TEST REPORT

Dt&C

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 : DREFCC1710-0292
2. Customer
   - Name : LG Electronics MobileComm USA, Inc.
   - Address : 1000 Sylvan Ave. Englewood Cliffs NJ 07632
3. Use of Report : Grant of Certification
4. Product Name / Model Name : Mobile phone / DM-01K
5. Test Method Used : ANSI C 63.4:2014
   FCC Part 15 Subpart B
   (Class B personal computers and peripherals)
6. Date of Test : 2017-10-17 ~ 2017-10-18
7. Testing Environment : Temperature (24 ~ 25) °C , Humidity (41 ~ 48) % R.H.
8. Test Result : Refer to the attached Test Result

Affirmation	Tested by	Technical Manager
	Name : MinSu Park (Signature)	Name : MyungJin Song (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.
This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

2017. 11. 16.

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

CONTENTS

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
http://www.dtnc.net
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

Product Name	Mobile phone
Model Name	DM-01K
Add Model Name	None
Serial No	None
Type of Sample Tested	Pre-Production
Supplied Power for Test	AC 120 V, 60 Hz
FCC ID	ZNFDM01K
Applicant	LG Electronics MobileComm USA, Inc. 1000 Sylvan Ave. Englewood Cliffs NJ 07632
Manufacturer	LG Electronics MobileComm USA, Inc. 1000 Sylvan Ave. Englewood Cliffs NJ 07632

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 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.

4.2 Test environment and conditions

Test Items	Test date (YYYY-MM-DD)	Temp (℃)	Humidity (% R.H.)
Conducted Disturbance	2017-10-17	25	41
Radiated Disturbance	2017-10-18	24	48

4.3 Test result Summary

(1) Conducted Emission

Frequency [MHz]	Phase	Result [dBμV]	Detector	Limit [dBμV]	Margin [dB]
11.43076	**N**	**46.18**	Average	**50.00**	**3.82**

(2) Radiated Emission

Frequency [MHz]	Pol.	Result [dB(μV/m)]	Detector	Limit [dB(μV/m)]	Margin [dB]
5006.276	**V**	**47.65**	Average	**54.00**	**6.35**

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

- EUT was connected PC by USB cable and continuously operated.
- 'READ' & 'WRITE' & 'DELETE' function.

5.3 Support Equipment Used

Unit	Model No.	Serial No.	Manufacturer	CABLE				Back shell	FCC ID
				Connect type	Length (m)	shield	With Ferrite		
KEYBOARD	KB25	N/A	LITEON Technology	USB OUT	1.7	Shield	X	Plastic	-
MOUSE	SM-9023	58Q02855	LG	USB OUT	1.7	Shield	X	Plastic	-
LCD MONITOR	UP2414Qt	CN-0W06C2-74445-467-013L	DELL	POWER IN DSUB OUT	1.8 1.8	Non-shield Shield	X X	Plastic Plastic	-
PC	DCNE	861Z8BX	DELL	POWER IN DSUB IN PARALLEL IN SERIAL IN USB IN USB IN USB IN STEREO IN/OUT	1.8 1.8 2.0 1.9 1.7 1.7 1.0 2.0	Non-shield Shield Shield Shield Shield Shield Shield Non-shield	X X X X X X X X	Plastic Plastic Plastic Plastic Plastic Plastic Plastic Plastic	-
SSD 3.0	MU-PT250B	S2WKNPAH700337W	SAMSUNG	USB OUT	0.3	Shield	X	Plastic	-
PRINTER	SRP-770	N/A	Bixolon	POWER IN PARALLEL OUT SERIAL OUT	1.8 2.0 1.9	Non-shield Shield Shield	X X X	Plastic Plastic Plastic	-
Headset	COV909	N/A	COSY	STEREO IN / OUT	2.0	Non-shield	X	Plastic	-

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 C63.4.** 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 0.15 m above the reference ground plane. Connect the EUT's power source lines to the PC power through the LISN. All the other peripherals are connected to the 2nd 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 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. 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

Measurement uncertainty :

Expended uncertainty *U* (95 %, Confidence level, *k* = 2)	2.36 dB

Test Result

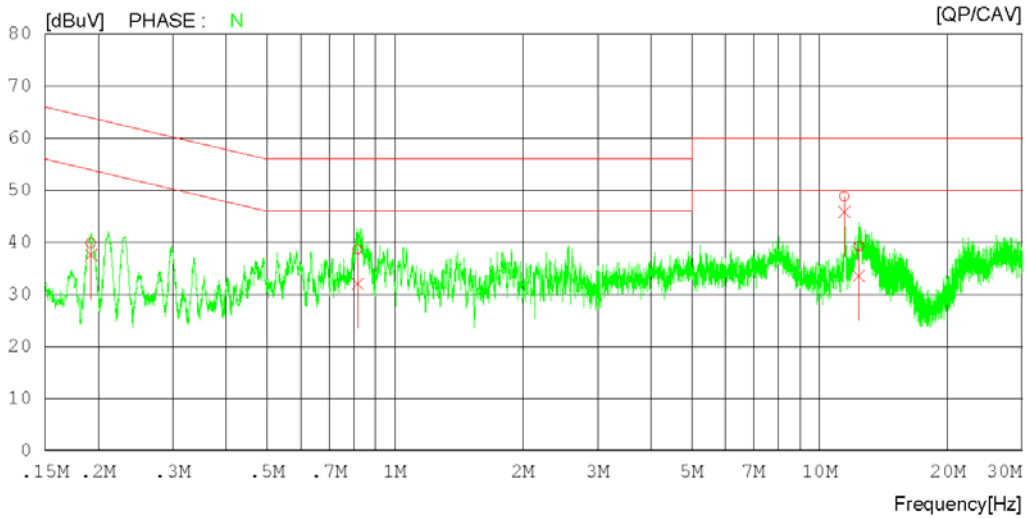
Results of Conducted Emission

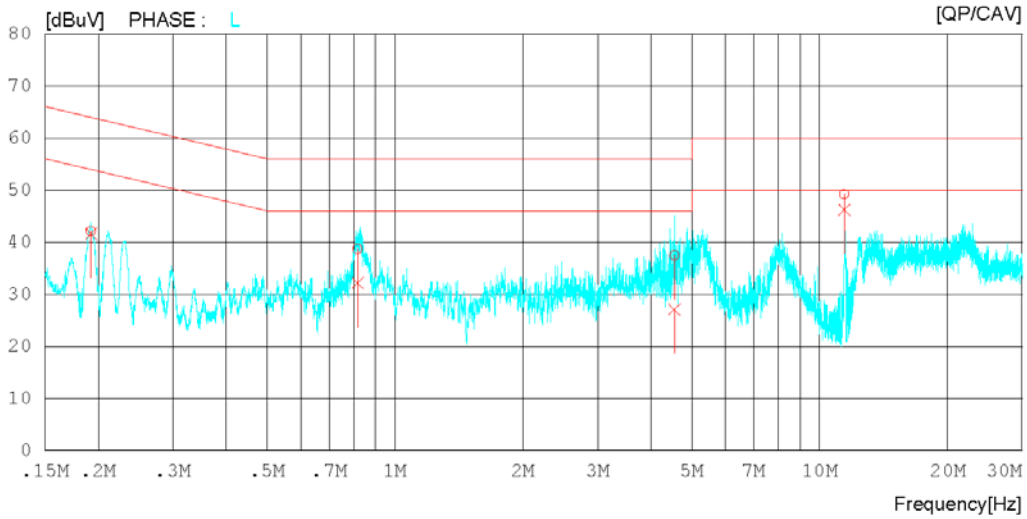
DT&C

Date 2017-10-17

Order No.	DTNC1710-07687
Power Supply	120 V 60 Hz
Temp/Humi/Atm	25 'C 41 % R.H. 100.3 kPa
Test Condition	PC LINK

LIMIT : CISPR22_B QP
CISPR22_B AV





Results of Conducted Emission

DT&C Date 2017-10-17

Order No.	DTNC1710-07687
Power Supply	120 V 60 Hz
Temp/Humi/Atm	25 'C 41 % R.H. 100.3 kPa
Test Condition	PC LINK

LIMIT : CISPR22_B QP
CISPR22_B AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.19242	29.74	27.41	10.08	39.82	37.49	63.93	53.93	24.11	16.44	N
2	0.81695	28.51	21.90	10.09	38.60	31.99	56.00	46.00	17.40	14.01	N
3	11.43012	38.47	35.54	10.31	48.78	45.85	60.00	50.00	11.22	4.15	N
4	12.37731	28.88	23.23	10.32	39.20	33.55	60.00	50.00	20.80	16.45	N
5	0.19242	31.99	31.44	10.07	42.06	41.51	63.93	53.93	21.87	12.42	L
6	0.81667	28.54	22.09	10.09	38.63	32.18	56.00	46.00	17.37	13.82	L
7	4.55156	27.22	16.85	10.19	37.41	27.04	56.00	46.00	18.59	18.96	L
8	11.43076	38.88	35.88	10.30	49.18	46.18	60.00	50.00	10.82	3.82	L

6.2 Radiated Disturbance

6.2.1 Measurement Procedure

The radiated disturbance was measured and set-up was made accordance with **ANSI C63.4.**

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 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. 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	5th harmonic of the highest frequency or 40 GHz, whichever is lower

(1) Limit for Radiated Emission below 1 000 MHz

Frequency range (MHz)	Class A Equipment (10 m distance)	Class B Equipment (3 m distance)
	Quasi-peak (dBμV/m)	Quasi-peak (dBμV/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 (dBμV/m)	**Quasi-peak (dBμV/m)**
30 to 230	40	30
230 to 1 000	47	37

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

Frequency (GHz)	Class A Equipment		Class B Equipment	
	Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
1 to 40	80	60	74	54

Note)1. Emission Level = Reading Value + loss - gain + Ant Factor
2. Margin = Limit - Emission level
3. (0.03 ~ 6) GHz : Loss = Cable Loss, Gain = Amp Gain, Ant Factor = Antenna Factor
4. (6 ~ 18) GHz : Loss = Cable Loss, Ant Factor = Antenna Factor - Amp Gain

Measurement uncertainty (10m Chamber) :

Expended uncertainty *U* (95 %, Confidence level, *k* = 2)	3.50 dB, (30 ~ 1 000) MHz 4.00 dB, (Above 1 GHz)

Test Result

< 30 MHz ~ 1 GHz >

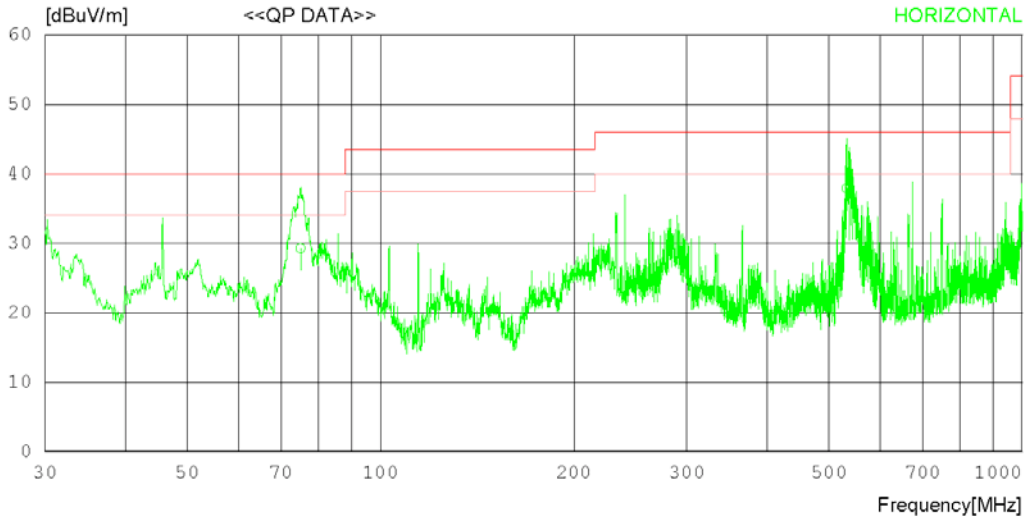
RADIATED EMISSION

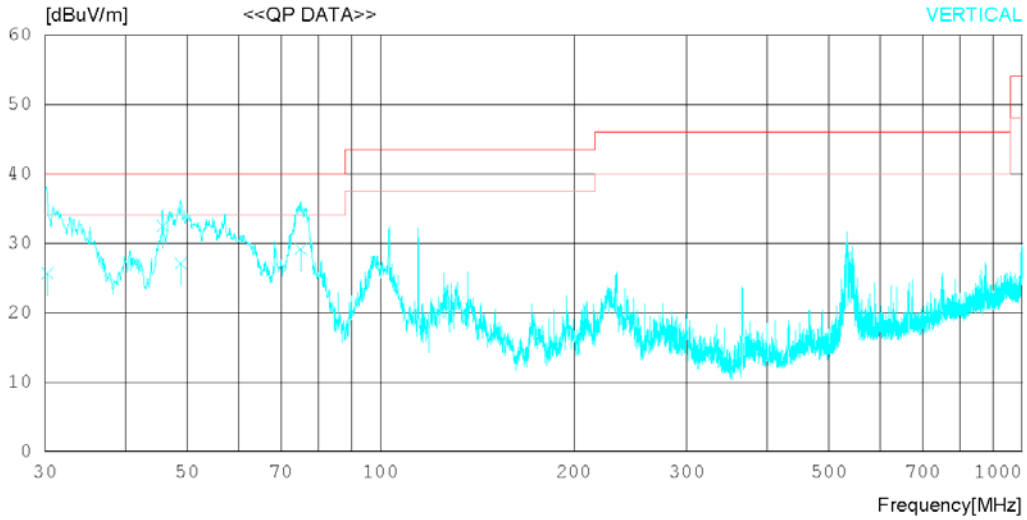
Date 2017-10-18

Order No.	DTNC1710-07687
Power Supply	120 V 60 Hz
Temp/Humi	24 'C 48 % R.H.
Test Condition	PC LINK

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 6 dB





RADIATED EMISSION

Date 2017-10-18

Order No. DTNC1710-07687
Power Supply 120 V 60 Hz
Temp/Humi 24 'C 48 % R.H.
Test Condition PC LINK

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m)
MARGIN: 6 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	75.111	45.70	9.07	1.30	26.81	29.26	40.00	10.74	395	96
2	532.936	42.10	18.36	3.87	26.40	37.93	46.00	8.07	130	350
----- Vertical ------										
3	30.243	42.40	9.35	0.74	26.85	25.64	40.00	14.36	115	235
4	45.763	46.80	11.48	0.98	26.84	32.42	40.00	7.58	290	78
5	48.794	41.10	11.78	1.02	26.84	27.06	40.00	12.94	100	153
6	75.153	45.60	9.06	1.30	26.81	29.15	40.00	10.85	120	23

< (1 ~ 6) GHz _ Peak >

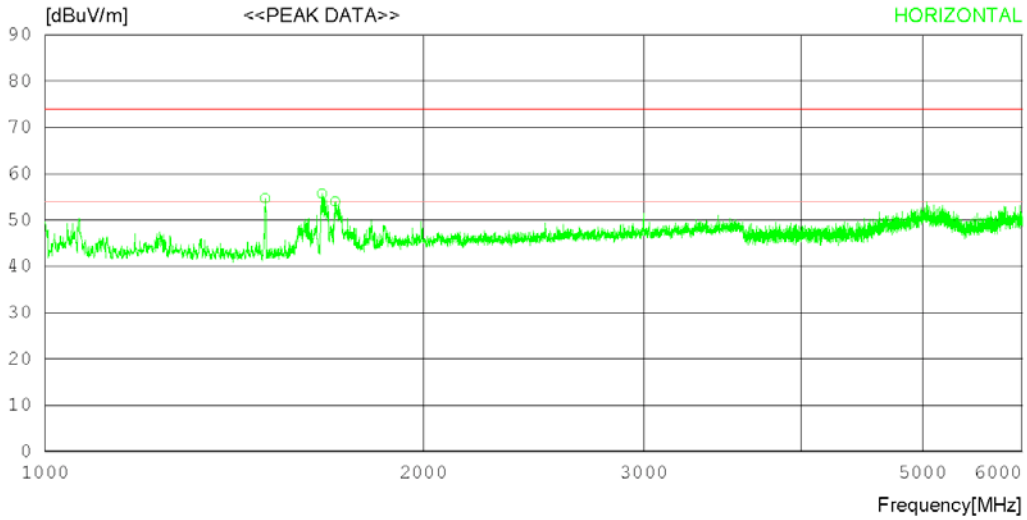
RADIATED EMISSION

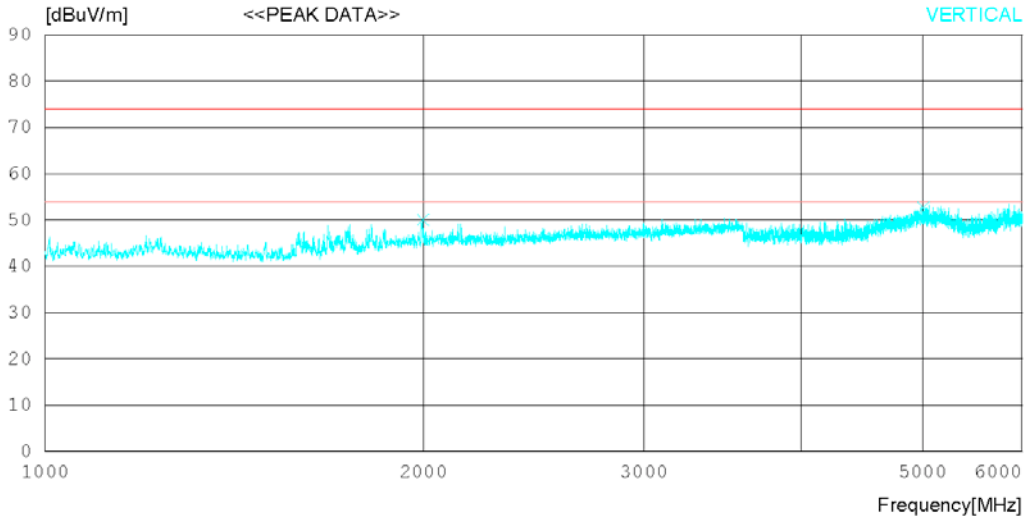
Date 2017-10-18

Order No.	DTNC1710-07687
Power Supply	120 V 60 Hz
Temp/Humi	24 'C 48 % R.H.
Test Condition	PC LINK

Memo

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





RADIATED EMISSION

Date 2017-10-18

Order No. DTNC1710-07687
Power Supply 120 V 60 Hz
Temp/Humi 24 'C 48 % R.H.
Test Condition PC LINK

Memo

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	1496.875	54.70	28.10	4.15	32.31	54.64	74.0	19.36	100	1
2	1661.875	55.00	28.77	4.31	32.38	55.70	74.0	18.3	100	202
3	1702.500	53.00	29.03	4.39	32.40	54.02	74.0	19.98	100	152
----- Vertical ------										
4	1999.375	46.40	31.50	4.70	32.52	50.08	74.0	23.92	100	0
5	5006.250	41.50	34.01	9.47	32.23	52.75	74.0	21.25	100	303

< (1 ~ 6) GHz _ Average >

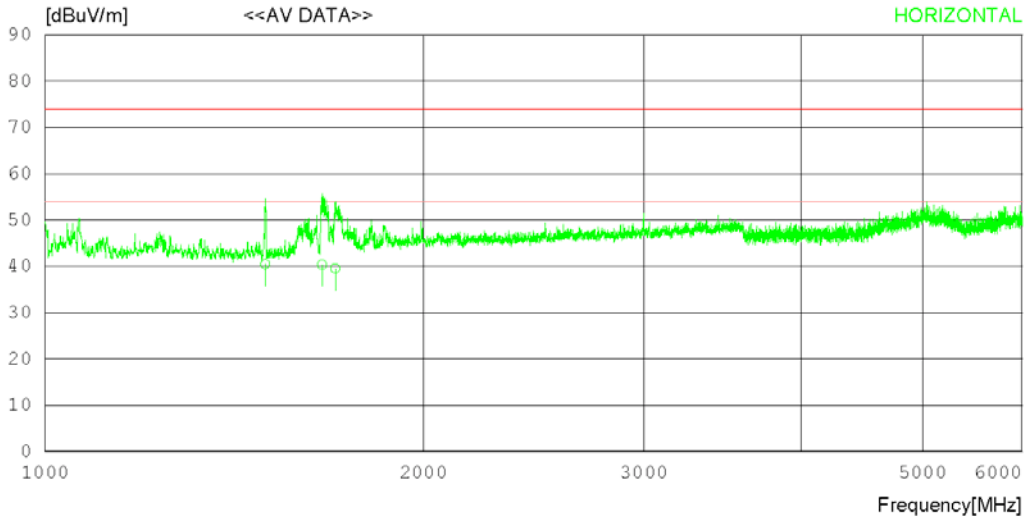
RADIATED EMISSION

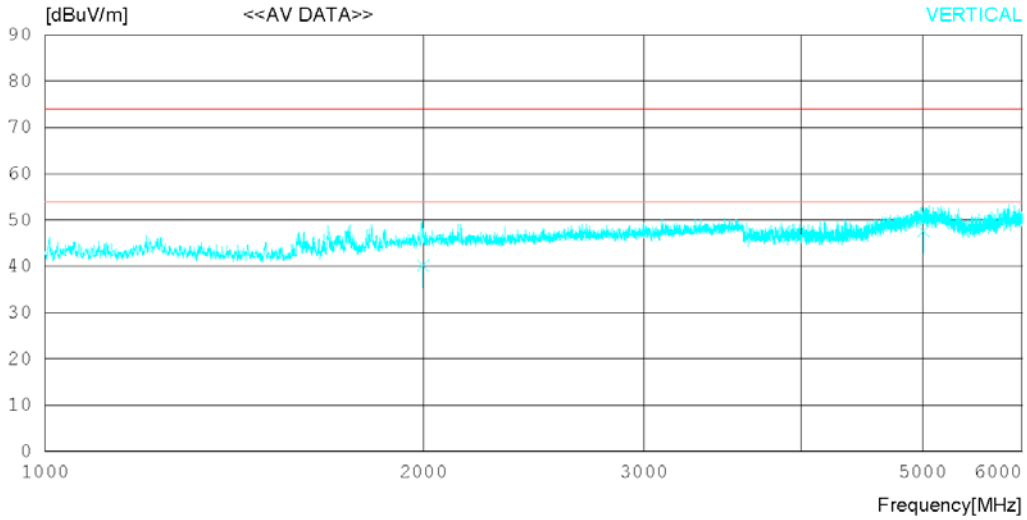
Date 2017-10-18

Order No.	DTNC1710-07687
Power Supply	120 V 60 Hz
Temp/Humi	24 'C 48 % R.H.
Test Condition	PC LINK

Memo

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





RADIATED EMISSION

Date 2017-10-18

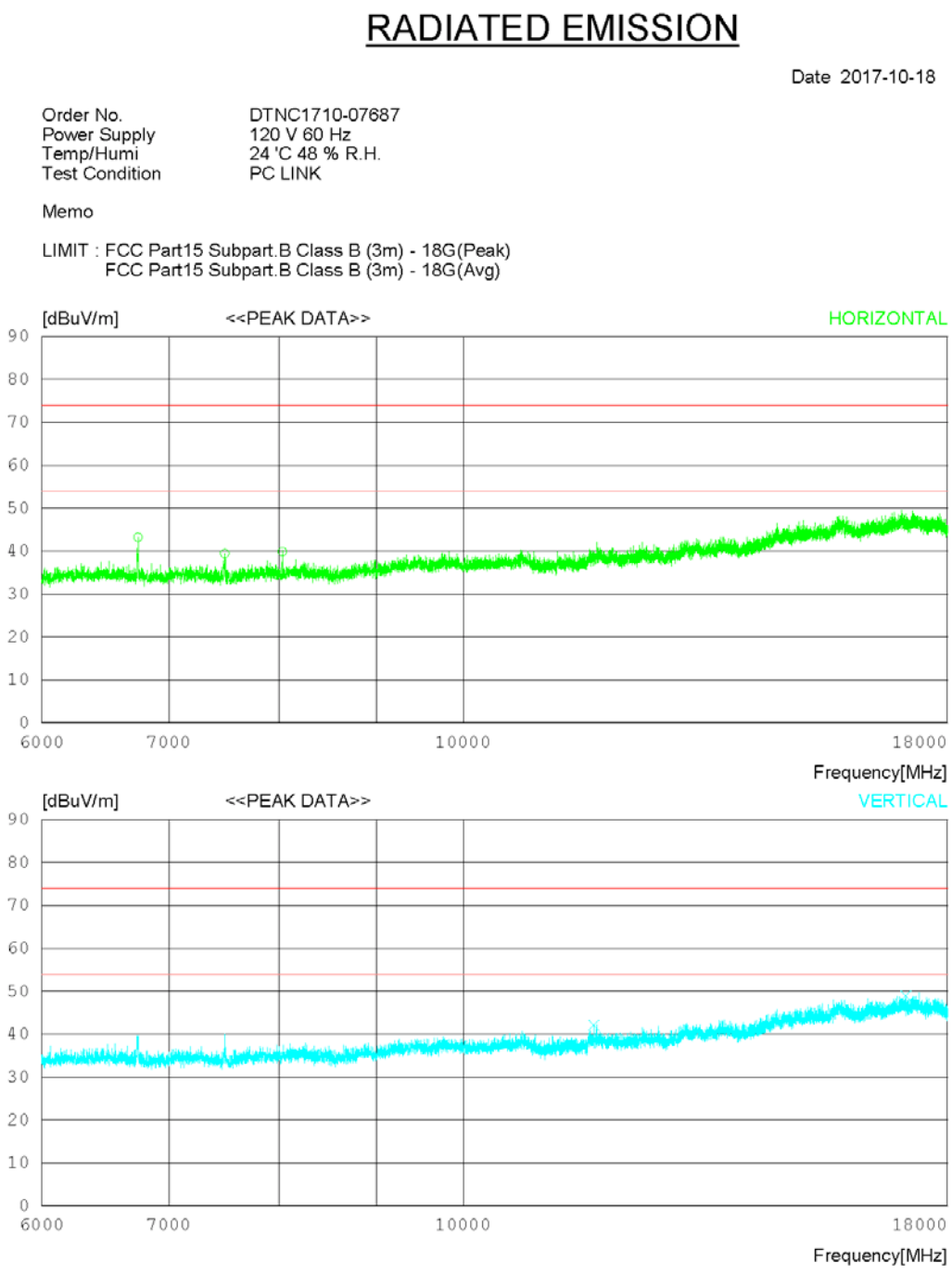
Order No. DTNC1710-07687
Power Supply 120 V 60 Hz
Temp/Humi 24 'C 48 % R.H.
Test Condition PC LINK

Memo

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	1496.905	40.50	28.10	4.15	32.31	40.44	54.00	13.56	100	12
2	1661.805	39.70	28.77	4.31	32.38	40.40	54.00	13.60	100	235
3	1702.538	38.50	29.03	4.39	32.40	39.52	54.00	14.48	100	175
----- Vertical ------										
4	1999.340	36.50	31.50	4.70	32.52	40.18	54.00	13.82	100	42
5	5006.276	36.40	34.01	9.47	32.23	47.65	54.00	6.35	100	325

< (6 ~ 30) GHz _ Peak >



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

RADIATED EMISSION

Date 2017-10-18

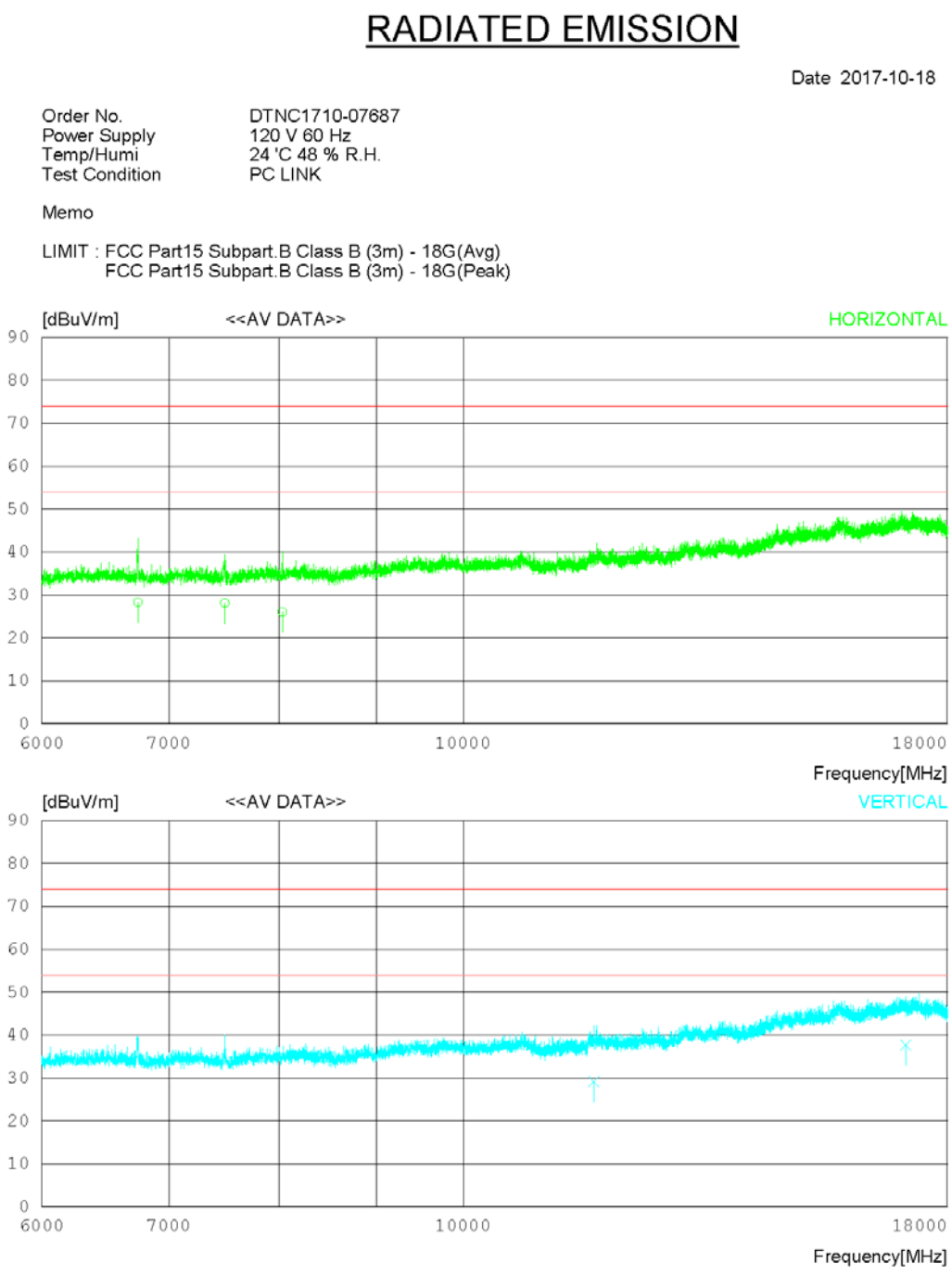
Order No. DTNC1710-07687
Power Supply 120 V 60 Hz
Temp/Humi 24 'C 48 % R.H.
Test Condition PC LINK

Memo

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	6744.000	42.40	-8.44	9.28	0.00	43.24	74.0	30.76	100	0
2	7493.250	37.70	-8.02	9.72	0.00	39.40	74.0	34.6	100	0
3	8031.750	37.20	-7.55	10.22	0.00	39.87	74.0	34.13	100	0
----- Vertical ------										
4	11722.500	34.70	-5.15	12.55	0.00	42.10	74.0	31.9	100	142
5	17109.000	32.90	-0.15	16.17	0.00	48.92	74.0	25.08	100	358

< (6 ~ 30) GHz _ Average >



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

RADIATED EMISSION

Date 2017-10-18

Order No. DTNC1710-07687
Power Supply 120 V 60 Hz
Temp/Humi 24 'C 48 % R.H.
Test Condition PC LINK

Memo

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	6744.078	27.50	-8.44	9.28	0.00	28.34	54.00	25.66	100	23
2	7493.273	26.40	-8.02	9.72	0.00	28.10	54.00	25.90	100	175
3	8031.753	23.40	-7.55	10.22	0.00	26.07	54.00	27.93	100	24
----- Vertical ------										
4	11722.470	21.70	-5.15	12.55	0.00	29.10	54.00	24.90	100	216
5	17109.020	21.60	-0.15	16.17	0.00	37.62	54.00	16.38	100	325

Appendix 1

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
☒	MEASUREMENT SOFTWARE	EMI-C VER. 2.00.0143	TSJ	N/A	N/A	N/A
☒	EMI TEST RECEIVER	ESCI	ROHDE & SCHWARZ	100364	2017.02.16	2018.02.16
☒	LISN	NNLK 8121	SCHWARZBECK	06182	2017.04.03	2018.04.03
☒	LISN	LISN1600	TTI	197204	2017.06.07	2018.06.07
☒	SINGLE-PHASE MASTER	4420	NF	3049354420023	2017.09.01	2018.09.01
☒	TRANSIENT LIMITER	CFL9206	SCHAFFNER	1661	2017.09.07	2018.09.07
☒	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
☒	MEASUREMENT SOFTWARE	EMI-R VER. 2.00.0121	TSJ	N/A	N/A	N/A
☒	EMI TEST RECEIVER	ESU	ROHDE & SCHWARZ	100469	2017.07.06	2018.07.06
☒	TRILOG BROADBAND TEST-ANTENNA NOTE1)	VULB9160	SCHWARZBECK	9160-3339	2017.04.21	2019.04.21
☒	LOW NOISE PRE AMPLIFIER	MLA-100K01-B01-26	TSJ	1252741	2017.02.20	2018.02.20
☒	PRE AMPLIFIER	8449B	H.P	3008A00887	2017.09.06	2018.09.06
☒	HORN ANTENNA	3117	ETS-LINDGREN	00152093	2016.02.26	2018.02.26
☒	HORN ANTENNA WITH PREAMPLIFIER	EM-6969	ELECTRO-METRICS	156	2017.01.19	2018.01.19
☒	HORN ANTENNA WITH PREAMPLIFIER	MLA-0618-B03-34	TSJ	1785642	2017.01.19	2018.01.19
☒	EMI TEST RECEIVER	ESU	ROHDE & SCHWARZ	100469	2017.07.06	2018.07.06
☒	LOW NOISE PRE AMPLIFIER	MLA-1840-J02-40	TSJ	13184	2016.10.18	2017.10.18
☒	HORN ANTENNA	SAS-574	A.H.SYSTEMS,INC	155	2017.07.31	2019.07.31

* NOTE1) The measurement antennas were calibrated in accordance to the requirements of C63.5-2006.

Appendix 2

Report Revision History

Revision Date	Description	Revised By	Revision Reviewed By
None	Original	N/A	N/A