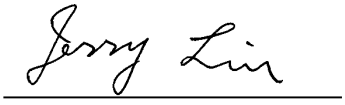
EMC
TEST REPORT

Report No. : EME-030533
Model No. : MWL-34B1
Issued Date : June 16, 2003

Applicant : Microlink Communications Inc.
6F, No. 30, Raykuang Rd., Neihu, Taipei,
Taiwan

Test By : Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
Shiang-Shan District, Hsinchu City, Taiwan

Project Engineer



Jerry Liu

Reviewed By

Elton Chen

Table of Contents

Summary of Tests

Wireless Lan 802.11b adaptor-Model: MWL-34B1
FCC ID: QVZ20020000

Test	Reference	Results
Minimum 6dB Bandwidth test	15.247(a)(2)	Complies
Maximum Output Power test	15.247(b)	Complies
Radiated Spurious Emission test	15.205, 15.209	Complies
Power Spectrum Density test	15.247(d)	Complies
Power Line Conducted Emission test	15.207	Complies

1. General information

1.1 Identification of the EUT

Applicant	: Microlink Communications Inc.
Product	: Wireless Lan 802.11b adaptor
Model No.	: MWL-34B1
FCC ID.	: QVZ20020000
Frequency Range	: 2412~2462 MHz
Channel Number	: 11 Channels
Frequency of Each Channel	: 2412MHz, 2417MHz, 2422MHz, 2427MHz, 2432MHz, 2437MHz, 2442MHz, 2447MHz, 2452MHz, 2457MHz, 2462MHz
Type of Modulation	: CCK (11Mps, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Rated Power	: 5VDC +/- 10%
Power Cord	: N/A
Test Voltage	: 5Vdc from Notebook
Sample Received	: April 10, 2003
Test Date(s)	: April 10, 2003 to June 12, 2003

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

This EUT is a plug and play 32-bit CardBus PCMCIA adapter and offers high-speed wireless connection up to 11Mbps. It complies with the IEEE 802.11b standard and ensures cross vendor interoperability with the greatest range of any Wi-Fi certified products.

We verified the model, AWC-351M, 11WP-612RL, PWC-351R and IWE100-X are identical to MWL-34B1, the difference model to difference brand serves as marketing strategy.

For more detail features, please refer to User's manual as file name “Installation guide.pdf”

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain : 1dBi
Antenna Type : PCB Printed
Connector Type : N/A

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
Notebook	IBM	2658-B7T	AA-GGRFZ	FCC DoC Approved
Printer	HP	C2642A	TH86K1N2ZB	FCC DoC Approved
Modem	Dynalink	V1456VQE	00V230A00051494	FCC DoC Approved

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section §15.205、§15.207、§15.209、§15.247 and ANSI C63.4/1992.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

Settle the EUT into notebook, run the test program “mp8180.exe” under Windows OS, provided by manufacturer.

The EUT was transmitted continuously during the test.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Series No.	Last Cal.Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	825788/014	Feb. 18, 2003
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	825428/005	June 9, 2003
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	100137	July 10, 2002
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30	100186	Oct. 9, 2002
Horn Antenna	EMCO	1GHz~18GHz	3115	9906-5890	Sep. 19, 2002
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170	159	June 20, 2002
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	3111	June 20, 2002
Turn Table	HDGmbH	N/A	DS 420S	420/669/01	N/A
Antenna Tower	HDGmbH	N/A	MA 240	240/573	N/A
Microwave Amplifier	Agilent	2GHz~26.5GHz	8348A	3111A00567	Dec. 20, 2002
4GHz Source RF	HP	9KHz~4GHz	8648D	3847U00403	Sep. 7, 2002
RF Power Meter	Boonton	10kHz~100GHz	4231A	79401	Mar. 25, 2003
Power Sensor	Boonton	30MHz~8GHz	51011-EMC	32482	May 25, 2002

Note:
1. The calibration interval of the above instruments is 12 months.

3. Minimum 6dB Bandwidth test

3.1 Operating environment

Temperature:	23	℃
Relative Humidity:	52	%
Atmospheric Pressure	1023	hPa

3.2 Test setup & procedure

The minimum 6dB bandwidth per FCC §15.247(a)(2) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set at 100kHz, and the SPAN>>RBW. The test was performed at 3 channels (lowest, middle and highest channel). The minimum 6-dB modulation bandwidth is in the following Table.

See Minimum 6dB Bandwidth plot as file name “Minimum 6dB Bandwidth plot.pdf”

3.3 Measured data of Minimum 6dB Bandwidth test results

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit
Low	2411.78	6.77	＞500kHz
Middle	2436.78	7.62	＞500kHz
High	2461.78	6.81	＞500kHz

4. Maximum Output Power test

4.1 Operating environment

Temperature:	22	℃
Relative Humidity:	60	%
Atmospheric Pressure	1023	hPa

4.2 Test setup & procedure

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to spectrum analyzer. The RBW of spectrum analyzer was set to 1MHz, VBW≧RBW. The channel power function would be enable. Power was read directly and cable loss correction (0.5dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

See Maximum Output Power plot as file name “Maximum Output Power plot CH1, CH6 and CH11.pdf”

4.3 Measured data of Maximum Output Power test results

Channel	Frequency (MHz)	C.B.L. (dB)	Reading (dBm)	Power Output		Limit (W)
				(dBm)	(mW)	
Lowest	2412	0.5	19	19.5	89.13	1
Middle	2437	0.5	18.76	19.26	84.33	1
Highest	2462	0.5	18.66	19.16	82.41	1

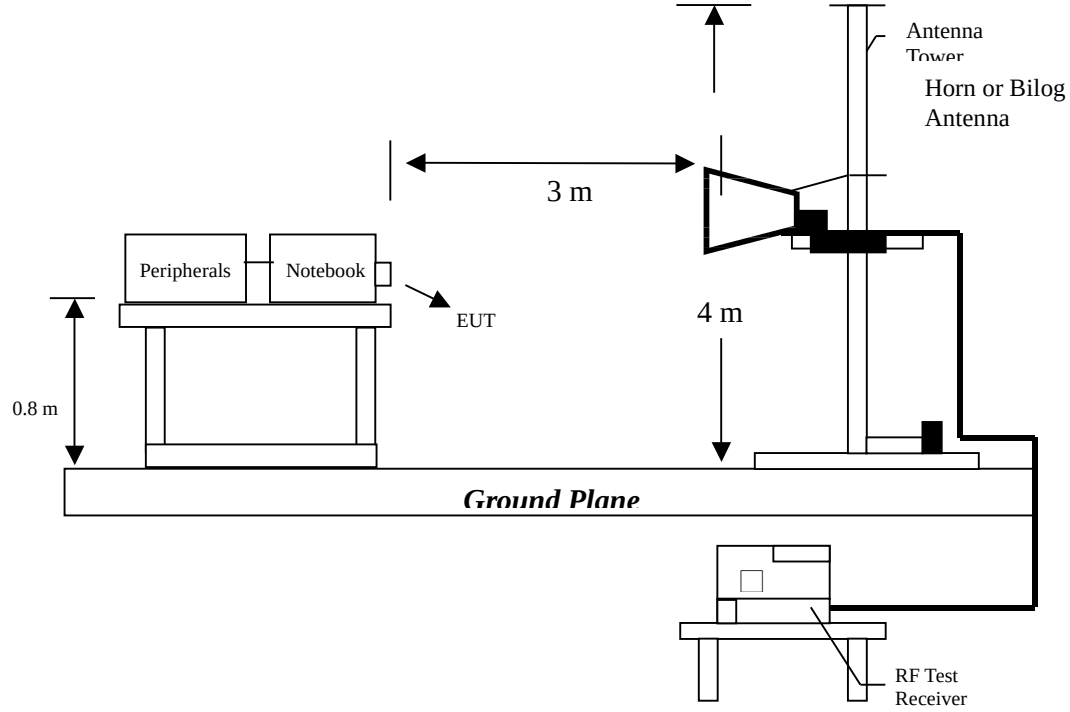
5. Radiated Emission test

5.1 Operating environment

Temperature:	23	℃
Relative Humidity:	52	%
Atmospheric Pressure	1023	hPa

5.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emissions were invested cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report.
The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

The EUT configuration please refer to the "Spurious set-up photo.pdf".

5.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dB μV/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.
Expanded uncertainty (k=2) of radiated emission measurement is ±4.98 dB.
Expanded uncertainty (k=2) of conducted emission measurement is ±2.02 dB.

5.4 Radiated spurious emission test data

5.4.1 Measurement results: frequencies equal to or less than 1 GHz

EUT : MWL-34B1
Test Condition : Tx at low channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
284.10000	QP	V	14.07	23.13	37.20	46.00	-8.80
406.40000	QP	V	16.96	21.24	38.20	46.00	-7.80
484.00000	QP	V	18.61	21.29	39.90	46.00	-6.10
571.30000	QP	V	20.41	18.79	39.20	46.00	-6.80
660.50000	QP	V	21.70	19.30	41.00	46.00	-5.00
747.80000	QP	V	23.32	16.48	39.80	46.00	-6.20
284.10000	QP	H	14.07	28.93	43.00	46.00	-3.00
484.00000	QP	H	18.61	22.99	41.60	46.00	-4.40
571.30000	QP	H	20.41	19.39	39.80	46.00	-6.20
660.50000	QP	H	21.70	20.30	42.00	46.00	-4.00
747.80000	QP	H	23.32	22.13	45.45	46.00	-0.55
835.10000	QP	H	24.29	18.61	42.90	46.00	-3.10

Remark:
1.Corrected Level = Reading Level + Correction Factor
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at middle channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
227.90000	QP	V	11.82	22.18	34.00	46.00	-12.00
284.10000	QP	V	14.07	18.73	32.80	46.00	-13.20
394.70000	QP	V	16.67	18.83	35.50	46.00	-10.50
484.00000	QP	V	18.61	18.09	36.70	46.00	-9.30
660.50000	QP	V	21.70	18.60	40.30	46.00	-5.70
747.80000	QP	V	23.32	18.28	41.60	46.00	-4.40
284.10000	QP	H	14.07	30.33	44.40	46.00	-1.60
400.50000	QP	H	16.96	27.04	44.00	46.00	-2.00
484.00000	QP	H	18.61	20.39	39.00	46.00	-7.00
660.50000	QP	H	21.70	20.80	42.50	46.00	-3.50
747.80000	QP	H	23.32	22.36	45.68	46.00	-0.32
835.10000	QP	H	24.29	17.91	42.20	46.00	-3.80

Remark:
1.Corrected Level = Reading Level + Correction Factor
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at high channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
227.90000	QP	V	11.82	23.98	35.80	46.00	-10.20
284.10000	QP	V	14.07	20.13	34.20	46.00	-11.80
484.00000	QP	V	18.61	19.89	38.50	46.00	-7.50
571.30000	QP	V	20.41	16.19	36.60	46.00	-9.40
660.50000	QP	V	21.70	18.50	40.20	46.00	-5.80
747.80000	QP	V	23.32	17.88	41.20	46.00	-4.80
284.10000	QP	H	14.07	30.23	44.30	46.00	-1.70
484.00000	QP	H	18.61	20.29	38.90	46.00	-7.10
660.50000	QP	H	21.70	20.40	42.10	46.00	-3.90
747.80000	QP	H	23.32	22.41	45.73	46.00	-0.27
835.10000	QP	H	24.29	16.41	40.70	46.00	-5.30
924.30000	QP	H	25.24	12.96	38.20	46.00	-7.80

Remark:
1.Corrected Level = Reading Level + Correction Factor
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

5.4.2 Measurement results: frequency above 1GHz

EUT : MWL-34B1
Test Condition : Tx at low channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4824	PK	V	32.496	35.47	50.126	53.1	74	-20.9
4824	AV	V	32.496	35.47	35.926	38.9	54	-15.1
7236	PK	V	34.32	38.42	52.34	56.44	74	-17.56
7236	AV	V	34.32	38.42	38.9	43	54	-11
9648	PK	V	35.808	-	-	-	-	-
9648	AV	V	35.808	-	-	-	-	-
12060	PK	V	35.4	-	-	-	-	-
12060	AV	V	35.4	-	-	-	-	-
14472	PK	V	34.754	-	-	-	-	-
14472	AV	V	34.754	-	-	-	-	-
16884	PK	V	35.346	-	-	-	-	-
16884	AV	V	35.346	-	-	-	-	-
19296	PK	V	34.488	-	-	-	-	-
19296	AV	V	34.488	-	-	-	-	-
21708	PK	V	34.588	-	-	-	-	-
21708	AV	V	34.588	-	-	-	-	-
24120	PK	V	35.52	-	-	-	-	-
24120	AV	V	35.52	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at low channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4824	PK	H	32.496	-	-	-	-	-
4824	AV	H	32.496	-	-	-	-	-
7236	PK	H	34.32	38.42	55.3	59.4	74	-14.6
7236	AV	H	34.32	38.42	41.81	45.91	54	-8.09
9648	PK	H	35.808	-	-	-	-	-
9648	AV	H	35.808	-	-	-	-	-
12060	PK	H	35.4	-	-	-	-	-
12060	AV	H	35.4	-	-	-	-	-
14472	PK	H	34.754	-	-	-	-	-
14472	AV	H	34.754	-	-	-	-	-
16884	PK	H	35.346	-	-	-	-	-
16884	AV	H	35.346	-	-	-	-	-
19296	PK	H	34.488	-	-	-	-	-
19296	AV	H	34.488	-	-	-	-	-
21708	PK	H	34.588	-	-	-	-	-
21708	AV	H	34.588	-	-	-	-	-
24120	PK	H	35.52	-	-	-	-	-
24120	AV	H	35.52	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at middle channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4874	PK	V	32.624	-	-	-	-	-
4874	AV	V	32.624	-	-	-	-	-
7311	PK	V	34.32	38.42	54.72	58.82	74	-15.18
7311	AV	V	34.32	38.42	41.84	45.94	54	-8.06
9748	PK	V	34.32	-	-	-	-	-
9748	AV	V	34.32	-	-	-	-	-
12185	PK	V	35.808	-	-	-	-	-
12185	AV	V	35.808	-	-	-	-	-
14622	PK	V	35.4	-	-	-	-	-
14462	AV	V	35.4	-	-	-	-	-
17059	PK	V	34.856	-	-	-	-	-
17059	AV	V	34.754	-	-	-	-	-
19496	PK	V	35.29	-	-	-	-	-
19496	AV	V	35.29	-	-	-	-	-
21933	PK	V	34.401	-	-	-	-	-
21933	AV	V	34.401	-	-	-	-	-
24370	PK	V	34.644	-	-	-	-	-
24370	AV	V	34.644	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at middle channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4874	PK	H	32.624	-	-	-	-	-
4874	AV	H	32.624	-	-	-	-	-
7311	PK	H	34.32	38.42	57.38	61.48	74	-12.52
7311	AV	H	34.32	38.42	44.4	48.5	54	-5.5
9748	PK	H	34.32	-	-	-	-	-
9748	AV	H	34.32	-	-	-	-	-
12185	PK	H	35.808	-	-	-	-	-
12185	AV	H	35.808	-	-	-	-	-
14622	PK	H	35.4	-	-	-	-	-
14462	AV	H	35.4	-	-	-	-	-
17059	PK	H	34.856	-	-	-	-	-
17059	AV	H	34.754	-	-	-	-	-
19496	PK	H	35.29	-	-	-	-	-
19496	AV	H	35.29	-	-	-	-	-
21933	PK	H	34.401	-	-	-	-	-
21933	AV	H	34.401	-	-	-	-	-
24370	PK	H	34.644	-	-	-	-	-
24370	AV	H	34.644	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at high channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4924	PK	H	32.624	-	-	-	-	-
4924	AV	H	32.624	-	-	-	-	-
7386	PK	V	34.32	38.42	54.34	58.44	74	-15.56
7386	AV	V	34.32	38.42	41.83	45.93	54	-8.07
9848	PK	H	34.32	-	-	-	-	-
9848	AV	H	34.32	-	-	-	-	-
12310	PK	H	35.919	-	-	-	-	-
12310	AV	H	35.919	-	-	-	-	-
14772	PK	H	35.315	-	-	-	-	-
14772	AV	H	35.315	-	-	-	-	-
17234	PK	H	34.856	-	-	-	-	-
17234	AV	H	34.856	-	-	-	-	-
19696	PK	H	35.234	-	-	-	-	-
19696	AV	H	35.234	-	-	-	-	-
22158	PK	H	34.314	-	-	-	-	-
22158	AV	H	34.314	-	-	-	-	-
24620	PK	H	34.7	-	-	-	-	-
24620	AV	H	34.7	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

EUT : MWL-34B1
Test Condition : Tx at high channel

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)
4924	PK	H	32.624	-	-	-	-	-
4924	AV	H	32.624	-	-	-	-	-
7386	PK	H	34.32	38.42	57.79	61.89	74	-12.11
7386	AV	H	34.32	38.42	44.53	48.63	54	-5.37
9848	PK	H	34.32	-	-	-	-	-
9848	AV	H	34.32	-	-	-	-	-
12310	PK	H	35.919	-	-	-	-	-
12310	AV	H	35.919	-	-	-	-	-
14772	PK	H	35.315	-	-	-	-	-
14772	AV	H	35.315	-	-	-	-	-
17234	PK	H	34.856	-	-	-	-	-
17234	AV	H	34.856	-	-	-	-	-
19696	PK	H	35.234	-	-	-	-	-
19696	AV	H	35.234	-	-	-	-	-
22158	PK	H	34.314	-	-	-	-	-
22158	AV	H	34.314	-	-	-	-	-
24620	PK	H	34.7	-	-	-	-	-
24620	AV	H	34.7	-	-	-	-	-

Remark:
1.Corrected Level = Reading Level + Correction Factor－Preamp
2.Correction Factor = Antenna Factor + Cable Loss
3. “-“ means the emission is below the noise floor.

6. Power Spectrum Density test

6.1 Operating environment

Temperature:	22	℃
Relative Humidity:	53	%
Atmospheric Pressure	1023	hPa

6.2 Test setup & procedure

The power spectrum density per FCC §15.247(d) was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 3kHz, the video bandwidth set at 10kHz, a span of 1.5 MHz, and the sweep time set at 500 seconds. Power Density was read directly and cable loss (0.5dB)/external attenuator (3dB) correction was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel). The Power Spectral Density measured result is in the following table.

See Power Spectrum Density plot as file name “Power Spectrum Density plot.pdf”

6.3 Measured data of Power Spectrum Density test results

Channel	Frequency (MHz)	Measured level (dBm)	Limit (dBm)
Low	2412	-9.34	8
Middle	2437	-9.37	8
High	2462	-9.65	8

7. Emission on the band edge §FCC 15.247(C)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

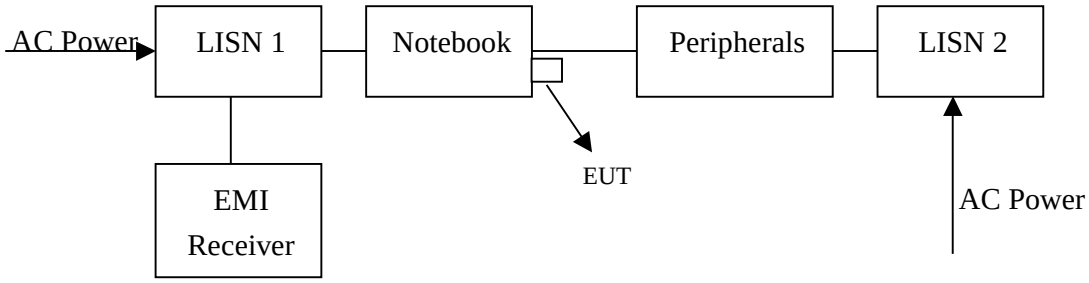
See band-edge plot as file name “Band-edge plot.pdf”.

8. Power Line Conducted Emission test §FCC 15.207

8.1 Operating environment

Temperature: 24 ℃
Relative Humidity: 53 %
Atmospheric Pressure 1023 hPa

8.2 Test setup & procedure



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/1992 on conducted measurement. The AC power conducted emissions was invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz. (15.207 paragraph)

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

See Power Line Conducted Emission plot as file name “Power Line Conducted Emission plot.pdf”.

Emission Limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

8.3 Power Line Conducted Emission test data

(1) Line

EUT : MWL-34B1

Test Condition : Tx at low channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	58.80	66.00	43.20	56.00	-7.20	-12.80
0.87800	43.60	56.00	40.60	46.00	-12.40	-5.40
1.74200	42.40	56.00	39.20	46.00	-13.60	-6.80
2.09400	41.10	56.00	36.60	46.00	-14.90	-9.40
2.51800	40.50	56.00	35.30	46.00	-15.50	-10.70
3.34200	40.00	56.00	35.00	46.00	-16.00	-11.00

(2) Neutral

EUT : MWL-34B1

Test Condition : Tx at low channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	56.80	66.00	32.90	56.00	-9.20	-23.10
0.56600	37.20	56.00	28.70	46.00	-18.80	-17.30
0.67000	38.60	56.00	31.20	46.00	-17.40	-14.80
0.99000	35.50	56.00	27.90	46.00	-20.50	-18.10
1.11000	36.30	56.00	29.50	46.00	-19.70	-16.50
2.16600	36.20	56.00	30.20	46.00	-19.80	-15.80

Remark:

1. 1. The reading value included cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81.
   Expanded uncertainty (k=2) of conducted emission measurement is ±2.6 dB.

(1) Line

EUT : MWL-34B1

Test Condition : Tx at middle channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	59.20	66.00	37.10	56.00	-6.80	-18.90
0.46200	41.90	56.66	30.60	46.66	-14.76	-16.06
0.61400	37.60	56.00	30.80	46.00	-18.40	-15.20
0.69400	37.90	56.00	29.90	46.00	-18.10	-16.10
0.78200	37.40	56.00	30.50	46.00	-18.60	-15.50
1.35000	36.10	56.00	30.80	46.00	-19.90	-15.20

(2) Neutral

EUT : MWL-34B1

Test Condition : Tx at middle channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	57.00	66.00	34.80	56.00	-9.00	-21.20
0.59000	33.90	56.00	26.40	46.00	-22.10	-19.60
1.00600	34.50	56.00	27.30	46.00	-21.50	-18.70
1.12600	35.90	56.00	30.00	46.00	-20.10	-16.00
1.42200	35.60	56.00	29.50	46.00	-20.40	-16.50
1.68600	36.00	56.00	30.10	46.00	-20.00	-15.90

Remark:

1. 1. The reading value included cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81.
   Expanded uncertainty (k=2) of conducted emission measurement is ±2.6 dB.

(1) Line

EUT : MWL-34B1

Test Condition : Tx at high channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	58.40	66.00	35.40	56.00	-7.60	-20.60
0.47800	41.10	56.37	29.90	46.37	-15.27	-16.47
0.72600	40.20	56.00	29.20	46.00	-15.80	-16.80
1.16600	37.00	56.00	30.70	46.00	-19.00	-15.30
1.20600	37.30	56.00	31.60	46.00	-18.70	-14.40
1.29400	36.70	56.00	30.90	46.00	-19.30	-15.10

(2) Neutral

EUT : MWL-34B1

Test Condition : Tx at high channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.15000	56.10	66.00	32.50	56.00	-9.90	-23.50
0.48600	38.50	56.24	26.30	46.24	-17.74	-19.94
0.72600	36.70	56.00	26.40	46.00	-19.30	-19.60
1.07800	34.90	56.00	27.30	46.00	-21.10	-18.70
1.31000	35.60	56.00	28.60	46.00	-20.40	-17.40
1.45400	35.70	56.00	28.40	46.00	-20.30	-17.60

Remark:

1. 1. The reading value included cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81.
   Expanded uncertainty (k=2) of conducted emission measurement is ±2.6 dB.