

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 : DREFCC1707-0188

2. Customer

• Name : LG Electronics MobileComm USA, Inc.

• Address : 1000 Sylvan Ave. Englewood Cliffs NJ 07632

3. Use of Report : FCC Certification of Conformity Marking

4. Product Name / Model Name : Mobile phone / LG-H930

5. Test Method Used : ANSI C 63.4:2014

FCC Part 15 Subpart B

(Class B personal computers and peripherals)

6. Date of Test : 2017-07-11 ~ 2017-07-12

7. Testing Environment : Temperature (24 ~ 26) °C , Humidity 53 % R.H.

8. Test Result : Refer to the attached Test Result

Affirmation	Tested by	Technical Manager
	Name : JinYoung 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.

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2017. 07. 24.

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to 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

<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 13 11 86721 001	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	LG-H930
Add Model Name	LG-H930DS, LG-H930K, LG-H930G
Serial No	None
Type of Sample Tested	Pre-Production
Supplied Power for Test	AC 120 V, 60 Hz
FCC ID	ZNFH930
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 (°C)	Humidity (% R.H.)
Conducted Disturbance	2017-07-11	24	53
Radiated Disturbance	2017-07-12	26	53

4.3 Test result Summary

(1) Conducted Emission

Frequency [MHz]	Phase	Result [dB μ V]	Detector	Limit [dB μ V]	Margin [dB]
0.21282	N	42.49	Average	53.09	10.60

(2) Radiated Emission

Frequency [MHz]	Pol.	Result [dB(μ V/m)]	Detector	Limit [dB(μ V/m)]	Margin [dB]
431.690	H	36.23	QP	46.0	9.77

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	None	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-0W06C2-74 445-467-013L	DELL	POWER IN DSUB OUT	1.8 1.8	Non-shield Shield	X X	Plastic Plastic	-
PC	DCSM	F92QFBX	DELL	POWER IN	1.8	Non-shield	X	Plastic	-
				DSUB IN	1.8	Shield	X	Plastic	
				PARALLEL 1 IN	2.0	Shield	X	Plastic	
				PARALLEL 2 IN	1.9	Shield	X	Plastic	
				USB IN	1.7	Shield	X	Plastic	
				USB IN	1.7	Shield	X	Plastic	
				USB IN	1.0	shield	X	Plastic	
				STEREO IN	2.0	Non-shield	X	Plastic	
SSD 3.0	MU-PT250B	S2WKNPAH003 37W	SAMSUNG	USB OUT	0.8	shield	X	Plastic	-
PRINTER	SRP-770	N/A	Bixolon	POWER IN	1.8	Non-shield	X	Plastic	-
				PARALLEL 1 OUT	2.0	Shield	X	Plastic	
				PARALLEL 2 OUT	1.9	Shield	X	Plastic	
Headset	COV909	N/A	COSY	STEREO 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 :

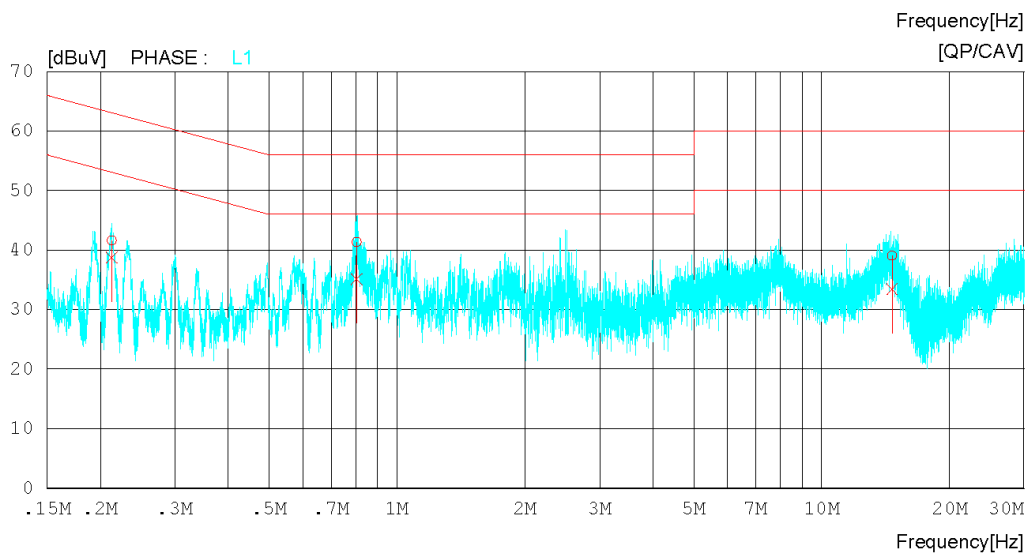
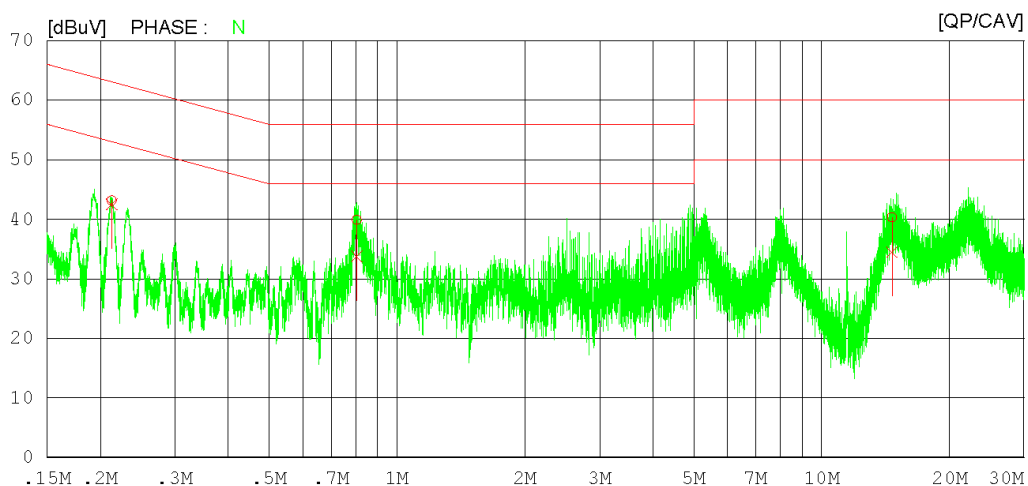
Expended uncertainty <i>U</i> (95 %, Confidence level, <i>k</i> = 2)	2.36 dB
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Test Result

Results of Conducted Emission

DT&C
Date 2017-07-11

Order No.	DTNC1706-04576
Power Supply	120 V 60 Hz
Temp/Humi/Atm	24 °C 53 % R.H. 99.5 kPa
Test Condition	PC LINK

LIMIT : CISPR22_B QP
CISPR22_B AV


Results of Conducted Emission

DT&C
Date 2017-07-11

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi/Atm 24'C 53 % R.H. 99.5 kPa
Test Condition PC LINK

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	0.21282	41.24	40.58	1.91	43.15	42.49	63.09	53.09	19.94	10.60	N
2	0.80420	39.41	33.26	0.46	39.87	33.72	56.00	46.00	16.13	12.28	N
3	14.64800	39.80	34.00	0.49	40.29	34.49	60.00	50.00	19.71	15.51	N
4	0.21294	39.67	36.79	1.94	41.61	38.73	63.09	53.09	21.48	14.36	L1
5	0.80350	40.89	34.58	0.49	41.38	35.07	56.00	46.00	14.62	10.93	L1
6	14.64760	38.60	32.92	0.47	39.07	33.39	60.00	50.00	20.93	16.61	L1

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 **10m 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	5 th 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 (dB μ V/m)	Quasi-peak (dB μ 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 μ V/m)	Quasi-peak (dB μ V/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 (dB μ V/m)	Average (dB μ V/m)	Peak (dB μ V/m)	Average (dB μ 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

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)
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Test Result

< 30 MHz ~ 1 GHz >

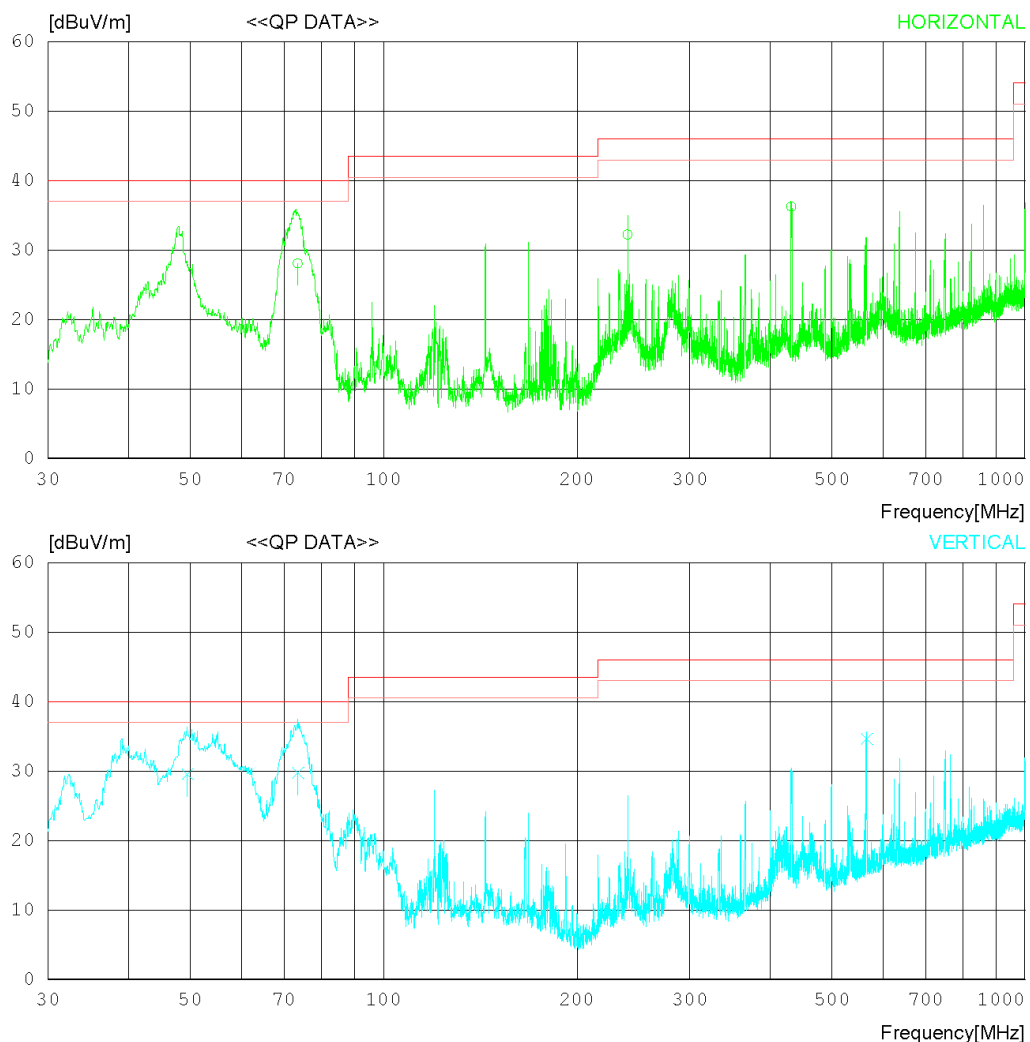
RADIATED EMISSION

Date 2017-07-12

Order No.	DTNC1706-04576
Power Supply	120 V 60 Hz
Temp/Humi	26 'C 53 % R.H.
Test Condition	PC LINK

Memo

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



RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % R.H.
Test Condition PC LINK

Memo

LIMIT : FCC Part15 Subpart.B Class B (3m)
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	73.529	44.20	9.42	1.28	26.82	28.08	40.00	11.92	400	13
2	240.000	44.80	11.60	2.39	26.56	32.23	46.00	13.77	200	190
3	431.690	42.50	16.75	3.38	26.40	36.23	46.00	9.77	100	358
----- Vertical -----										
4	49.438	43.50	11.84	1.03	26.84	29.53	40.00	10.47	100	263
5	73.529	45.80	9.42	1.28	26.82	29.68	40.00	10.32	300	99
6	566.287	37.90	19.13	3.99	26.37	34.65	46.00	11.35	100	148

< (1 ~ 6) GHz _ Peak >

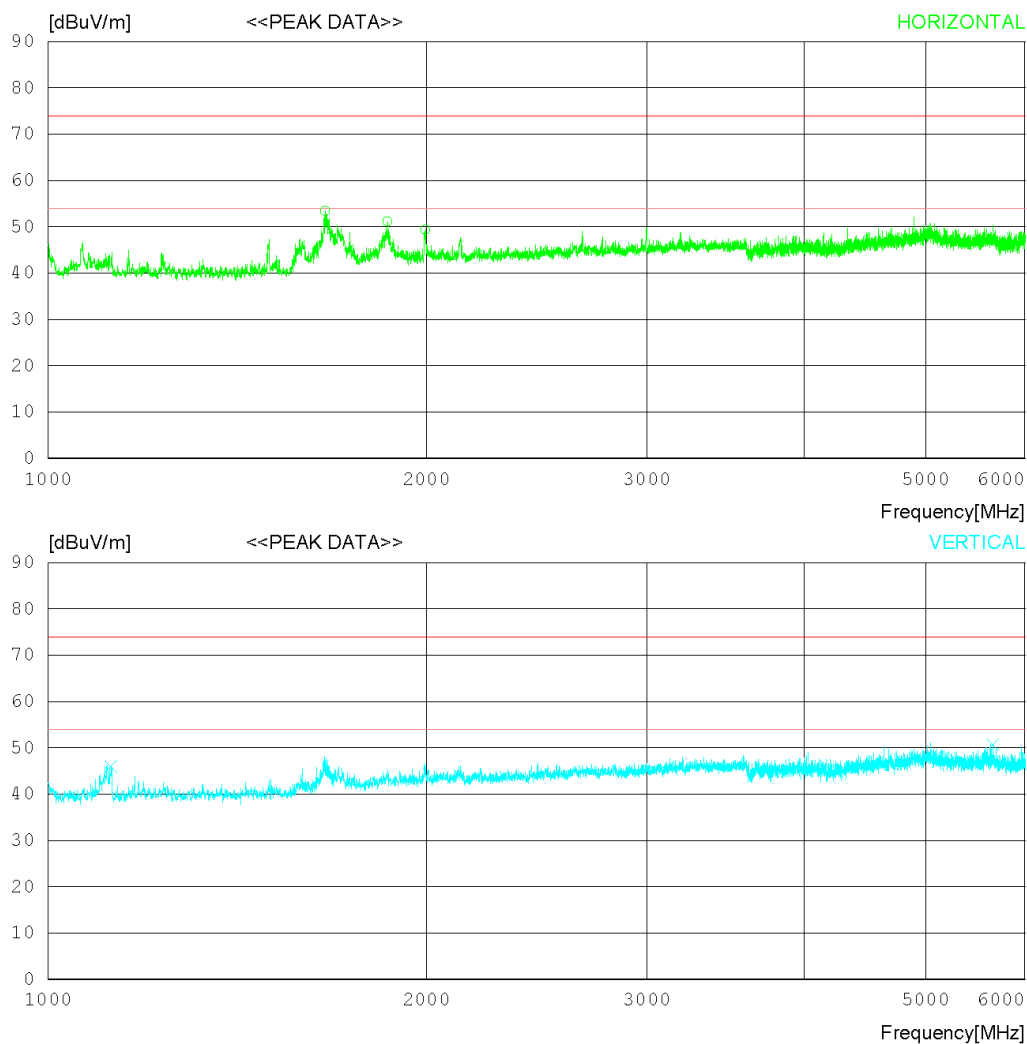
RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 53 % 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 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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	1662.500	59.50	28.78	4.29	39.17	53.40	74.0	20.6	100	358
2	1862.500	54.80	30.76	4.55	38.93	51.18	74.0	22.82	100	310
3	1996.250	52.00	31.49	4.66	38.77	49.38	74.0	24.62	100	358
----- Vertical -----										
4	1122.500	54.40	28.08	3.58	40.16	45.90	74.0	28.1	100	199
5	5652.500	43.40	34.50	9.92	37.17	50.65	74.0	23.35	100	244

< (1 ~ 6) GHz _ Average >

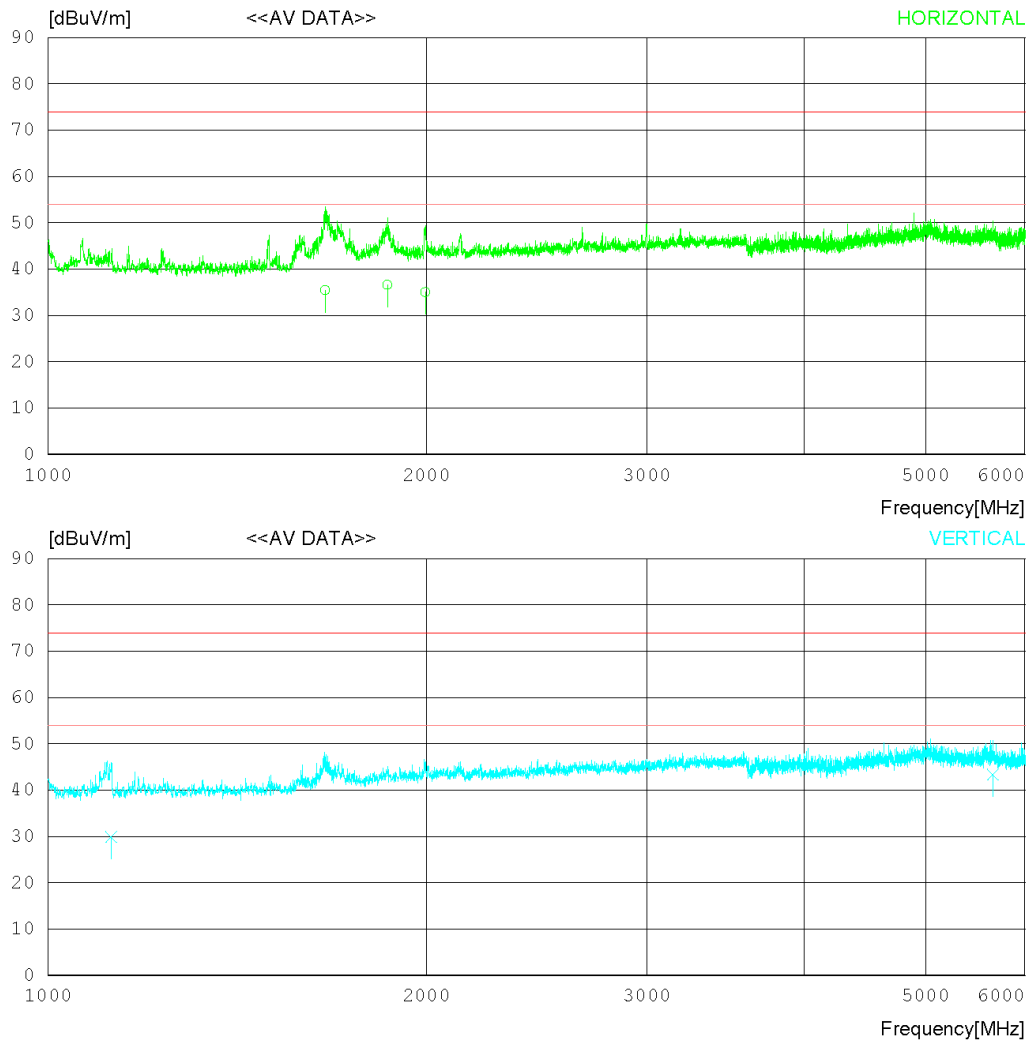
RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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	1662.532	41.50	28.78	4.29	39.17	35.40	54.00	18.60	100	23
2	1862.511	40.20	30.76	4.55	38.93	36.58	54.00	17.42	100	324
3	1996.305	37.60	31.49	4.66	38.77	34.98	54.00	19.02	100	17
----- Vertical -----										
4	1122.638	38.40	28.08	3.58	40.16	29.90	54.00	24.10	100	235
5	5652.570	36.10	34.50	9.92	37.17	43.35	54.00	10.65	100	268

< (6 ~ 30) GHz _ Peak >

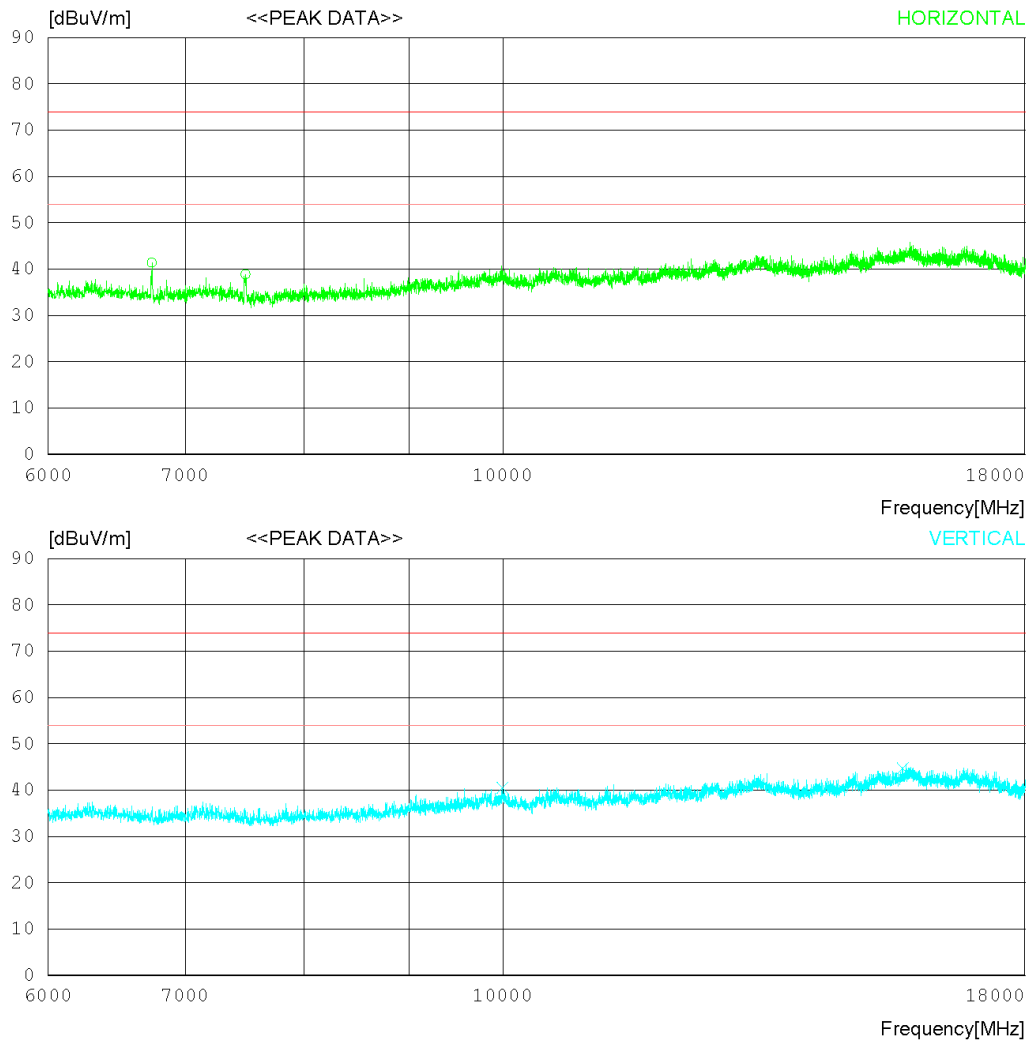
RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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)



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

RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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	40.20	-8.44	9.62	0.00	41.38	74.0	32.62	100	358
2	7494.000	37.30	-8.02	9.60	0.00	38.88	74.0	35.12	100	231
----- Vertical -----										
3	9999.000	32.80	-6.44	14.07	0.00	40.43	74.0	33.57	100	16
4	15681.000	29.80	-1.55	16.43	0.00	44.68	74.0	29.32	100	0

< (6 ~ 30) GHz _ Average >

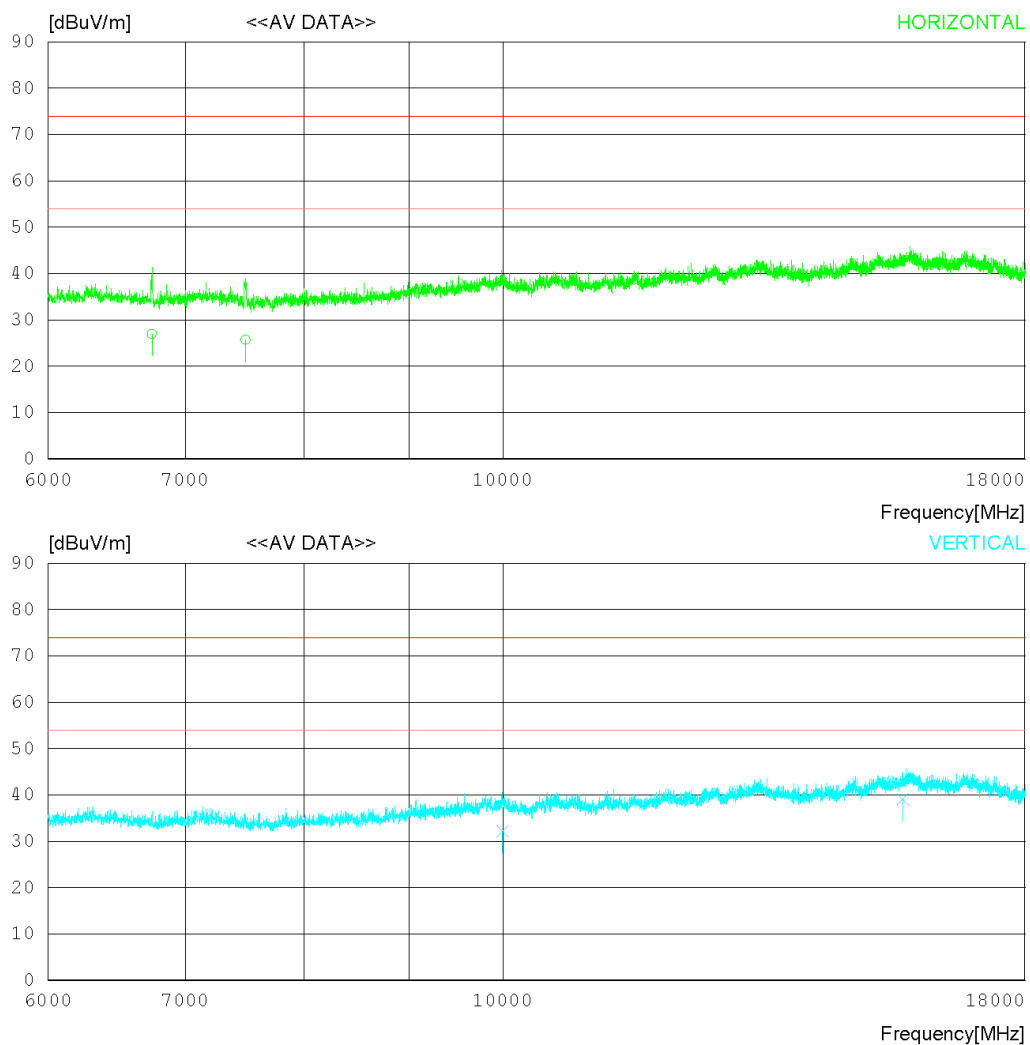
RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 'C 53 % 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)



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

RADIATED EMISSION

Date 2017-07-12

Order No. DTNC1706-04576
Power Supply 120 V 60 Hz
Temp/Humi 26 °C 53 % 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	6744.032	25.80	-8.44	9.62	0.00	26.98	54.00	27.02	100	23
2	7494.253	24.10	-8.02	9.60	0.00	25.68	54.00	28.32	100	112
----- Vertical -----										
3	9999.078	24.50	-6.44	14.07	0.00	32.13	54.00	21.87	100	75
4	15681.010	24.10	-1.55	16.43	0.00	38.98	54.00	15.02	100	175

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
☒ ARTIFICIAL MAINS NETWORK	ESH2-Z5	ROHDE & SCHWARZ	828739/006	2016.09.08	2017.09.08
☒ LISN	LISN1600	TTI	197204	2017.06.07	2018.06.07
☒ SINGLE-PHASE MASTER	4420	NF	3049354420023	2016.09.08	2017.09.08
☒ HIGH PASS FILTER	KFL-007D	KYORITSU	8-2259-4	N/A	N/A
☒ 50 OHM TERMINATOR	CT-01	TME	N/A	2017.01.03	2018.01.03
☐ LISN (DC)	NNBM8125	SCHWARZBECK	8125-821	2016.09.08	2017.09.08
☐ LISN (DC)	NNBM8125	SCHWARZBECK	8125-1390	2016.09.08	2017.09.08

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	100538	2017.02.03	2018.02.03
☒ 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	AGILENT	3008A01590	2017.02.20	2018.02.20
☒ 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	2016.07.18	2017.07.18
☒ 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	2015.09.03	2017.09.03

* NOTE1) Calibrated according to ANSI 63.5 : 2006 calibration.

Appendix 2

Report Revision History

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