

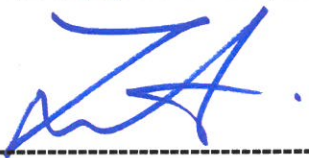
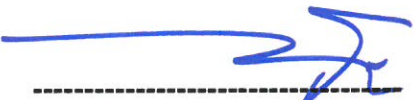
FCC TEST REPORT

Reference No. : G-45-2016-02533
Applicant : LG Electronics Inc.
Equipment Under Test (EUT) :
 Product Name : WIRELESS DONGLE
 Model Name : MEB-R300

Applied Standards : FCC Part 15 Subpart B
 ANSI C 63.4:2014

FCC ID : ZNFMEBR300

Date of Receipt : August 25, 2016
Date of Test : August 29, 2016 ~ September 13, 2016
Date of Issue : September 13, 2016
Test Results : Complied

Tested by	:		 ----- Clark Lee
Reviewed by	:		 ----- Paul Kang

Remarks :

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1. General Information

1.1 Client Information

Applicant : LG Electronics MobileComm USA, Inc.
 Address of Applicant : 1000 Sylvan Avenue Englewood Cliffs, New Jersey, United States

Manufacturer : Bluecom Co., Ltd.
 Address of Manufacturer : C5-4, Area CN1, Trang Due Industrial Park, An Duong District, Haiphong City, Vietnam

1.2 Test Laboratory

Name and Address : SGS Korea Co., Ltd.
 Giheung 1 Laboratory : 35, Giheungdanji-ro 121beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
 Giheung 2 Laboratory : 23, Giheungdanji-ro 24beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Republic of Korea
 Gunpo Laboratory : 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, 435-040 Republic of Korea

Phone : + 82 31 428 5700
 Fax : + 82 31 427 2370
 e-mail : Jinho.Seo@sgs.com

1.3 General Information of E.U.T.

Product Name	WIRELESS DONGLE
Model Name	MEB-R300
Serial No.	-
EMI Classification	Class B
Internal Clock Frequency	2402 MHz ~ 2480 MHz
Test Voltage	120 V~, 60 Hz(For Notebook computer)
FCC ID	ZNFMEBR300

1.4 Operating Modes and Conditions

Operating mode	Operating condition
Dongle Mode	USB dongle operating status

1.4.1 Monitoring Method

- Checked the any error by eyes.

1.5 Auxiliary Equipments

Description	Model	Serial No.	Manufacturer
WIRELESS MOUSE	MEB-300	-	LG Electronics Inc.
AC/DC ADAPTER(LCD)	ADP-40DD B	-	DELTA ELECTRONICS, INC.
LCD MONITOR	S2740Lb	-	DELL INC.
Wireless Router	WG602	1PA11C5000896	NETGEAR
I.T.E. POWER SUPPLY	MU08A9075100-C5	332-10309-01	NETGEAR
Notebook Computer	LGE-DMLGX14(B)	008QTEQ024836	LG Electronics Co., Ltd.
AC/DC ADAPTER(NOT EBOOK)	ADP-40PH AD	-	DELTA ELECTRONICS, INC.
USB KEYBOARD	SKS-9000UB	-	MONTEREY INTERNATIONAL CORP.
USB Mouse	1344	-	Microsoft

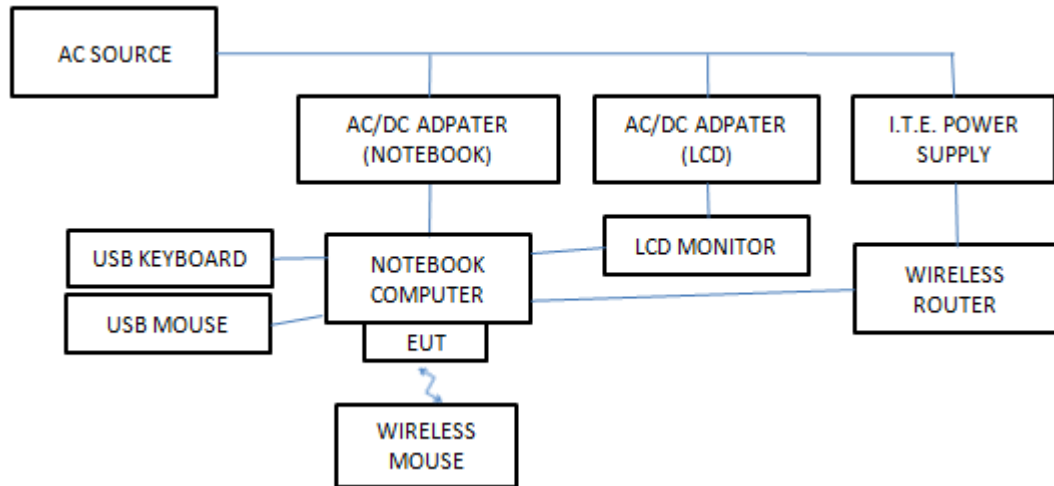
1.6 Cable List

Start		END		Cable Spec.		Use d core
Name	I/O Port	Name	I/O Port	Length	Shield	
EUT	USB	NOTEBOOK COMPUTER	USB	-	-	-
NOTEBOOK COMPUTER	USB	USB KEYBOARD	USB	1.5	Unshield	No.
	USB	USB MOUSE	USB	0.8	Unshield	No.
	RGB	LCD MONITOR	RGB	1.8	Unshield	No.
	LAN	WIRELESS ROUTER	LAN	3.5	Unshield	No.
	DC IN	AC/DC ADAPTER (NOTEBOOK)	DC OUT	1.2	Unshield	No.
LCD MONITOR	DC IN	AC/DC ADAPTER (LCD)	DC OUT	1.5	Unshield	No.
WIRELESS ROUTER	DC IN	I.T.E. POWER SUPPLY	DC OUT	1.5	Unshield	No.
AC/DC ADAPTER (NOTEBOOK)	AC IN	AC SOURCE	AC OUT	1.2	Unshield	No.
AC/DC ADAPTER (LCD)	AC IN		AC OUT	1.2	Unshield	No.
I.T.E. POWER SUPPLY	AC IN		AC OUT	1.2	Unshield	No.

1.7 System Configurations

Description	Model	Serial No.	Manufacturer
Main Board	MEB-300 V1.0	CG0510	-

1.8 Test System Layout



1.9 Modifications

There was no modified item during the test.

1.10 Applicable Standards for Testing

Standards	Status	Deviation
FCC Part 15 Subpart B	Applicable	No Deviation

1.11 Summary of Test Results

Test Item	Basic Standards	Results
Conducted Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied
Radiated Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied

Note: Test methods of all test items are performed according to the basic standards in this table.

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2.1 Test Results

Test Items	Basic Standards	Test Results
Conducted Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied
Radiated Emission	ANSI C 63.4:2014 FCC Part 15 Subpart B	Complied

2.2 Test Method and Limits

2.2.1 Test Method

Test Items	Measuring Frequency Range	RBW	Measuring Distance
Conducted Emission	0.15 MHz ~ 30 MHz	9 kHz	-
Radiated Emission	30 MHz ~ 1 GHz	120 kHz	10 m & 3 m
	Above 1 GHz	1 MHz	3 m

2.2.2 Test Limits

-Conducted Emission Limits at Mains Port

Frequency Range	Limits(dB(μ V))		Class
	Quasi-peak	Average	
0.15 MHz ~ 0.5 MHz	79	66	Class A
0.5 MHz ~ 30 MHz	73	60	
0.15 MHz ~ 0.5 MHz	66 to 56	56 to 46	Class B
0.5 MHz ~ 5 MHz	56	46	
5 MHz ~ 30 MHz	60	50	

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

-Radiated Emission Limits below 1 GHz

Frequency Range	Limits(dB(μ V/m))	Class
	Quasi-peak	
30 MHz ~ 88 MHz	39.1	Class A
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46.4	
960 MHz ~ 1 GHz	49.5	
30 MHz ~ 88 MHz	40	Class B
88 MHz ~ 216 MHz	43.5	
216 MHz ~ 960 MHz	46	
960 MHz ~ 1 GHz	54	

-Radiated Emission Limits above 1 GHz (3m method)

Frequency Range	Limits(dB(μ V/m))		Class
	Average	Peak	
Above 1 GHz	59.5	79.5	Class A
Above 1 GHz	54	74	Class B

2.3 Conducted Emission

The initial preliminary exploratory scans were performed over the measuring frequency range(0.15 MHz to 30 MHz) using a max hold mode incorporating a Peak detector and Average detector and using the software of ES-K1(Version V1.71 from R&S). The final test data was measured using a Quasi-Peak detector and Average detector.

2.3.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Cal Due. Date
Two-Line V-Network	ENV216	R & S	100190	2016.12.21
Test Receiver	ESCI 7	R & S	100911	2016.12.22

Note : The calibration period of every equipment is 1 year.

2.3.2 Test Site

Shield Room in Gunpo Laboratory

2.3.3 Environment Conditions and data

- Conducted Emission at AC Mains Port

Temp. (Minimum 23.2 °C, Maximum 23.5 °C) ,
 Humidity (Minimum 35.0 % R.H., Maximum 35.0 % R.H.)
 Atmospheric Pressure : (100.2) kPa

Test Date : August 29, 2016

Freq. (MHz)	Line (H/N)	Level (dB μ V)		CL (dB)	LISN (dB)	Result (dB μ V)		Limit (dB μ V)		Margin (dB)	
		Q/P	A/V			Q/P	A/V	Q/P	A/V	Q/P	A/V
0.15	H	36.69	8.89	0.02	9.69	46.40	18.60	65.90	55.90	19.50	37.30
0.20	H	40.69	26.09	0.01	9.60	50.30	35.70	63.82	53.82	13.52	18.12
0.20	N	39.69	25.29	0.01	9.70	49.40	35.00	63.82	53.82	14.42	18.82
4.05	N	18.89	12.69	0.11	9.70	28.70	22.50	56.00	46.00	27.30	23.50
23.13	H	26.88	24.98	0.22	9.70	36.80	34.90	60.00	50.00	23.20	15.10
23.13	N	22.75	19.35	0.22	9.93	32.90	29.50	60.00	50.00	27.10	20.50

Measurement Uncertainty : 2.98 dB (The confidential level is about 95%, $k=2$)

- Note :
- Line (H) : Hot
 - Line (N) : Neutral
 - CL: Cable Loss
 - LISN : LISN Factor
 - Result = Level + CL + LISN
 - Margin = Limit – Result

See Appendix A (Conducted Emission at AC Mains Port)

2.4 Radiated Emission

The initial preliminary exploratory scans were performed at 3 m distance over the measuring frequency range(30 MHz to 25 GHz) using a max hold mode incorporating a Peak detector and using the software of EMC32(Version 8.50.0 from R&S) and EP5RE(Version Ver3.10.20 from TOYO). The final test data was measured using a Quasi-Peak detector below 1 GHz at 10 m distance and a Peak and Average detector above 1 GHz at 3 m distance. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency.

2.4.1 Test Equipments

Description	Model No.	Manufacturer	S/N	Cal Due. Date
Horn Antenna	HF906	R & S	100326	2017.04.16
Signal Conditioning Unit	SCU 18	R & S	10117	2017.04.07
Test Receiver	ESU26	R & S	100109	2017.03.07
Bilog Antenna	VULB9163	SCHWARZBECK MESS-ELEKTRONIK	396	2018.06.22
Amplifier	8447F	HP	2944A03909	2016.08.27
Horn Antenna	BBHA9170	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170540	2017.09.04
PREAMPLIFIER	JS44-18004000- 35-8P	MITEQINC	1546891	2017.05.12

Note : Only the calibration period of Antennas is 2 years but the period of every equipment is 1 year.

2.4.2 Test Site

3m SEMI-ANECHOIC CHAMBER Gunpo Laboratory (Below 1 GHz, Above 1 GHz)

2.4.3 Environment Conditions and data

- Below 1 GHz

Temperature : (minimum 23.5, maximum 23.8) °C
Humidity : (minimum 37.0, maximum 38.0) %R.H.
Atmospheric Pressure : (101.1) kPa

Test Date : August 30, 2016

- Above 1 GHz

Temperature : (minimum 22.3, maximum 24.0) °C
Humidity : (minimum 44.0, maximum 46.0) %R.H.
Atmospheric Pressure : (102.1) kPa

Test Date : September 13, 2016

- Below 1 GHz (3 m method)

Freq. (MHz)	Level (dB(μ V))	Pol. (H/V)	A ($^{\circ}$)	H (cm)	AF (dB/m)	CL (dB)	Amp. (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Quasi-Peak Detector										
30.12	45.20	V	201	100	12.24	0.59	27.90	30.13	40.00	9.87
80.79	46.40	V	79	200	7.87	1.06	27.90	27.43	40.00	12.57
142.87	53.60	V	158	100	8.20	1.38	27.37	35.81	43.50	7.69
384.02	50.50	H	130	100	15.86	2.20	27.16	41.40	46.00	4.60
448.01	50.20	V	177	100	17.03	2.55	27.90	41.88	46.00	4.12
801.03	45.30	H	137	200	21.97	3.26	28.29	42.24	46.00	3.76
895.95	44.60	H	165	100	23.08	3.73	27.74	43.67	46.00	2.33

Measurement Uncertainty (Horizontal) : 4.82 dB (The confidential level is about 95%, $k=2$)

Measurement Uncertainty (Vertical) : 5.34 dB (The confidential level is about 95%, $k=2$)

Note 1: • AF = Antenna Factor
 • POL H = Horizontal
 • H : Height

• CL = Cable Loss

• POL V = Vertical

• Margin = Limit – Result

• Amp = Amplifier Gain

• A : Angle

• Result = Level + AF + CL – Amp

- Above 1 GHz (3 m method)

Freq. (MHz)	Level (dB(μ V))	Pol. (H/V)	A ($^{\circ}$)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Peak Detector										
1344.25	56.60	H	159	200	24.68	4.03	37.47	47.84	74.00	26.16
1990.96	49.50	H	141	200	27.70	4.96	37.41	44.75	74.00	29.25
1994.50	53.40	V	346	200	27.72	4.95	37.41	48.66	74.00	25.34
7453.62	42.60	V	346	200	35.92	15.92	38.25	56.19	74.00	17.81
7456.46	42.40	H	188	100	35.92	15.83	38.24	55.91	74.00	18.09
13206.71	42.00	V	52	200	39.53	14.74	36.33	59.94	74.00	14.06
14405.92	42.50	V	260	100	41.35	16.11	37.72	62.24	74.00	11.76
14734.58	42.30	H	188	100	40.84	15.60	37.49	61.25	74.00	12.75
17291.66	42.90	V	346	200	42.21	16.25	39.55	61.81	74.00	12.19
17394.37	43.10	H	188	100	42.40	16.17	39.60	62.07	74.00	11.93
17945.46	43.00	H	186	200	43.31	16.74	39.87	63.18	74.00	10.82
17954.66	43.10	V	256	200	43.33	16.75	39.88	63.30	74.00	10.70
18102.96	44.10	V	178	100	38.02	20.13	49.90	52.35	74.00	21.65
18132.71	44.30	H	88	100	37.99	20.20	49.96	52.53	74.00	21.47
18742.00	44.40	V	178	200	37.51	21.68	51.15	52.44	74.00	21.56
22878.42	43.70	H	189	100	39.72	24.34	54.29	53.47	74.00	20.53
23565.87	44.70	V	275	200	39.53	24.38	54.05	54.56	74.00	19.44
23676.71	43.90	H	189	100	39.47	24.34	54.01	53.70	74.00	20.30
23909.46	44.10	V	178	100	39.34	24.25	53.93	53.76	74.00	20.24
24124.71	44.70	H	94	200	39.34	23.73	53.87	53.90	74.00	20.10
24819.46	45.20	V	178	200	39.63	22.57	53.70	53.70	74.00	20.30
24947.50	44.70	H	189	200	39.69	22.68	53.66	53.41	74.00	20.59

Measurement Uncertainty (Horizontal) : 5.78 dB (The confidential level is about 95%, $k=2$)

Measurement Uncertainty (Vertical) : 5.90 dB (The confidential level is about 95%, $k=2$)

- Note 1:
- AF = Antenna Factor
 - POL H = Horizontal
 - H : Height
 - CL = Cable Loss
 - POL V = Vertical
 - Margin = Limit – Result
 - Amp = Amplifier Gain
 - A : Angle
 - Result = Level + AF + CL – Amp

Freq. (MHz)	Level (dB(μ V))	Pol. (H/V)	A ($^{\circ}$)	H (cm)	AF (dB)	CL (dB)	Amp. (dB)	Result (dB(μ V/m))	Limit (dB(μ V/m))	Margin (dB)
Average Detector										
1344.25	38.20	H	159	200	24.68	4.03	37.47	29.44	54.00	24.56
1990.96	32.90	H	141	200	27.70	4.96	37.41	28.15	54.00	25.85
1994.50	34.50	V	346	200	27.72	4.95	37.41	29.76	54.00	24.24
7453.62	28.70	V	346	200	35.92	15.92	38.25	42.29	54.00	11.71
7456.46	28.70	H	188	100	35.92	15.83	38.24	42.21	54.00	11.79
13206.71	28.50	V	52	200	39.53	14.74	36.33	46.44	54.00	7.56
14405.92	28.20	V	260	100	41.35	16.11	37.72	47.94	54.00	6.06
14734.58	28.40	H	188	100	40.84	15.60	37.49	47.35	54.00	6.65
17291.66	29.30	V	346	200	42.21	16.25	39.55	48.21	54.00	5.79
17394.37	29.30	H	188	100	42.40	16.17	39.60	48.27	54.00	5.73
17945.46	29.20	H	186	200	43.31	16.74	39.87	49.38	54.00	4.62
17954.66	29.20	V	256	200	43.33	16.75	39.88	49.40	54.00	4.60
18102.96	30.40	V	178	100	38.02	20.13	49.90	38.65	54.00	15.35
18132.71	30.40	H	88	100	37.99	20.20	49.96	38.63	54.00	15.37
18742.00	30.70	V	178	200	37.51	21.68	51.15	38.74	54.00	15.26
22878.42	29.70	H	189	100	39.72	24.34	54.29	39.47	54.00	14.53
23565.87	30.30	V	275	200	39.53	24.38	54.05	40.16	54.00	13.84
23676.71	30.30	H	189	100	39.47	24.34	54.01	40.10	54.00	13.90
23909.46	30.40	V	178	100	39.34	24.25	53.93	40.06	54.00	13.94
24124.71	30.90	H	94	200	39.34	23.73	53.87	40.10	54.00	13.90
24819.46	31.20	V	178	200	39.63	22.57	53.70	39.70	54.00	14.30
24947.50	31.00	H	189	200	39.69	22.68	53.66	39.71	54.00	14.29

Measurement Uncertainty (Horizontal) : 5.78 dB (The confidential level is about 95%, $k=2$)

Measurement Uncertainty (Vertical) : 5.90 dB (The confidential level is about 95%, $k=2$)

Note 1: • AF = Antenna Factor

• POL H = Horizontal

• H : Height

• CL = Cable Loss

• POL V = Vertical

• Margin = Limit – Result

• Amp = Amplifier Gain

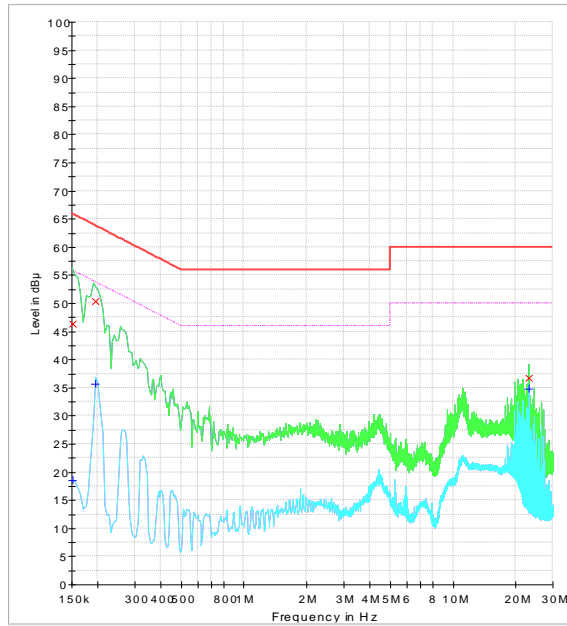
• A : Angle

• Result = Level + AF + CL – Amp

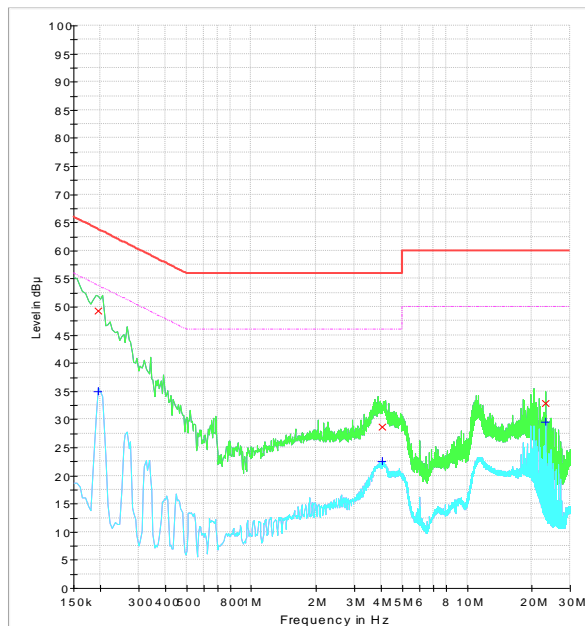
See Appendix B (Radiated Emission)

Appendix A : Conducted Emission at Mains Port

Hot

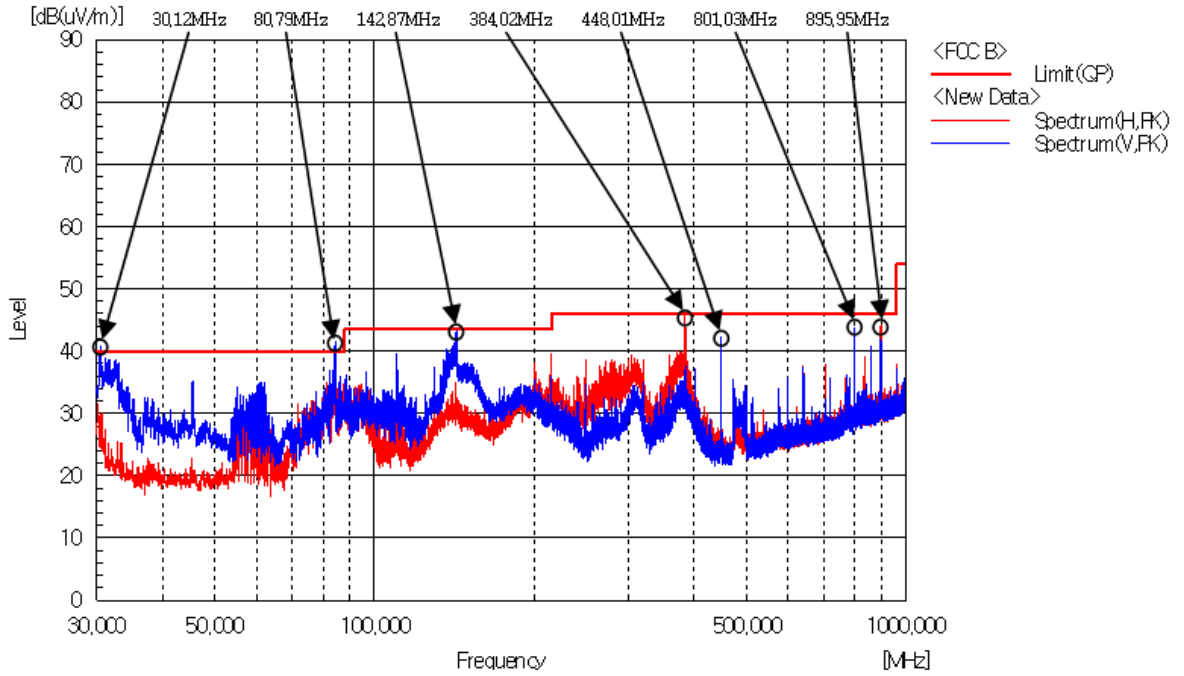


Neutral

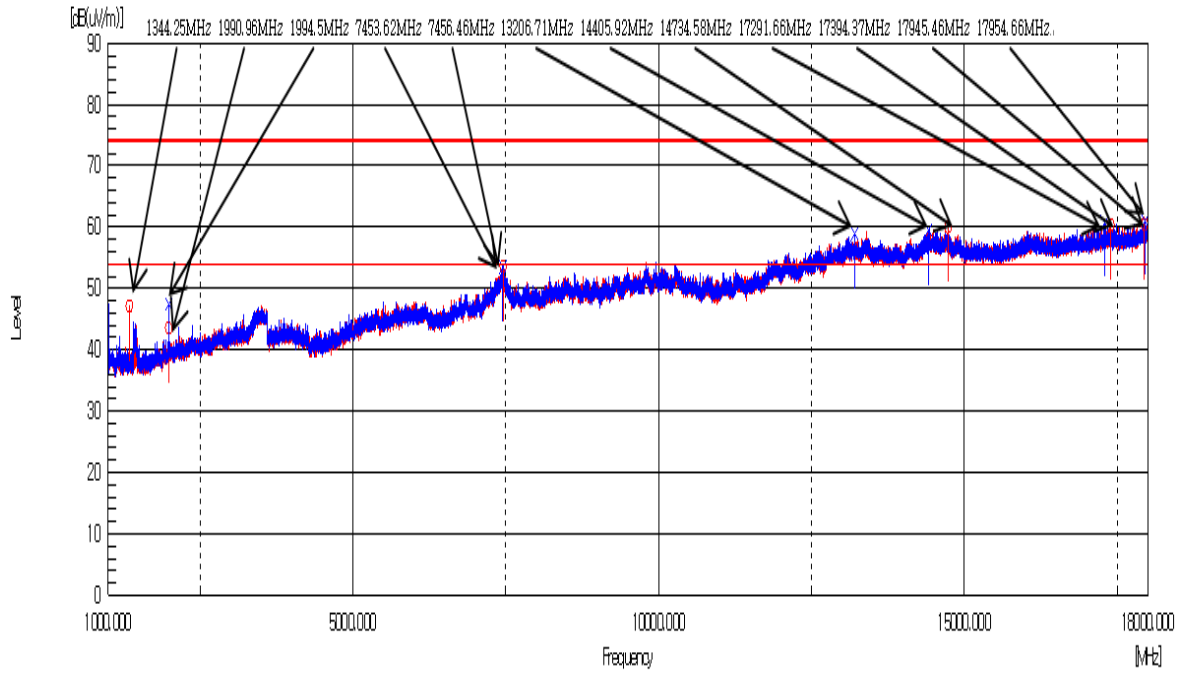


Appendix B : Radiated Emission

Below 1 GHz



Above 1 GHz
1GHz ~ 18 GHz



18GHz ~ 25 GHz

