



Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd.,
Ling 8, Shan-Tong Li,
Chung-Li Dist., Taoyuan City
320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A18040202
Report No.: FCCA18040202
FCC ID : 2APSH-W01A
Page: 1 of 28
Date: May 25, 2018

Product Name: Wireless Power Bank User
Model No.: W01A
Applicant: Entery Industrial Co., Ltd.
No.203, Huacheng Rd., Xinzhuang Dist., New Taipei
City, Taiwan
Date of Receipt: Apr. 02, 2018
Finished date of Test: May 04, 2018
Applicable Standards: 47 CFR Part 15, Subpart C 15.209
ANSI C63.10:2013

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Dowa , Date: 5.25.2018
(Dowa)

Approved By : Johnson Ho , Date: 5/25/2018
(Johnson Ho, Director)



	Spectrum Research & Testing Lab., Inc. No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)	TEST REPORT	Reference No.: A18040202 Report No.: FCCA18040202 FCC ID :2APSH-W01A Page: 2 of 28 Date: May 25, 2018
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Revisions History

Report No.	Issue Date	Revisions
FCCA18040202	May 25, 2018	Initial issue



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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- FCC Registered Test Site Number : TW1016

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power source from battery: DC power source 3.7V or DC 5.0V from PC USB Port was used during the test.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

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2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Power Bank User
MODEL NO.	W01A
POWER SUPPLY	DC power source, DC 3.7V of charge battery or DC 5.0V from PC USB Port
CABLE	1.5m unshielded power cable
CARRIER FREQUENCY	120 KHZ ~ 205 KHZ
NUMBER OF CHANNEL	1
RATED RF OUTPUT POWER	75.32dBμV/m
MODULATION TYPE	ASK
MODE OF OPERATION	Duplex
ANTENNA TYPE	Wireless charging coils
ANTENNA GAIN	0dBi

NOTE : For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
Battery	ENERGY	AE7063135P	DoC	DC INPUT:5V DC OUTPUT:3.7V 19.24Wh.

2.3 DESCRIPTION OF TEST MODE

Mode	Frequency
Standby	N/A
LINK	N/A
TX	N/A

NOTE: The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

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2.4 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. Set the EUT under continuous transmission condition, LINK, TX, Standby

2.5 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.10:2013. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	PC	ASUS	M32AA1	DoC	1.8m unshielded power cable.
2	LCD Monitor	Dell	U2410	DoC	1.8m unshielded power cable 1.5m shielded data cable
3	Mouse	ASUS	MOBTUO	DoC	1.5m unshielded data cable.
4	Keyboard	ASUS	PK1100U	DoC	1.8m unshielded data cable.
5	USB 2.0 HDD	TERASYS	F12-U	DoC	1.5m shielded data cable
6	Printer	HP	C8995A	DoC	1.5m unshielded power cable 1.5m shielded data cable
7	Cell phone	SAMSUNG	S8	DoC	N/A

NOTE: For the actual test configuration, please refer to the photos of testing.



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3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C 15.209

ANSI C63.10: 2013

All tests have been performed and recorded as the above standards.

3.1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
15.209 ANSI C63.10	RADIATED EMISSION	PASS

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4 CONDUCTED EMISSION TEST

4.1 LIMIT

Frequency (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.2 TEST EQUIPMENT

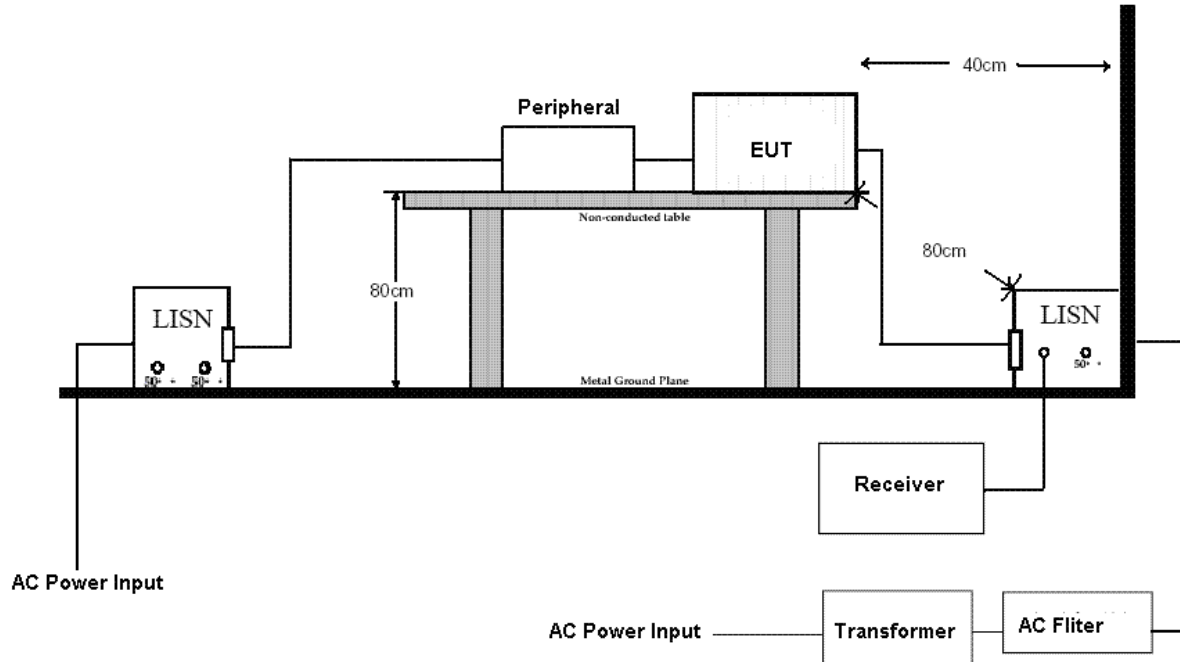
The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	LAST CAL. & CENTER	CAL. DUE
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	JAN. 02, 2018 ETC	JAN. 01, 2019
EMI TEST RECEIVER	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	JAN. 15, 2018 ETC	JAN. 14, 2019
LISN	50 μH, 50 ohm	SOLAR	9252-50-R-24-BNC / 951315	OCT. 31, 2017 ETC	OCT. 30, 2018
LISN	50 μH, 50 ohm	SCHWARZBECK	NSLK 8127 / 8127-808	DEC. 08, 2017 ETC	DEC. 07, 2018
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	11593A / L1TEQU005	NOV. 09, 2017 ETC	NOV. 08, 2018
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	B00-CD-357 / L1TEQU009	MAY 18, 2017 ETC	MAY 17, 2018
COAXIAL CABLE	5 m	HUBER+SUHNER	RG214/U / #5M(L1TCAB013)	MAY 14, 2017 ETC	MAY 13, 2018
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 771	NCR	NCR
GROUND PLANE	2 m (H) x 3 m (W)	SRT	N/A	NCR	NCR
GROUND PLANE	2.5 m (H) x 3 m (W)	SRT	N/A	NCR	NCR
PULSE LIMITER	9 kHz ~ 30 MHz Insertion Loss= 10dB±0.3dB	ROHDE & SCHWARZ	ESH3Z2 / L1TTES010	MAR. 26, 2018 ETC	MAR. 25, 2019
THERMO- HYGRO	15 – 40 °C, 0- 100% RH	TOP	20-A / 6644	SEP. 18, 2017 ETC	SEP. 17, 2018

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



4.3 TEST SETUP



NOTE :

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.

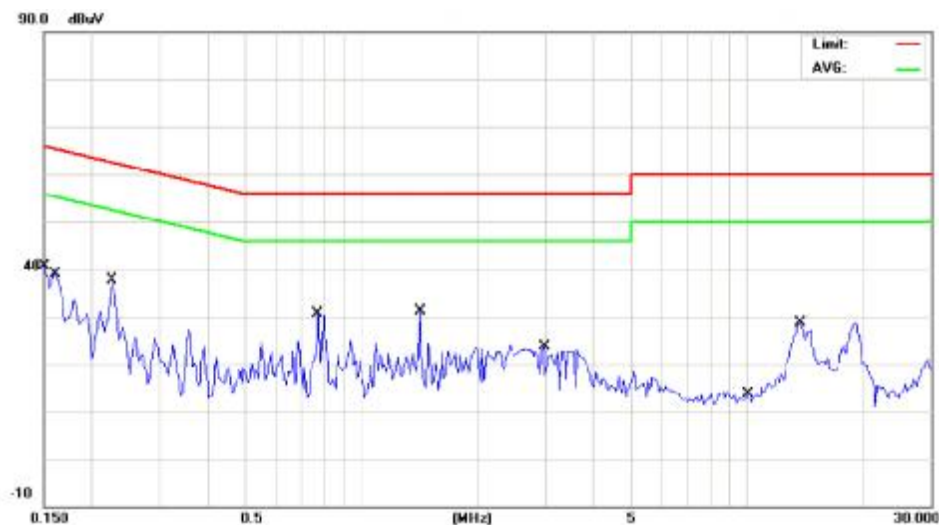
4.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.10:2013 and CISPR22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50 μ H as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.



4.5 TEST RESULT

Temperature:	30 °C	Humidity:	65% RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	LINK
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	May 04, 2018
Power Line Measured : Line			



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	37.54	-0.09	37.45	66.00	-28.55	QP	
	2	0.1500	32.50	-0.09	32.41	56.00	-23.59	AVG	
	3	0.1624	38.98	-0.09	38.89	65.34	-26.45	QP	
	4	0.1624	38.43	-0.09	38.34	55.34	-17.00	AVG	
	5	0.2250	36.72	-0.09	36.63	62.63	-26.00	QP	
*	6	0.2250	35.82	-0.09	35.73	52.63	-16.90	AVG	
	7	0.7750	28.82	-0.07	28.75	56.00	-27.25	QP	
	8	0.7750	23.22	-0.07	23.15	46.00	-22.85	AVG	
	9	1.4200	28.24	-0.05	28.19	56.00	-27.81	QP	
	10	1.4200	25.35	-0.05	25.30	46.00	-20.70	AVG	
	11	2.9900	19.68	0.00	19.68	56.00	-36.32	QP	
	12	2.9900	13.37	0.00	13.37	46.00	-32.63	AVG	
	13	10.0000	5.10	0.22	5.32	60.00	-54.68	QP	
	14	10.0000	1.80	0.22	2.02	50.00	-47.98	AVG	
	15	13.7350	24.84	0.32	25.16	60.00	-34.84	QP	
	16	13.7350	18.16	0.32	18.48	50.00	-31.52	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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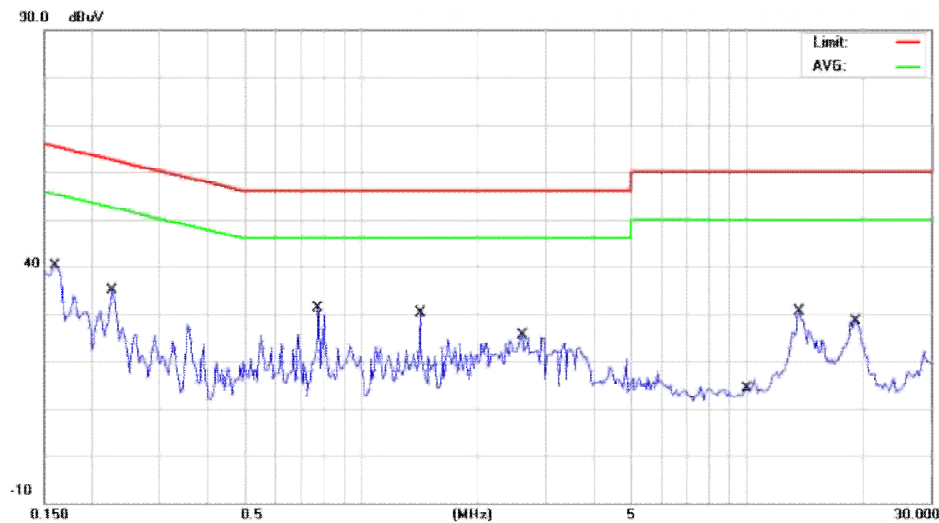
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Temperature:	30 °C	Humidity:	65% RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	LINK
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	May 04, 2018

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	39.18	-0.08	39.10	65.46	-26.36	QP	
*	2	0.1600	38.35	-0.08	38.27	55.46	-17.19	AVG	
	3	0.2250	33.78	-0.08	33.70	62.63	-28.93	QP	
	4	0.2250	33.53	-0.08	33.45	52.63	-19.18	AVG	
	5	0.7750	28.76	-0.06	28.70	56.00	-27.30	QP	
	6	0.7750	23.30	-0.06	23.24	46.00	-22.76	AVG	
	7	1.4200	28.28	-0.04	28.24	56.00	-27.76	QP	
	8	1.4200	25.35	-0.04	25.31	46.00	-20.69	AVG	
	9	2.6150	20.02	0.01	20.03	56.00	-35.97	QP	
	10	2.6150	15.01	0.01	15.02	46.00	-30.98	AVG	
	11	10.0000	5.04	0.22	5.26	60.00	-54.74	QP	
	12	10.0000	1.91	0.22	2.13	50.00	-47.87	AVG	
	13	13.6450	23.90	0.31	24.21	60.00	-35.79	QP	
	14	13.6450	17.20	0.31	17.51	50.00	-32.49	AVG	
	15	19.1400	25.12	0.43	25.55	60.00	-34.45	QP	
	16	19.1400	16.39	0.43	16.82	50.00	-33.18	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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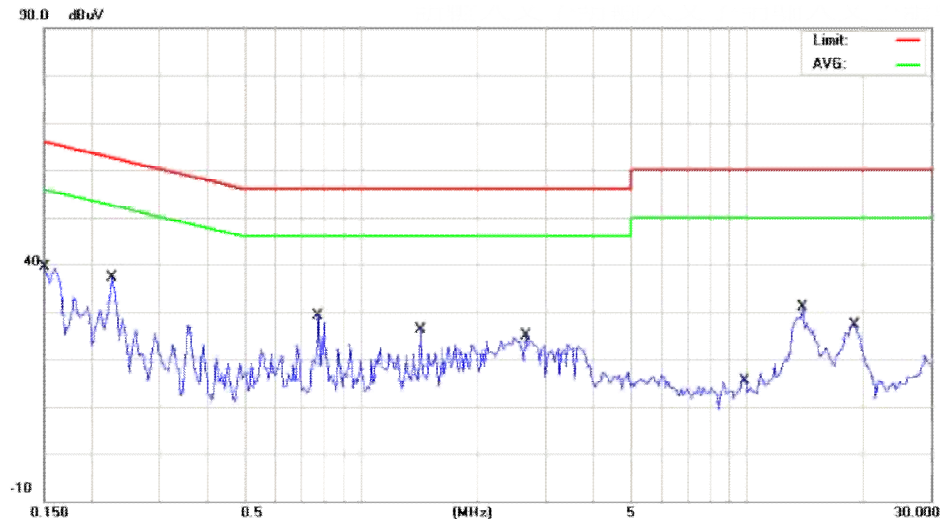
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Temperature:	30 °C	Humidity:	65% RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	TX
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	May 04, 2018

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	37.56	-0.09	37.47	66.00	-28.53	QP	
	2	0.1500	32.58	-0.09	32.49	56.00	-23.51	AVG	
	3	0.2250	36.74	-0.09	36.65	62.63	-25.98	QP	
*	4	0.2250	35.82	-0.09	35.73	52.63	-16.90	AVG	
	5	0.7750	26.10	-0.07	26.03	56.00	-29.97	QP	
	6	0.7750	21.47	-0.07	21.40	46.00	-24.60	AVG	
	7	1.4200	26.68	-0.05	26.63	56.00	-29.37	QP	
	8	1.4200	23.82	-0.05	23.77	46.00	-22.23	AVG	
	9	2.6750	19.98	0.00	19.98	56.00	-36.02	QP	
	10	2.6750	17.20	0.00	17.20	46.00	-28.80	AVG	
	11	10.0000	5.12	0.22	5.34	60.00	-54.66	QP	
	12	10.0000	1.68	0.22	1.90	50.00	-48.10	AVG	
	13	13.9350	24.76	0.32	25.08	60.00	-34.92	QP	
	14	13.9350	18.09	0.32	18.41	50.00	-31.59	AVG	
	15	19.0850	24.58	0.45	25.03	60.00	-34.97	QP	
	16	19.0850	16.09	0.45	16.54	50.00	-33.46	AVG	

NOTE :

- Measurement uncertainty is 2.92 dB
- Emission level = Reading value + Correction factor
- Correction Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
- Margin value = Emission level - Limit
- The emission of other frequencies was very low against the limit.
- "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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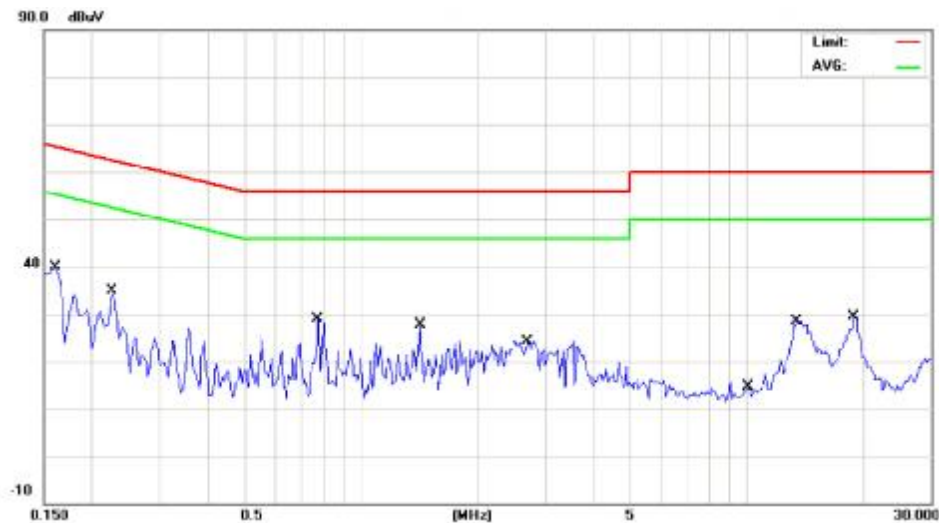
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Temperature:	30 °C	Humidity:	65% RH
Frequency Range:	0.15 – 30 MHz	Tested Mode:	TX
Receiver Detector:	Q.P. and AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	May 04, 2018

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	39.30	-0.08	39.22	65.46	-26.24	QP	
*	2	0.1600	38.52	-0.08	38.44	55.46	-17.02	AVG	
	3	0.2250	33.76	-0.08	33.68	62.63	-28.95	QP	
	4	0.2250	33.45	-0.08	33.37	52.63	-19.26	AVG	
	5	0.7750	27.44	-0.06	27.38	56.00	-28.62	QP	
	6	0.7750	21.84	-0.06	21.78	46.00	-24.22	AVG	
	7	1.4200	26.48	-0.04	26.44	56.00	-29.56	QP	
	8	1.4200	23.75	-0.04	23.71	46.00	-22.29	AVG	
	9	2.7000	20.12	0.01	20.13	56.00	-35.87	QP	
	10	2.7000	10.37	0.01	10.38	46.00	-35.62	AVG	
	11	10.0000	4.98	0.22	5.20	60.00	-54.80	QP	
	12	10.0000	1.68	0.22	1.90	50.00	-48.10	AVG	
	13	13.5500	25.58	0.31	25.89	60.00	-34.11	QP	
	14	13.5500	18.36	0.31	18.67	50.00	-31.33	AVG	
	15	18.9600	25.50	0.43	25.93	60.00	-34.07	QP	
	16	18.9600	16.97	0.43	17.40	50.00	-32.60	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB
2. Emission level = Reading value + Correction factor
3. Correction Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin value = Emission level - Limit
5. The emission of other frequencies was very low against the limit.
6. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

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5 RADIATED EMISSION TEST**5.1 LIMIT**

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dB _m V/m)
0.009 - 0.490	300	2400/F(KHz)
0.490 - 1.705	30	24000/F(KHz)
1.705 - 30	30	30
30 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
Above 960	3	54.0

NOTE:

1. 30 dBuV (in 30m) = 70 dBuV (in 3m).
2. Transmitters that require Crystal Controlled Oscillators with values below 30 MHz requires the Test Report to show "Spurious Radiated Emissions" results below 30 MHz per FCC Part 15.33(a).

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

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5.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test:

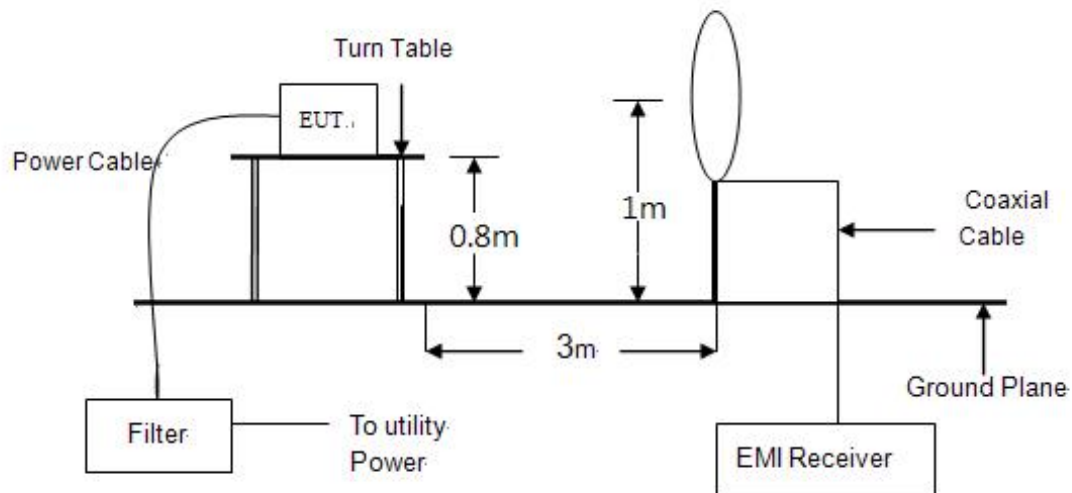
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	LAST CAL.	CAL. DUE
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	Jan. 02, 2018	Jan. 01, 2019
SPECTRUM ANALYZER	9 kHz ~ 40GHz	ROHDE & SCHWARZ	FSP40 / 100093	Jan. 02, 2018	Jan. 01, 2019
LOOP ANTENNA	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	HFH2-Z2 / 860605/002	Feb. 25, 2018	Feb. 24, 2019
BICONICAL ANTENNA	30 MHz ~ 200 MHz	EMCO	3110 / 11966C	Mar. 15, 2018	Mar. 14, 2019
LOG PERIODIC ANTENNA	200 MHz ~ 1 GHz	EMCO	3146 / 9002-2686	Dec. 25, 2017	Dec. 24, 2018
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115 / 9602-4681	Nov. 29, 2017	Nov. 28, 2018
HORN ANTENNA	18 ~ 40 GHz	ETS-LINDGREN	3116 / 00032255	Jan. 18, 2018	Jan. 17, 2019
PRE-AMPLIFIER	0.1 MHz ~ 1.3 GHz	HP	8447D / 2944A06746	Dec. 15, 2017	Dec. 14, 2018
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B / 3008A01995	Dec. 28, 2017	Dec. 27, 2018
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	Mar. 10, 2018	Mar. 09, 2019
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	Sep. 14, 2017	Sep. 13, 2018
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M(L1TCAB014)	Mar. 19, 2018	Mar. 18, 2019
K-TYPE CABLE	UP TO 40 GHz 3 m	HUBER+SUHNER	SF102-46/2*11SK252 / MY2611/2	Mar. 06, 2018	Mar. 05, 2019
K-TYPE CABLE	UP TO 40 GHz, 1 m	HUBER+SUHNER	SF102/2*11SK252 / MY3331/2	Sep. 29, 2017	Sep. 28, 2018
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR	NCR
THERMO-HYGRO	15 – 40 °C, 0- 100% RH	TOP	20-A / 7685	Sep. 20, 2017	Sep. 19, 2018

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

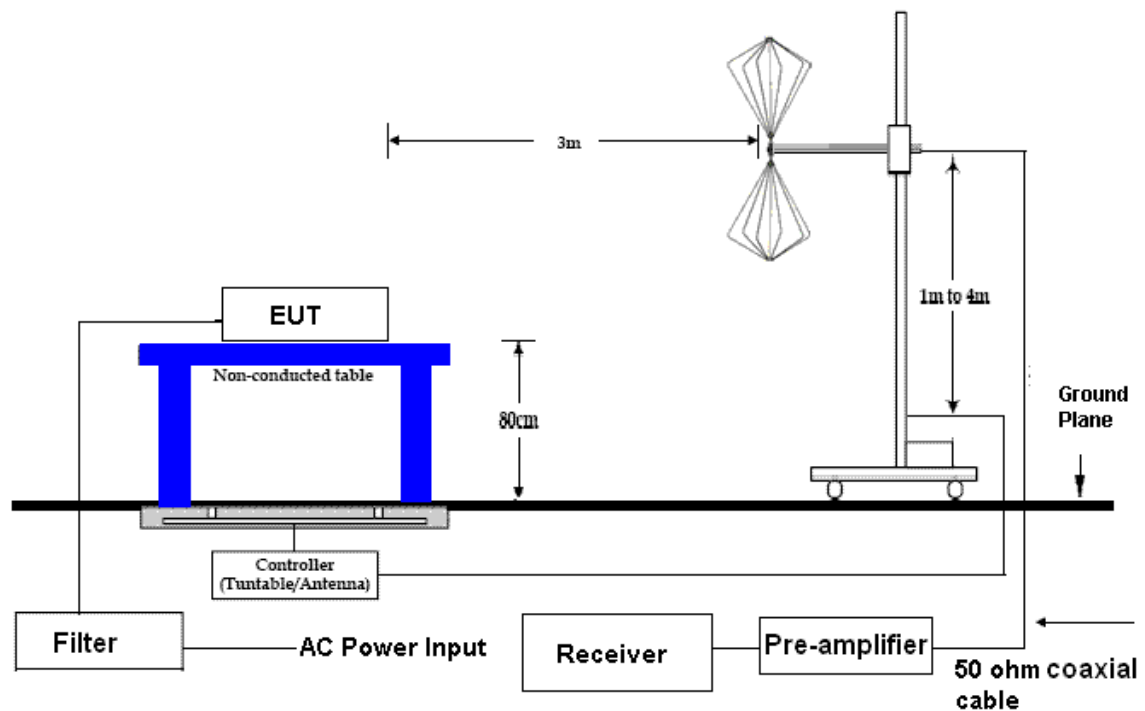


5.3 TEST SET-UP

Below 30MHz

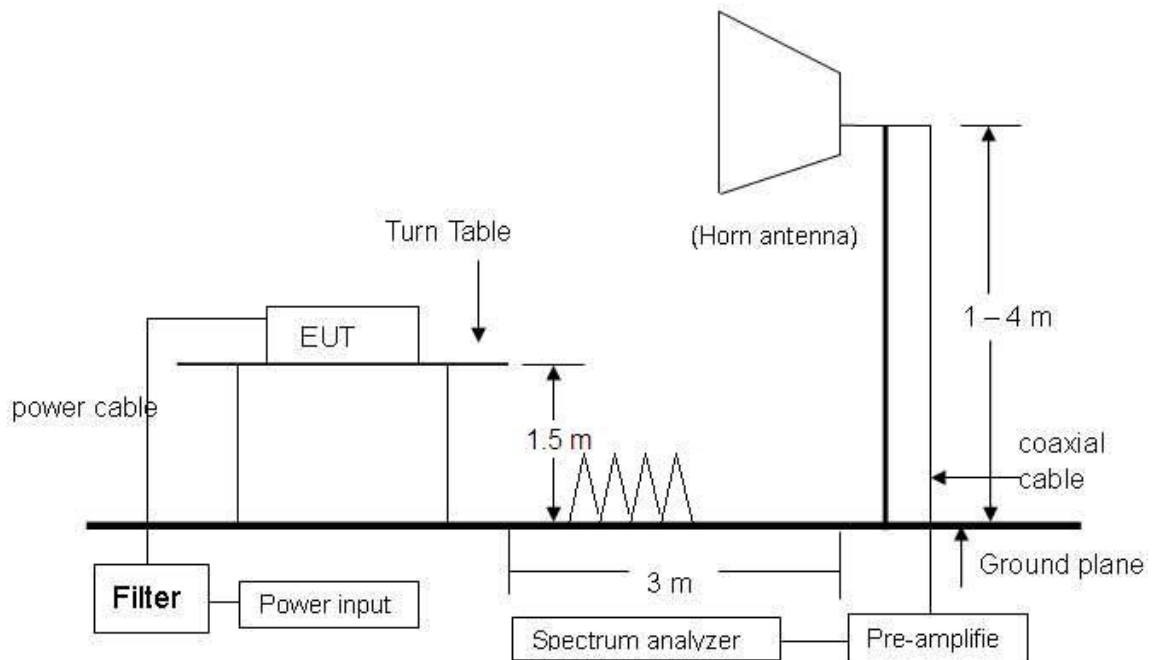


30 MHz ~ 1 GHz





Above 1 GHz



NOTE: The EUT system was put on a wooden table with 1.5m heights above a ground plane. For the actual test configuration, please refer to the photos of testing.

5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.10:2013 and CISPR 22:2011.

The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz.

The frequency spectrum measured started from 9kHz to 30MHz and 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver.

Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver.

The EUT system was operated in all typical methods by users.

The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency.

First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data.

The procedure is referred on the test procedure of SRT LAB.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

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5.5 TEST RESULT**9KHz ~ 30MHz :**

Temperature:	24 °C	Humidity:	68 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	Standby
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.76	0.77	20.15	31.89	52.81	69.98	-17.17
1.42	0.84	20.14	27.36	48.34	64.55	-16.21
2.47	0.92	19.98	11.25	32.16	69.50	-37.34
10.12	1.24	20.81	11.26	33.32	69.50	-36.18
13.78	1.36	21.29	9.43	32.08	69.50	-37.42
26.04	1.65	22.34	8.18	32.17	69.50	-37.33

Temperature:	24 °C	Humidity:	68 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	LINK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.12(F)	0.66	20.29	54.12	75.07	105.73	-30.66
0.76	0.77	20.15	32.14	53.06	69.98	-16.92
1.42	0.84	20.14	26.48	47.46	64.55	-17.09
12.90	1.33	21.18	10.38	32.89	69.50	-36.61
15.00	1.40	21.45	9.91	32.76	69.50	-36.74
24.81	1.60	22.29	8.84	32.73	69.50	-36.77

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Temperature: 24 °C

Humidity: 68 %RH

Frequency Range: 9 kHz – 30 MHz

Measured Distance: 3 m

Receiver Detector: AV.

Tested Mode: TX

Tested By: Dowa

Tested Date: Apr. 03, 2018

Frequency (MHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.17(F)	0.69	20.27	54.37	75.32	102.84	-27.52
0.76	0.77	20.15	33.24	54.16	69.98	-15.82
1.42	0.84	20.14	26.34	47.32	64.55	-17.23
8.53	1.19	20.68	10.87	32.74	69.50	-36.76
14.31	1.37	21.36	10.24	32.98	69.50	-36.52
17.76	1.48	21.80	9.70	32.98	69.50	-36.52

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Temperature:	24 °C	Humidity:	68% RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	Standby
Receiver Detector:	Quasi-peak	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
148.54	2.75	14.70	27.86	35.45	25.05	44	-18.45	259	3.64
222.06	3.21	11.94	27.52	38.48	26.11	46	-19.89	120	3.41
499.40	4.98	19.03	28.46	29.21	24.76	46	-21.24	295	2.54
684.81	6.01	21.51	28.42	28.64	27.75	46	-18.25	71	1.98
747.08	6.39	22.06	28.25	28.35	28.55	46	-17.45	33	1.78
862.14	7.07	23.57	27.83	28.13	30.94	46	-15.06	217	1.43

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
54.27	2.21	10.44	28.25	30.34	14.75	40	-25.25	87	1.08
84.20	2.33	6.84	28.15	34.05	15.06	40	-24.94	36	1.17
664.68	5.91	21.15	28.45	28.74	27.35	46	-18.65	291	2.96
736.36	6.32	21.94	28.28	29.35	29.34	46	-16.66	109	3.19
816.19	6.77	22.75	28.02	27.82	29.32	46	-16.68	75	3.43
922.78	7.45	24.02	27.58	27.68	31.57	46	-14.43	278	3.76

NOTE :

1. Measurement uncertainty is 4.20dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

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Temperature:	24 °C	Humidity:	68% RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	LINK
Receiver Detector:	Quasi-peak	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
57.22	2.23	9.57	28.24	41.58	25.14	40	-14.86	187	3.82
142.56	2.74	14.40	27.89	38.14	27.39	44	-16.11	99	3.65
205.77	3.11	12.20	27.58	45.96	33.69	44	-9.81	238	3.46
223.76	3.22	11.96	27.52	43.52	31.18	46	-14.82	230	3.40
257.49	3.45	12.91	27.42	41.48	30.42	46	-15.58	170	3.30
299.13	3.72	15.01	27.29	39.85	31.29	46	-14.71	164	3.17

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
33.83	1.96	17.78	28.30	35.26	26.69	40	-13.31	139	1.01
56.14	2.23	9.86	28.24	41.31	25.16	40	-14.84	84	1.08
135.87	2.71	14.10	27.92	37.36	26.24	44	-17.26	350	1.33
204.81	3.10	12.24	27.58	38.29	26.05	44	-17.45	195	1.55
516.55	5.08	18.69	28.48	32.93	28.22	46	-17.78	281	2.51
853.24	7.01	23.45	27.87	27.97	30.56	46	-15.44	150	3.55

NOTE :

1. Measurement uncertainty is 4.20dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit

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Temperature:	24 °C	Humidity:	68% RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX
Receiver Detector:	Quasi-peak	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
149.31	2.76	14.75	27.85	35.55	25.21	44	-18.29	163	3.64
223.81	3.22	11.96	27.52	39.21	26.87	46	-19.13	74	3.41
493.47	4.95	18.58	28.43	31.08	26.18	46	-19.82	354	2.57
743.28	6.37	22.00	28.26	29.77	29.88	46	-16.12	118	1.80
777.06	6.55	22.22	28.16	30.14	30.75	46	-15.25	140	1.69
849.17	6.98	23.39	27.88	28.26	30.75	46	-15.25	268	1.46

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
148.81	2.75	14.70	27.86	31.22	20.82	44	-22.68	192	1.37
458.84	4.75	17.83	28.25	28.34	22.68	46	-23.32	26	2.33
687.57	6.03	21.57	28.41	28.69	27.88	46	-18.13	360	3.03
728.74	6.27	21.91	28.31	28.41	28.29	46	-17.71	174	3.16
746.92	6.39	22.04	28.25	28.93	29.11	46	-16.89	140	3.22
938.57	7.55	24.18	27.51	28.14	32.36	46	-13.64	235	3.81

NOTE :

1. Measurement uncertainty is 4.20dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit

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Temperature:	22 °C	Humidity:	69% RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	Standby
Receiver Detector:	PK. or AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1594.04	-32.21	26.52	47.45	37.21	41.76	31.52	74	54	-32.24	-22.48	349	2.32
3669.31	-29.92	31.54	41.13	31.08	42.75	32.70	74	54	-31.25	-21.30	288	1.70
4129.54	-29.51	32.60	40.76	30.63	43.85	33.72	74	54	-30.15	-20.28	325	1.56
4834.71	-28.64	33.47	40.58	30.17	45.41	35.00	74	54	-28.59	-19.00	50	1.35
4999.40	-28.40	33.90	40.44	30.07	45.94	35.57	74	54	-28.06	-18.43	24	1.30
5595.31	-28.40	34.30	40.53	29.53	46.43	35.43	74	54	-27.57	-18.57	306	1.12

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2760.42	-31.02	29.49	42.57	32.32	41.04	30.79	74	54	-32.96	-23.21	117	1.53
3039.75	-30.77	30.45	41.59	30.62	41.27	30.30	74	54	-32.73	-23.70	25	1.61
3669.58	-29.92	31.54	41.07	30.12	42.69	31.74	74	54	-31.31	-22.26	271	1.80
4505.34	-29.12	32.61	40.94	30.13	44.43	33.62	74	54	-29.57	-20.38	61	2.05
5000.16	-28.40	33.90	39.09	28.58	44.59	34.08	74	54	-29.41	-19.92	165	2.20
5135.71	-28.41	34.01	40.26	29.74	45.86	35.34	74	54	-28.14	-18.66	228	2.24

NOTE :

1. Measurement uncertainty is 4.04dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.

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Temperature:	22 °C	Humidity:	69% RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	LINK
Receiver Detector:	PK. or AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3074.04	-30.72	30.49	42.86	32.67	42.63	32.44	74	54	-31.37	-21.56	240	1.88
3595.75	-29.99	31.30	41.30	30.50	42.61	31.81	74	54	-31.39	-22.19	217	1.72
3814.01	-29.80	32.00	41.68	30.78	43.88	32.98	74	54	-30.12	-21.02	294	1.66
4639.45	-28.93	32.96	40.74	30.45	44.77	34.48	74	54	-29.23	-19.52	148	1.41
5000.66	-28.40	33.90	39.51	28.95	45.01	34.45	74	54	-28.99	-19.55	309	1.30
5550.58	-28.41	34.30	40.94	30.21	46.83	36.10	74	54	-27.17	-17.90	197	1.14

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2894.73	-30.91	30.00	42.64	32.10	41.73	31.19	74	54	-32.27	-22.81	340	1.57
3175.25	-30.56	30.61	42.19	32.06	42.24	32.11	74	54	-31.76	-21.89	279	1.65
3765.77	-29.84	31.85	41.91	31.68	43.92	33.69	74	54	-30.08	-20.31	132	1.83
4510.50	-29.12	32.63	41.82	31.19	45.33	34.70	74	54	-28.67	-19.30	195	2.05
5000.11	-28.40	33.90	39.61	29.44	45.11	34.94	74	54	-28.89	-19.06	335	2.20
5625.00	-28.40	34.30	40.50	30.04	46.40	35.94	74	54	-27.60	-18.06	179	2.39

NOTE :

1. Measurement uncertainty is 4.04dB.
2. "": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.

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Temperature:	22 °C	Humidity:	69% RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX
Receiver Detector:	PK. or AV.	Modulation Type:	ASK
Tested By:	Dowa	Tested Date:	Apr. 03, 2018

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2079.61	-31.51	27.99	46.59	35.76	43.07	32.24	74	54	-30.93	-21.76	127	2.18
3215.86	-30.50	30.66	42.17	31.79	42.32	31.94	74	54	-31.68	-22.06	182	1.84
3819.75	-29.80	32.02	40.34	30.12	42.57	32.35	74	54	-31.43	-21.65	44	1.65
4784.91	-28.72	33.34	39.63	29.62	44.26	34.25	74	54	-29.74	-19.75	261	1.36
5000.85	-28.40	33.90	39.12	28.60	44.62	34.10	74	54	-29.38	-19.90	150	1.30
5525.02	-28.42	34.30	39.12	28.68	45.00	34.56	74	54	-29.00	-19.44	31	1.14

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2429.00	-31.27	28.41	46.21	35.44	43.36	32.59	74	54	-30.64	-21.41	67	1.43
3765.85	-29.84	31.85	42.33	31.84	44.34	33.85	74	54	-29.66	-20.15	352	1.83
4435.09	-29.20	32.60	40.61	30.36	44.01	33.76	74	54	-29.99	-20.24	47	2.03
4720.44	-28.81	33.17	41.62	30.81	45.98	35.17	74	54	-28.02	-18.83	120	2.12
4999.90	-28.40	33.90	39.63	29.58	45.13	35.08	74	54	-28.87	-18.92	3	2.20
5539.45	-28.41	34.30	39.95	29.42	45.84	35.31	74	54	-28.16	-18.69	162	2.36

NOTE :

1. Measurement uncertainty is 4.04dB.
2. "※": The Peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.:Cable Loss and Pre-Amplifier Gain)
4. The field strength of other emission frequencies were very low against the limit.
5. (F):The field strength of fundamental frequency.

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6 BANDWIDTH TEST

6.1 LIMIT

99% Occupied Bandwidth for report purpose only.

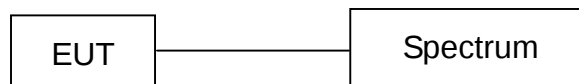
6.2 TEST EQUIPMENT

The following test equipment was used during the test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAY 21, 2018 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

6.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

6.4 TEST PROCEDURE

The EUT was operated in continuous transmission mode or any specific channel.
 Printed out the test result from the spectrum by hard copy function.

6.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.

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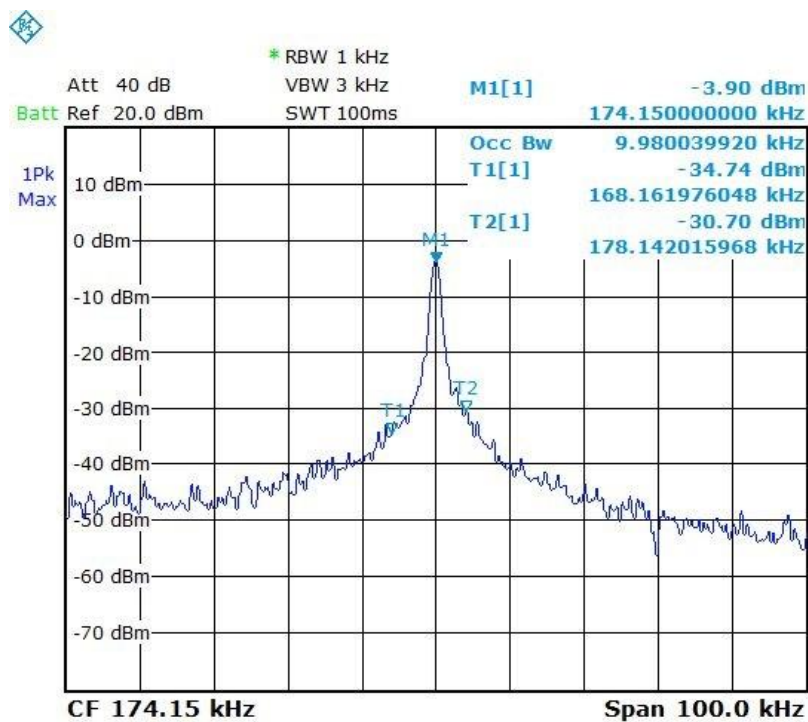
6.6 TEST RESULT

99% Bandwidth :

Temperature:	25°C	Humidity:	68 %RH
Detector:	Peak	Test Mode:	802.11b
RBW:	1 kHz	VBW:	3 kHz
Tested By:	Dowa	Tested Date:	Apr. 29, 2018

Channel Number	Channel Frequency (kHz)	99% Bandwidth (kHz)
CH01	174.15	9.98

CH01 :



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7. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction