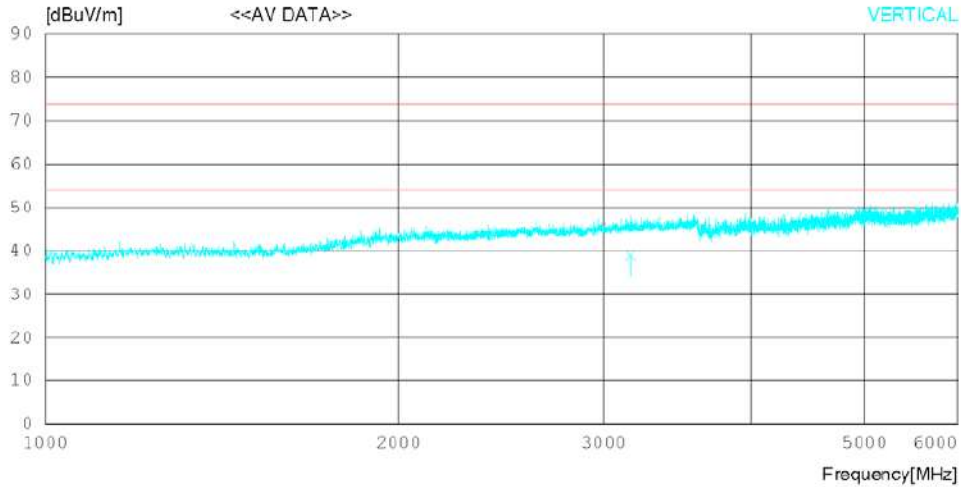
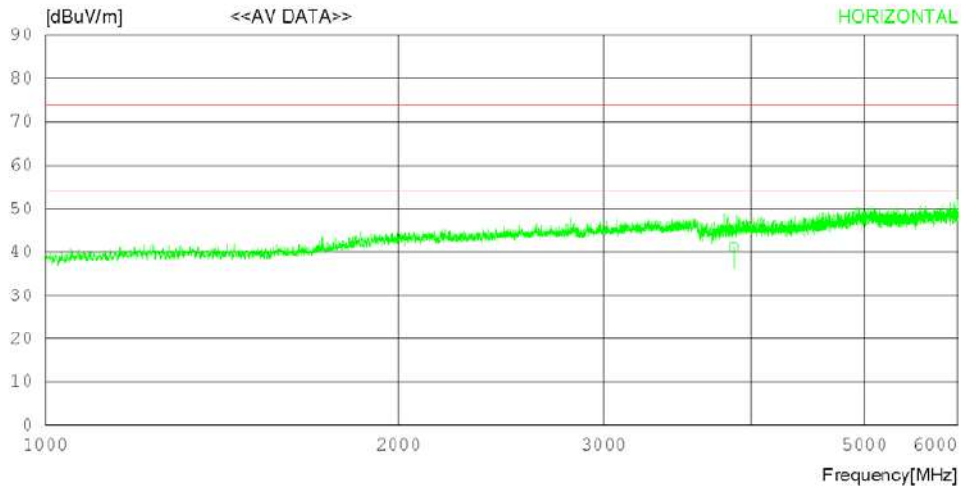
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo AUX

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 °C 37 % R.H.  
 Test Condition

Memo AUX

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	3867.500	38.19	33.27	7.36	37.60	41.22	54.00	12.78	100	358
----- Vertical -----										
2	3159.375	38.49	32.66	6.12	38.42	38.85	54.00	15.15	100	168

< (6 ~ 18) GHz \_ Peak \_ AUX MODE >

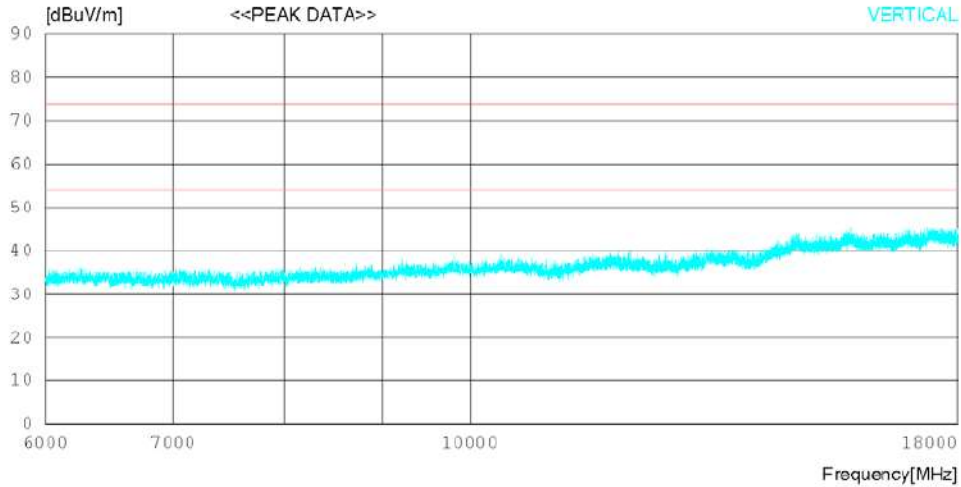
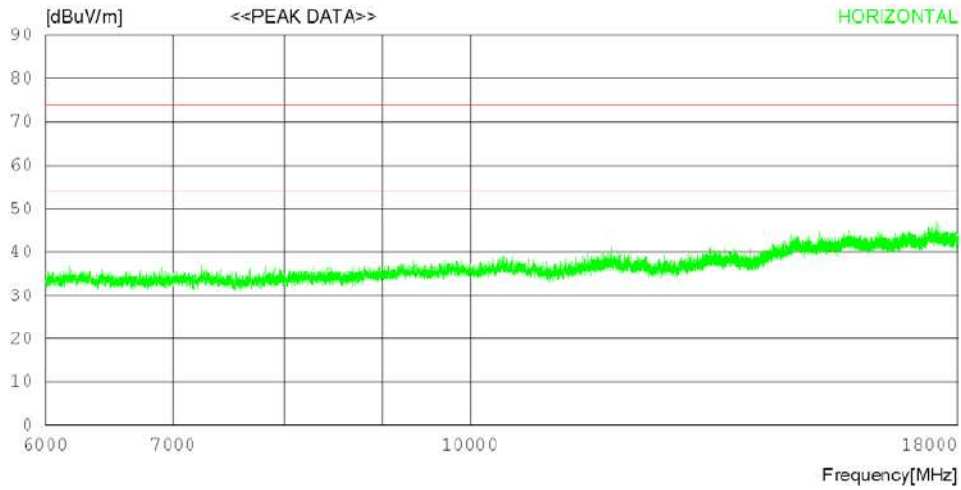
### RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition AUX

Memo AUX

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



## RADIATED EMISSION

Date 2017-09-11

Order No.	DTNC1707-05727,DTNC1707-05728
Power Supply	BATTERY
Temp/Humi	24'C 37% R.H.
Test Condition	AUX

Memo	AUX
------	-----

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	15816.000	26.80	-1.28	16.86	0.00	42.38	74.0	31.62	100	160
----- Vertical -----										
2	15816.000	27.20	-1.28	16.86	0.00	42.78	74.0	31.22	100	242

< (6 ~ 18) GHz \_ Average \_ AUX MODE >

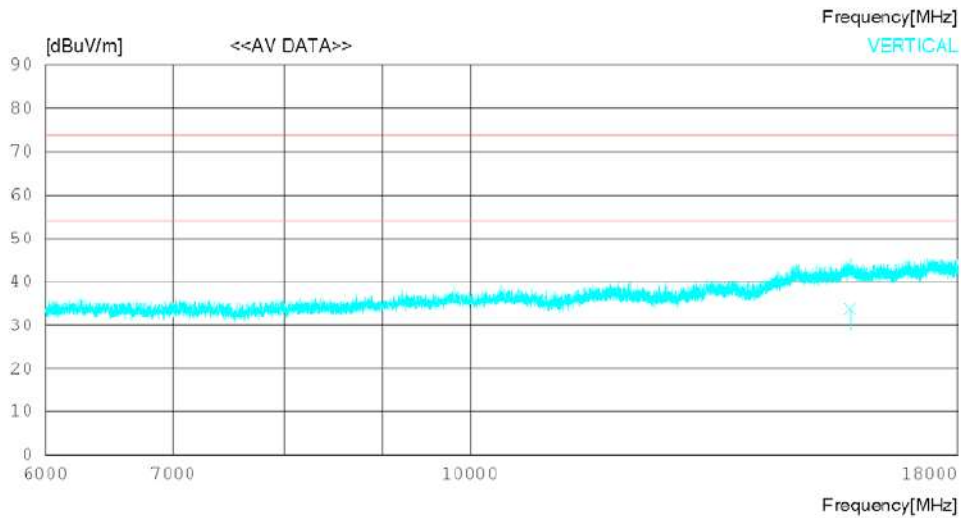
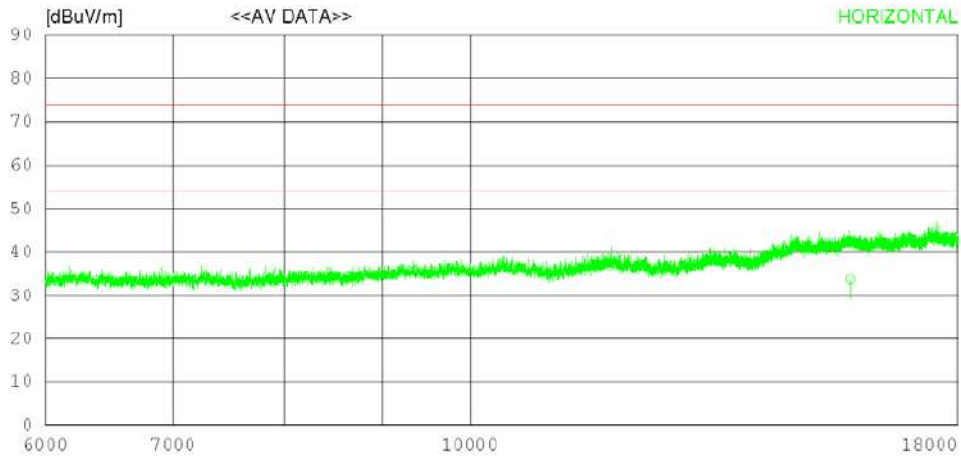
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 46 % R.H.  
Test Condition

Memo AUX

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





## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 'C 37% R.H.  
 Test Condition

Memo AUX

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	15816.010	0.21	-1.28	16.86	0.00	33.79	54.00	20.21	100	160
----- Vertical -----										
2	15816.000	0.11	-1.28	16.86	0.00	33.69	54.00	20.31	100	242

< 30 MHz ~ 1 GHz \_ HEADSET MODE >

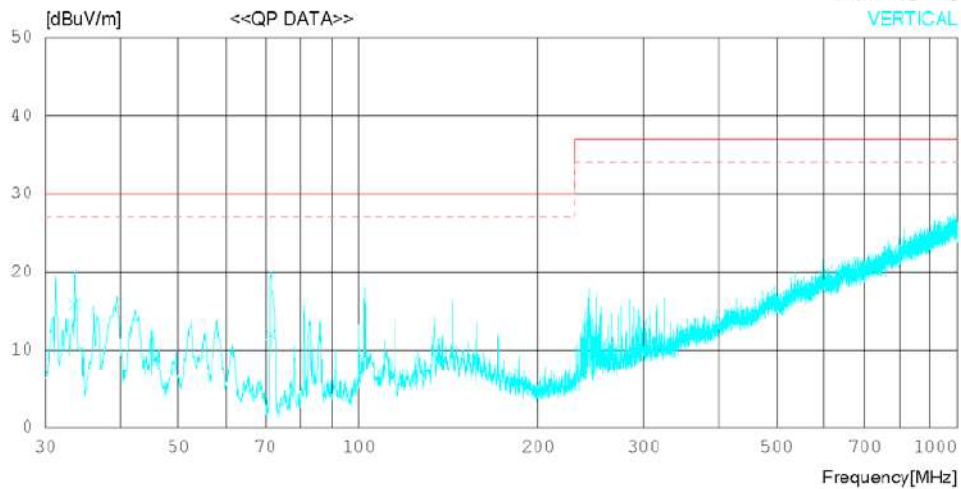
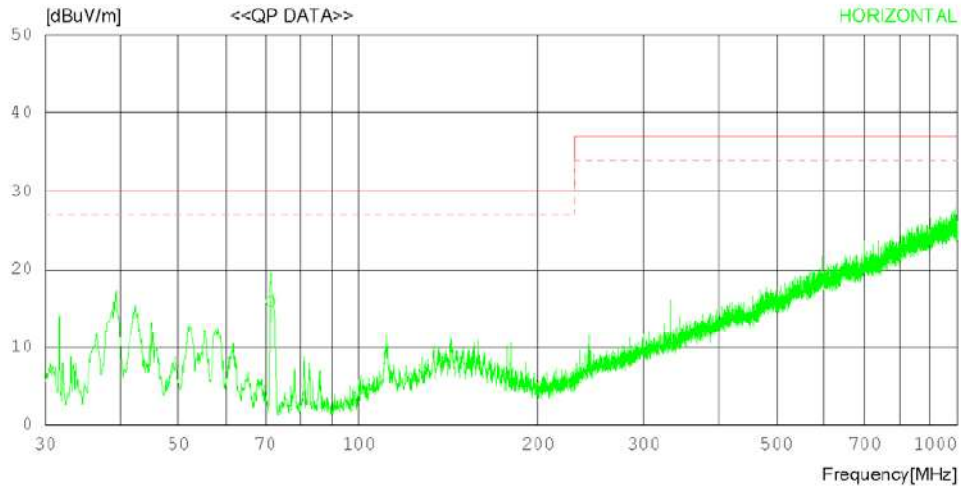
RADIATED EMISSION

Date 2017-09-08

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 48 % R.H.  
Test Condition

Memo HEADSET

LIMIT : CISPR Pub.32 Class B (10m)  
MARGIN: 3 dB



## RADIATED EMISSION

Date 2017-09-08

Order No.	DTNC1707-05727,DTNC1707-05728
Power Supply	BATTERY
Temp/Humi	24 °C 48 % R.H.
Test Condition	

Memo	HEADSET
------	---------

LIMIT : CISPR Pub.32 Class B (10m)  
MARGIN: 3 dB

No.	FREQ [MHz]	READING QP [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	71.346	35.19	9.15	1.98	30.40	15.92	30.00	14.08	199	359
----- Vertical -----										
2	33.638	34.28	10.74	1.35	30.51	15.86	30.00	14.14	199	167
3	71.467	31.29	9.13	1.98	30.40	12.00	30.00	16.01	199	161

< (1 ~ 6) GHz \_ Peak \_ HEADSET MODE >

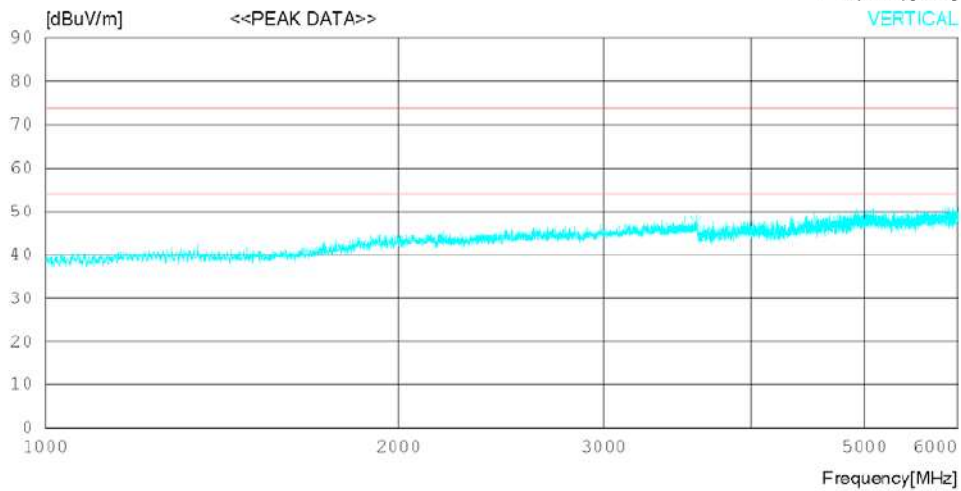
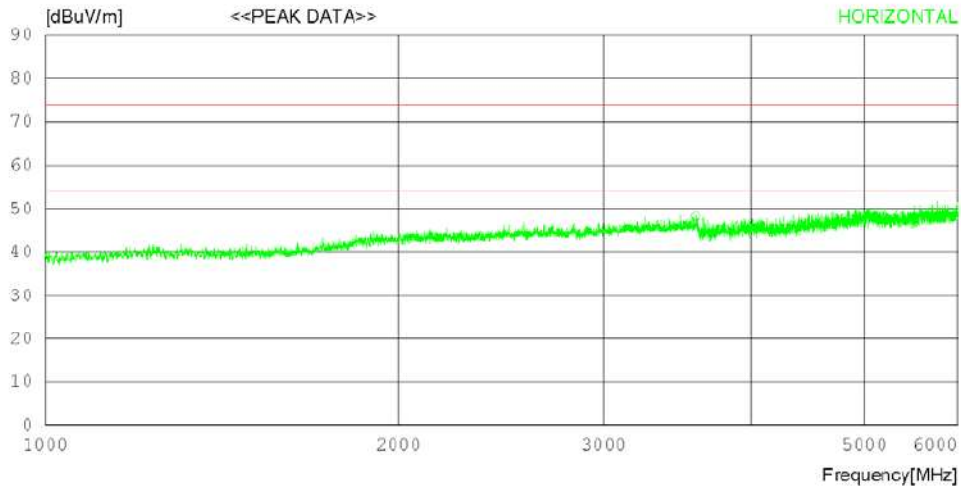
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo HEADSET

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 'C 37 % R.H.  
 Test Condition

Memo HEADSET

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	3588.125	46.40	32.80	7.15	37.99	48.36	74.0	25.64	100	122
----- Vertical -----										
2	3593.125	45.40	32.80	7.17	37.98	47.39	74.0	26.61	100	253



< (1 ~ 6) GHz \_ Average \_ HEADSET MODE >

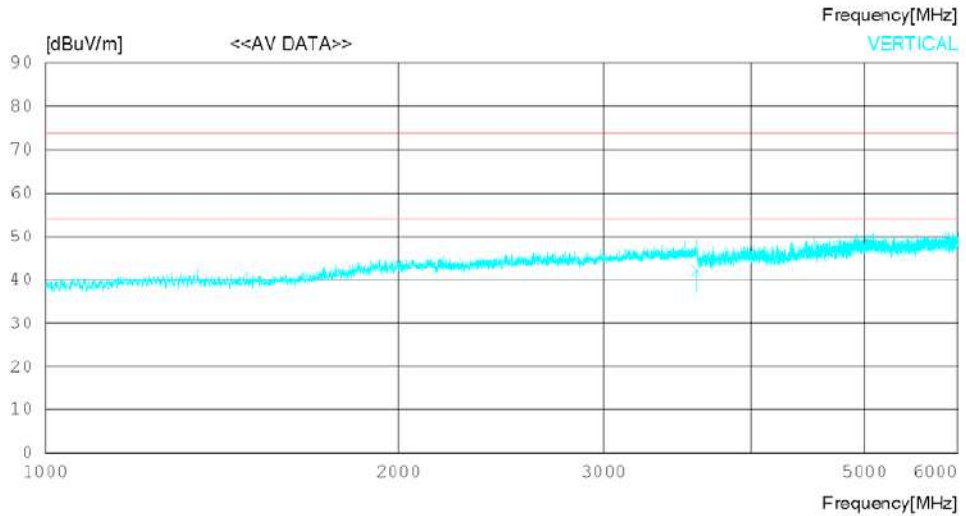
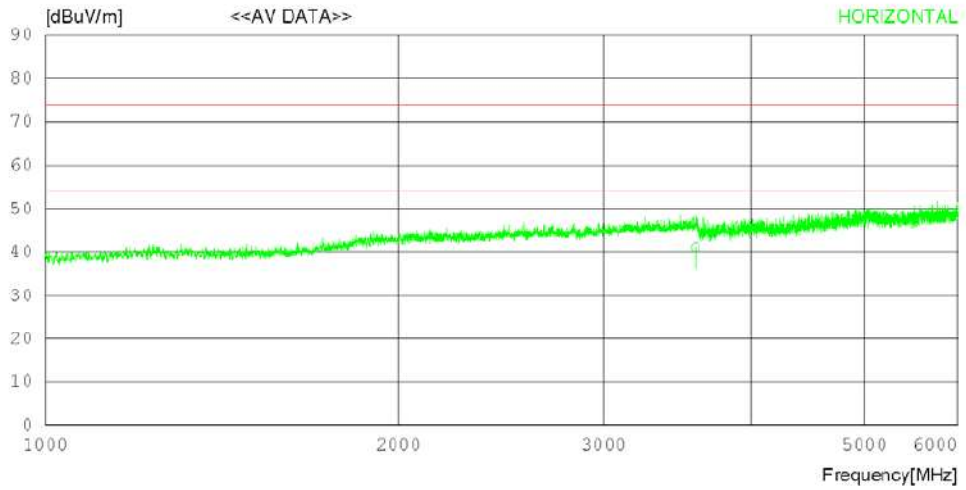
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo HEADSET

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 °C 37 % R.H.  
 Test Condition

Memo HEADSET

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	3588.119	39.22	32.80	7.15	37.99	41.18	54.00	12.82	100	122
----- Vertical -----										
2	3593.128	40.18	32.80	7.17	37.98	42.17	54.00	11.83	100	253

< (6 ~ 18) GHz \_ Peak \_ HEADSET MODE >

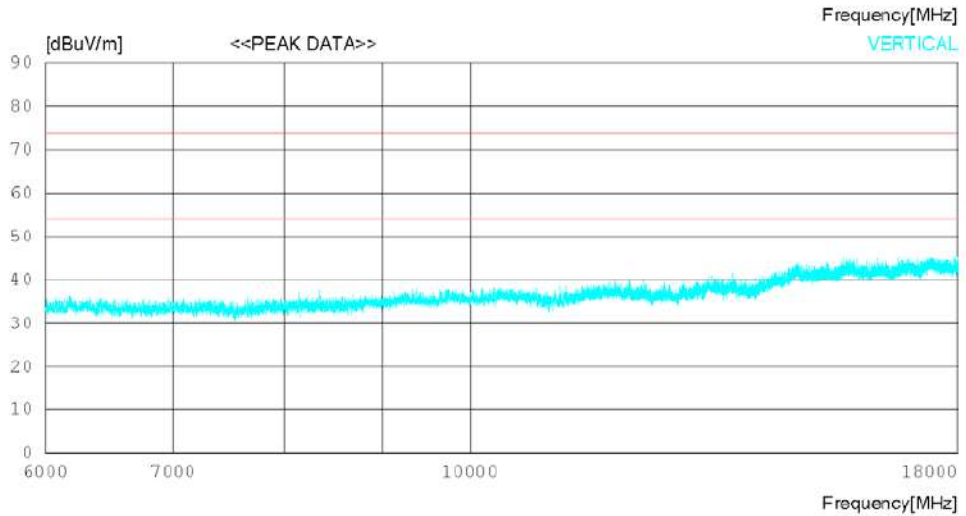
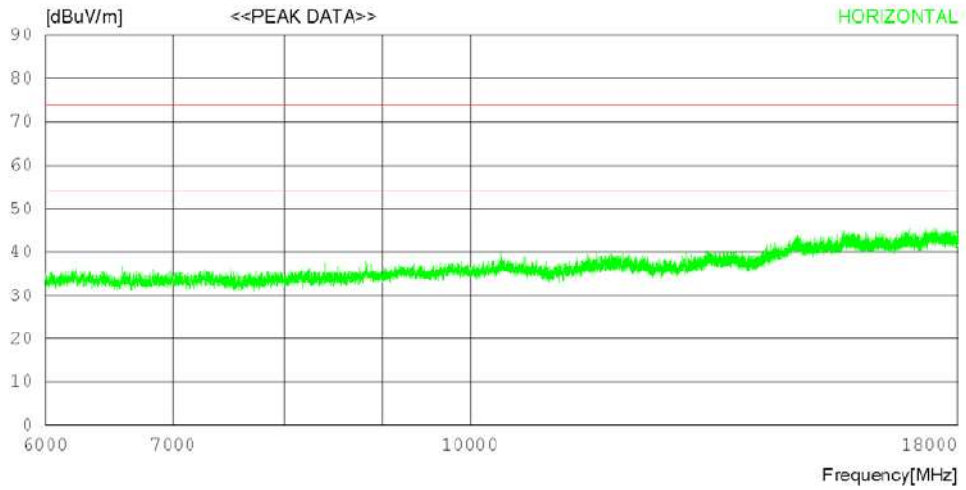
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo HEADSET

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



## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 'C 37 % R.H.  
 Test Condition

Memo HEADSET

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

No.	FREQ [MHz]	READING PEAK [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	14967.750	26.80	-2.07	15.59	0.00	40.32	74.0	33.68	100	1
----- Vertical -----										
2	15333.000	27.20	-1.94	16.11	0.00	41.37	74.0	32.63	100	261

< (6 ~ 18) GHz \_ Average \_ HEADSET MODE >

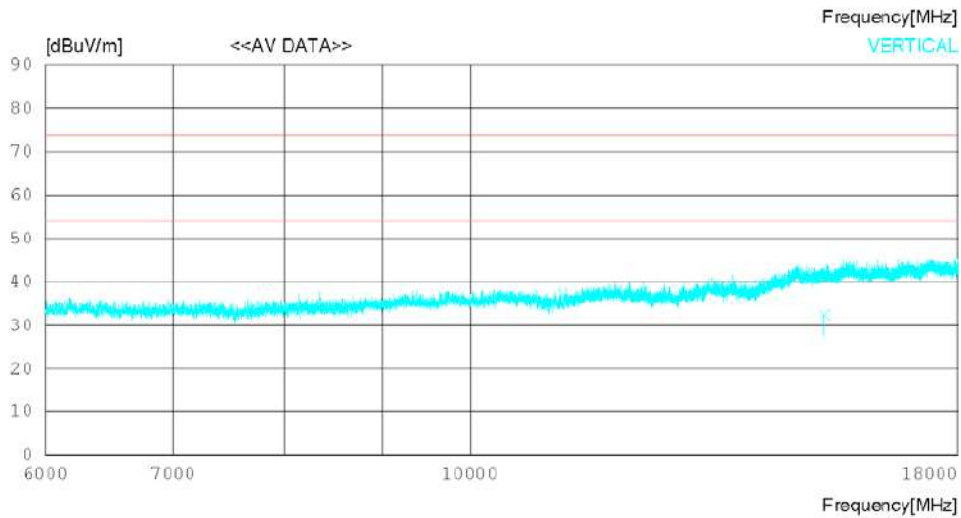
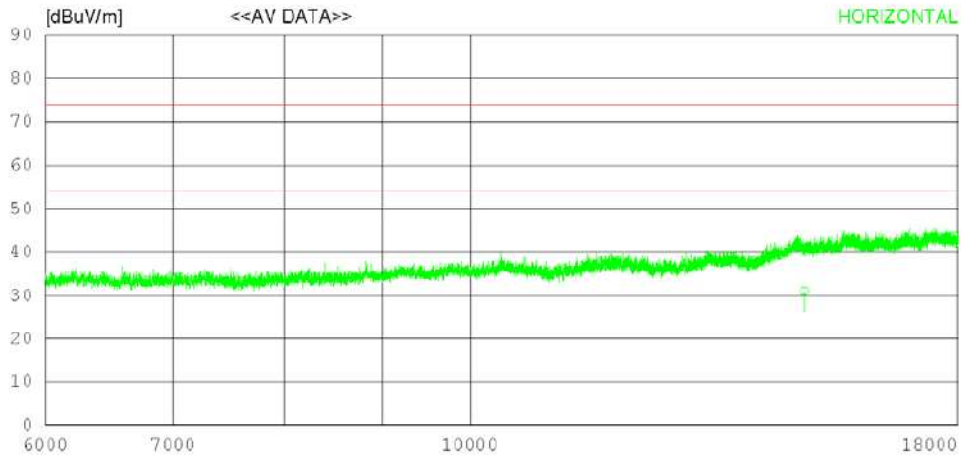
RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
Power Supply BATTERY  
Temp/Humi 24 'C 37 % R.H.  
Test Condition

Memo HEADSET

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





## RADIATED EMISSION

Date 2017-09-11

Order No. DTNC1707-05727,DTNC1707-05728  
 Power Supply BATTERY  
 Temp/Humi 24 'C 37 % R.H.  
 Test Condition

Memo HEADSET

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

No.	FREQ [MHz]	READING CAV [dBuV]	ANT FACTOR [dB]	LOSS [dB]	GAIN [dB]	RESULT [dBuV/m]	LIMIT [dBuV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	14967.740	17.54	-2.07	15.59	0.00	31.06	54.00	22.94	100	1
----- Vertical -----										
2	15333.010	18.19	-1.94	16.11	0.00	32.36	54.00	21.64	100	261

## List of Test and Measurement Instruments

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment is identified by the Test Laboratory.

### 1. Conducted Disturbance

Name of Instrument	Model No.	Manufacturer	Serial No.	Cal. Date	Next Cal. Date
<input checked="" type="checkbox"/> MEASUREMENT SOFTWARE	EMI-C VER. 2.00.0143	TSJ	N/A	N/A	N/A
<input checked="" type="checkbox"/> EMI TEST RECEIVER	ESR	ROHDE & SCHWARZ	101767	2017.01.03	2018.01.03
<input checked="" type="checkbox"/> LISN	NNLK8121	SCHWARZBECK	NNLK8121-580	2017.07.27	2018.07.27
<input checked="" type="checkbox"/> PULSE LIMITER	ESH3-Z2	ROHDE & SCHWARZ	101334	2017.01.03	2018.01.03
<input type="checkbox"/> 50 OHM TERMINATOR	CT-01	TME	N/A	2017.01.03	2018.01.03

### 2. Radiated Disturbance

Name of Instrument	Model No.	Manufacturer	Serial No.	Cal. Date	Next Cal. Date
<input checked="" type="checkbox"/> MEASUREMENT SOFTWARE	EMI-R VER. 2.00.0121	TSJ	N/A	N/A	N/A
<input checked="" type="checkbox"/> HORN ANTENNA WITH PREAMPLIFIER	EM-6969/ MLA-0618-B03-34	ELECTRO-METRICS/ TSJ	156/ 1785642	2017.01.19	2018.01.19
<input checked="" type="checkbox"/> HORN ANTENNA	3117	ETS-LINDGREN	00152093	2016.02.26	2018.02.26
<input checked="" type="checkbox"/> PREAMPLIFIER	8449B	AGILENT TECHNOLOGIES	3008A01590	2017.02.20	2018.02.20
<input checked="" type="checkbox"/> EMI TEST RECEIVER	ESR7	ROHDE&SCHWARZ	101061	2017.02.16	2018.02.16
<input checked="" type="checkbox"/> TRILOG BROADBAND TEST-ANTENNA	VULB9160	SCHWARZBECK	9160-3362	2016.08.05	2018.08.05
<input checked="" type="checkbox"/> LOW NOISE PRE AMPLIFIER	MLA-010K01-B01-27	TSJ	1844538	2017.03.06	2018.03.06

NOTE : The measurement antennas were calibrated in accordance to the requirements of C63.5-2006.