FCC 47 CFR PART 15 SUBPART B TEST REPORT

for

LE910-NVG

MODEL:LE910-NVG, LE910-SVG

Test Report Number:
T140415W01-D

Issued for

Telit Communications S.p.A.
Via Stazione di Prosecco 5/B
34010 Sgonico, Trieste - Italy.

Issued By:

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
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Issued Date: June 19, 2014

Testing Laboratory
1309

ACCREDITED
TESTING CERT #0824.01

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 19, 2014	Initial Issue	ALL	Doris Chu

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1 TEST RESULT CERTIFICATION

Product:	LE910-NVG
Model:	LE910-NVG, LE910-SVG
Brand:	Telit
Applicant:	**Telit Communications S.p.A.** Via Stazione di Prosecco 5/B 34010 Sgonico, Trieste - Italy
Manufacturer:	**Telit Communications S.p.A.** Via Stazione di Prosecco 5/B 34010 Sgonico, Trieste - Italy
Tested:	May 10 ~ June 19, 2014
Test Voltage:	120Vac, 60Hz

EMISSION			
Standard	**Item**	**Result**	**Remarks**
FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 5-2012 ANSI C63.4-2009	Conducted (Power Port)	PASS	Meet Class B limit
	Radiated	PASS	Meet Class B limit

Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
2. The information of measurement uncertainty is available upon the customer's request.

Deviation from Applicable Standard
None

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Gary Wu
Section Manager

Reviewed by:

Angel Cheng
Section Manager

2 EUT DESCRIPTION

Product	LE910-NVG
Brand Name	Telit
Model	LE910-NVG, LE910-SVG
Applicant	Telit Communications S.p.A.
Identify Number	T140415W01
Received Date	April 15, 2014
EUT Power Rating	DC 3.8V powered from Host device.

Note:

1. *Client consigns only one sample to test (model number: LE910-NVG). Therefore, the testing Lab. just guarantees the unit, which has been tested.*
2. *Difference of the two model numbers (list on this report) is identical, please see as below:*

Model Number	***Difference***
LE910-NVG	*SVG is the same as NVG but with 3G technology disabled by SW. Their HW is identical*
LE910-SVG	

I/O Port

I/O PORT TYPES	Q'TY	TESTED WITH
1). Single Port	1	1
2). SIM Slot	1	1

3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

1. The following test modes were scanned during the preliminary test:

Pre-Test Mode
Mode 1 : WCDMA Band II
Mode 2 : WCDMA Band V
Mode 3 : LTE Band IV
Mode 4 : LTE Band XIII

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Conducted Emission	**Mode 1 ~ 4**
	Radiated Emission	**Mode 1 ~ 4**

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT SYSTEM OPERATION

1 Setup the EUT and simulators as shown on 4.2.

2 Turn on the power of all equipment.

3 Turn on the Hyper terminal and Enter the script.

4 The EUT will receive the RF signal source and sustained action.

5 Adjust to the test mode, and begin the test.

Note: *Test program is self-repeating throughout the test.*

4 SETUP OF EQUIPMENT UNDER TEST

4.1. DESCRIPTION OF SUPPORT UNITS

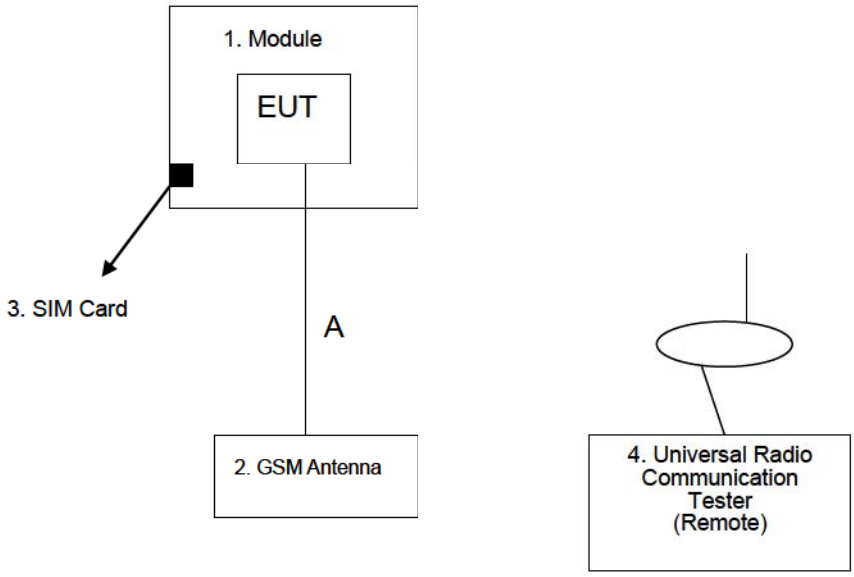
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Trade Name	Model No.	Serial No.	FCC ID / BSMI ID	Power Cord
1.	Module	N/A	N/A	N/A	N/A	N/A
2.	Antenna	N/A	N/A	N/A	N/A	N/A
3.	SIM Card	N/A	N/A	N/A	N/A	N/A
4.	Universal Radio Communication Tester (Remote)	R & S	CMU 200	N/A	N/A	Non-shielded 1.8m

No.	Cable Name	Unit	Shielded	Length	With Core
(A)	Antenna Cable	1	☐Shielded, ■Non	1.8 m	☐With Core×, ■Non

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2. CONFIGURATION OF SYSTEM UNDER TEST



5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at:

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

☒ No.139, Wugong Rd., Wugu Dist., New Taipei City 24891, Taiwan (R.O.C.)

☐ No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, TAIWAN, R.O.C.

☐ No.163-1, Jhongsheng Rd., Sindian City, Taipei County 23151, Taiwan.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan	TAF (TAF 1309)
USA	A2LA (0824.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada (3M Semi Anechoic Chamber: IC 2324G-1 / IC 2324G-2 / 2324J-1 / 2324J-2 to perform)
Norway	Nemko
Japan	VCCI 966 Chamber C: Radiated emissions: 30 MHz -1000 MHz: R-3282 / Above 1GHz: G-146 10M Chamber: Radiated emissions: 30 MHz -1000 MHz: R-3283 / Above 1GHz: G-147 Conducted Emission B: C-3700 / T-1839
USA	FCC (3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements)

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	±1.2575 dB
Radiated emissions	30~200MHz	±3.9163 dB
	200~1000MHz	±3.9030 dB
	Above 1GHz	±2.5208 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22:2008, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

6 CONDUCTED EMISSION MEASUREMENT

6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	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 0.15 to 0.50 MHz.
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.2. TEST INSTRUMENTS

Conducted Emission Room #B				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESCI	101073	07/30/2014
LISN	R&S	ENV216	101054	06/04/2015
LISN	EMCO	3825/2	9106-1809	07/02/2014
ISN	FCC	FCC-TLISN-T2-02-09	100105	07/29/2014
ISN	FCC	FCC-TLISN-T4-02-09	20395	05/22/2015
ISN	FCC	FCC-TLISN-T8-02-09	100106	07/30/2014
Capacitive Voltage Probe	FCC	F-CVP-1	100185	03/23/2015
Test S/W	CCS-3A1-CE			

Note:
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

6.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

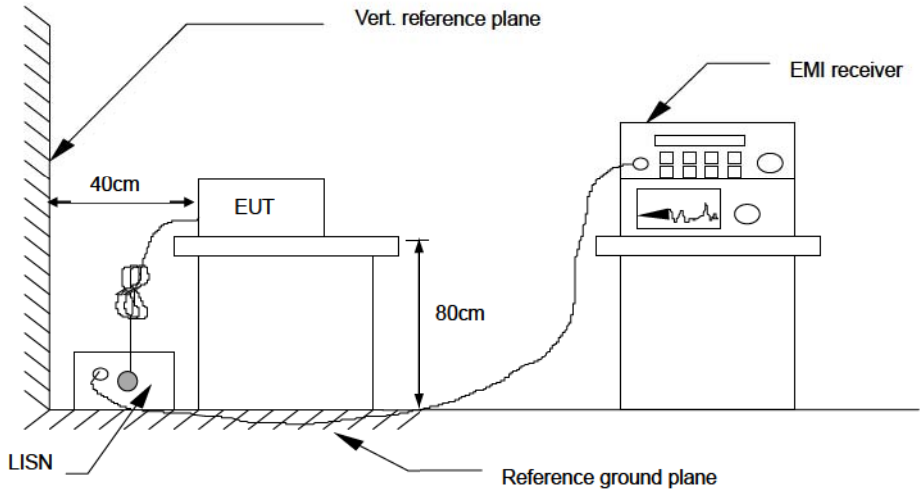
Procedure of Preliminary Test

- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT installed by AC 120VAC/60Hz main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.
- All support equipment power by from a second LISN.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.

6.4. TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.5. DATA SAMPLE:

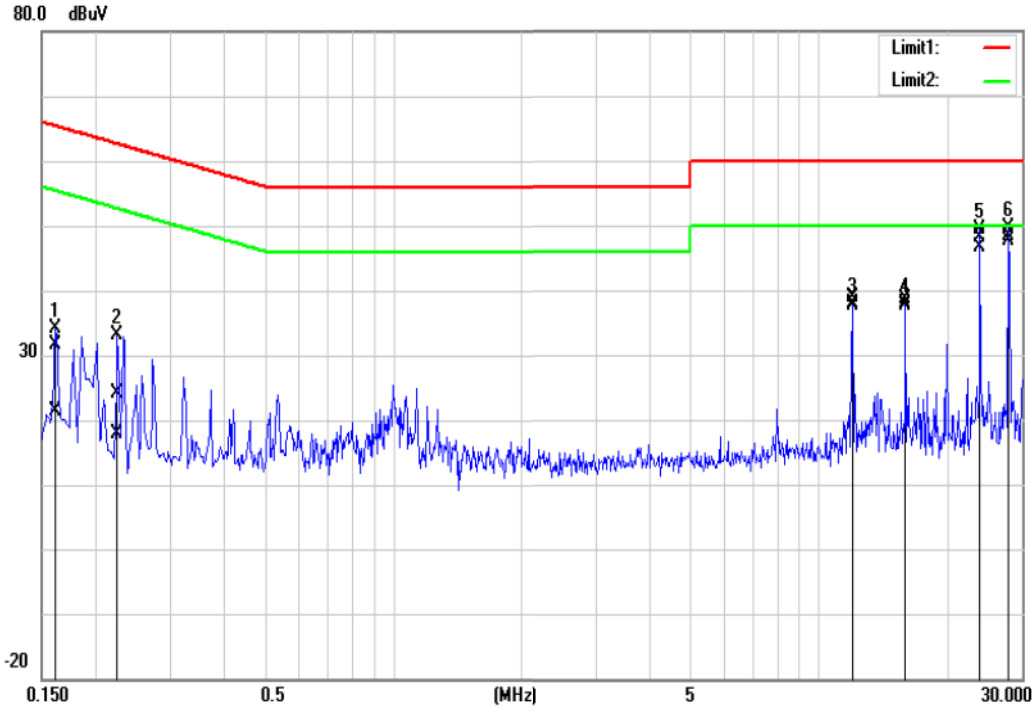
Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correctrion factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak. limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
x.xx	43.95	33.00	10.00	53.95	43.00	56.00	46.00	-2.05	-3.00	Pass

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB
Correction Factor (dB) = LISN Factor + Cable Loss
Result (dBuV) = Raw reading converted to dBuV and CF added
Limit (dBuV) = Limit stated in standard
Margin (dB) = Result (dBuV) – Limit (dBuV)

6.6. TEST RESULTS

CCS Conduction Test

Model No.	LE910-NVG	Test Date	2014/6/19
Environmental Conditions	24°C, 50% RH	Test Mode	Mode 1
Tested by	Moore Cheng	Line	L1

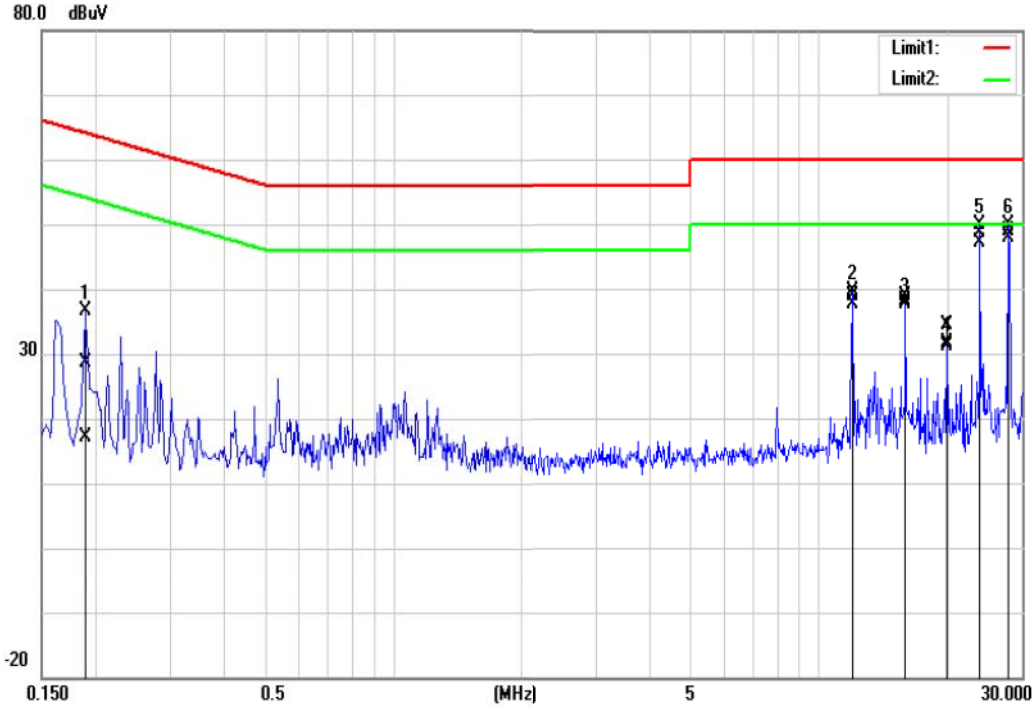


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1620	22.05	11.80	9.66	31.71	21.46	65.36	55.36	-33.65	-33.90	Pass
2	0.2266	14.46	8.30	9.62	24.08	17.92	62.57	52.57	-38.49	-34.65	Pass
3	12.0020	28.94	27.66	9.98	38.92	37.64	60.00	50.00	-21.08	-12.36	Pass
4	16.0020	28.60	27.60	10.00	38.60	37.60	60.00	50.00	-21.40	-12.40	Pass
5	24.0020	38.21	36.63	9.97	48.18	46.60	60.00	50.00	-11.82	-3.40	Pass
6*	28.0020	38.57	37.77	9.92	48.49	47.69	60.00	50.00	-11.51	-2.31	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	LE910-NVG	**Test Date**	2014/6/19
Environmental Conditions	24°C, 50% RH	**Test Mode**	Mode 1
Tested by	Moore Cheng	**Line**	L2

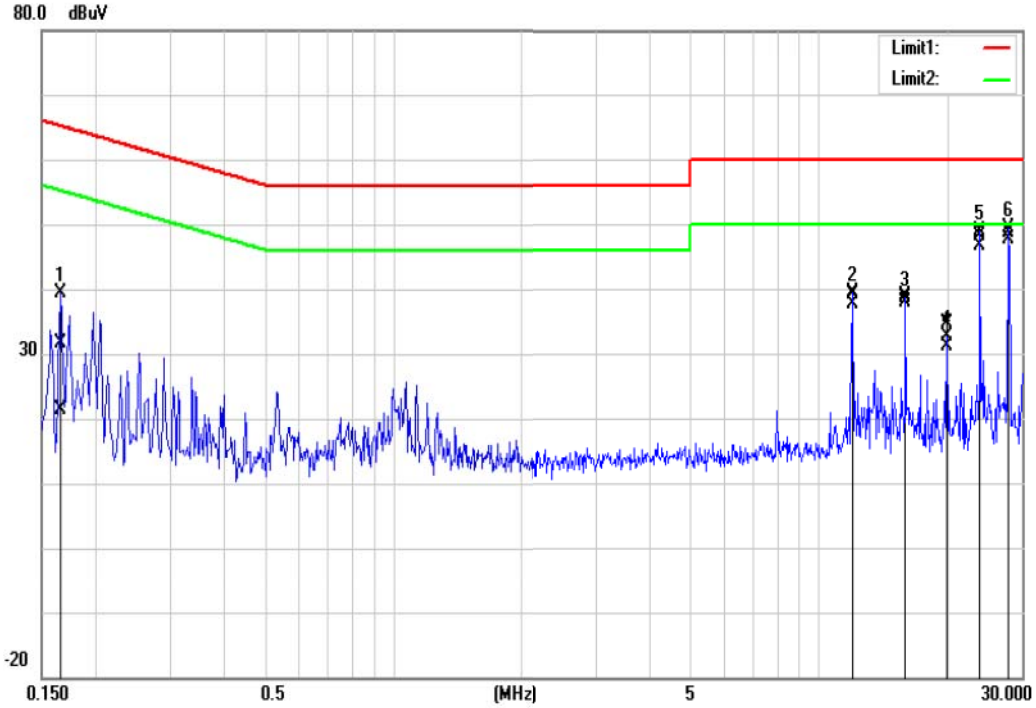


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1900	18.86	7.53	9.68	28.54	17.21	64.03	54.04	-35.49	-36.83	Pass
2	12.0020	28.92	27.69	10.02	38.94	37.71	60.00	50.00	-21.06	-12.29	Pass
3	16.0020	28.87	27.98	10.04	38.91	38.02	60.00	50.00	-21.09	-11.98	Pass
4	20.0020	24.43	21.12	10.05	34.48	31.17	60.00	50.00	-25.52	-18.83	Pass
5	24.0020	38.47	37.00	10.05	48.52	47.05	60.00	50.00	-11.48	-2.95	Pass
6*	28.0020	38.95	37.82	10.05	49.00	47.87	60.00	50.00	-11.00	-2.13	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	LE910-NVG	Test Date	2014/6/19
Environmental Conditions	24°C, 50% RH	Test Mode	Mode 2
Tested by	Moore Cheng	Line	L1

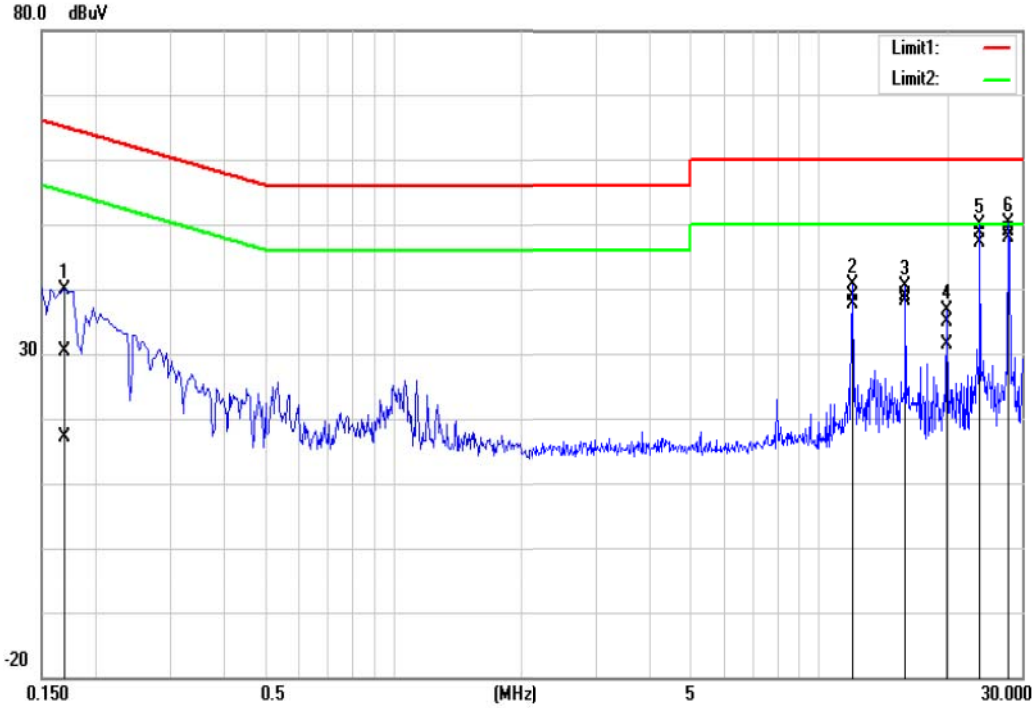


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1660	22.01	11.71	9.65	31.66	21.36	65.15	55.16	-33.49	-33.80	Pass
2	12.0020	29.06	27.65	9.98	39.04	37.63	60.00	50.00	-20.96	-12.37	Pass
3	16.0020	28.82	27.85	10.00	38.82	37.85	60.00	50.00	-21.18	-12.15	Pass
4	20.0020	24.52	21.07	10.03	34.55	31.10	60.00	50.00	-25.45	-18.90	Pass
5	24.0020	38.15	36.63	9.97	48.12	46.60	60.00	50.00	-11.88	-3.40	Pass
6*	28.0020	38.69	37.76	9.92	48.61	47.68	60.00	50.00	-11.39	-2.32	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	LE910-NVG	Test Date	2014/6/19
Environmental Conditions	24°C, 50% RH	Test Mode	Mode 2
Tested by	Moore Cheng	Line	L2

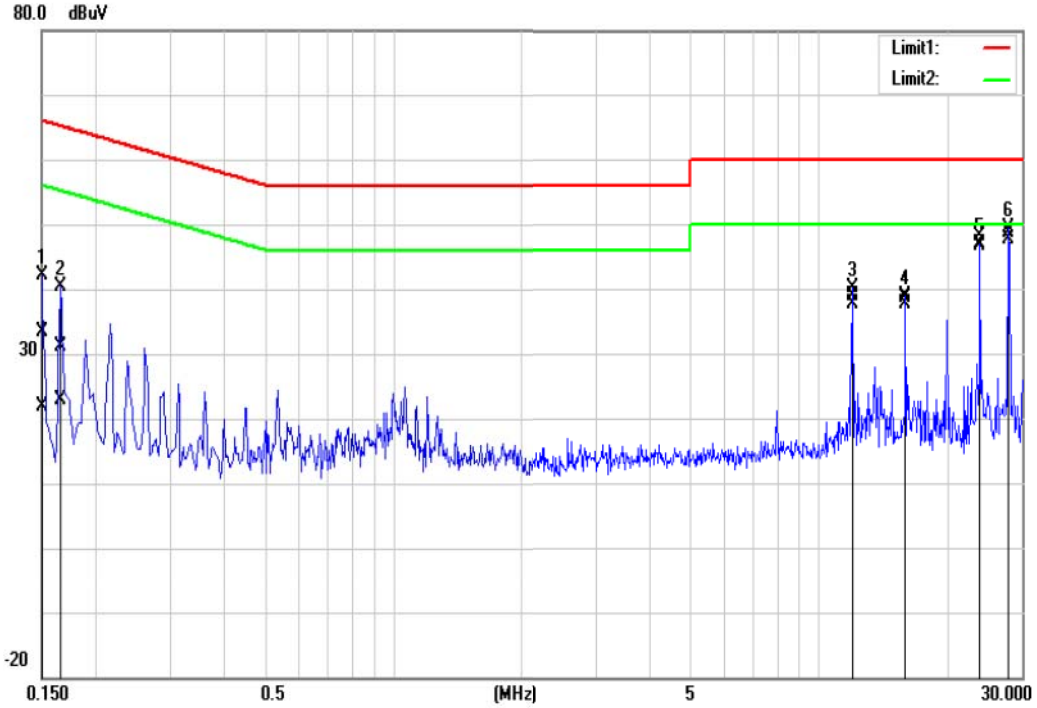


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1700	20.59	7.34	9.70	30.29	17.04	64.96	54.96	-34.67	-37.92	Pass
2	12.0020	28.94	27.62	10.02	38.96	37.64	60.00	50.00	-21.04	-12.36	Pass
3	16.0020	28.78	28.00	10.04	38.82	38.04	60.00	50.00	-21.18	-11.96	Pass
4	20.0020	24.79	21.38	10.05	34.84	31.43	60.00	50.00	-25.16	-18.57	Pass
5	24.0020	38.58	37.00	10.05	48.63	47.05	60.00	50.00	-11.37	-2.95	Pass
6*	28.0020	38.90	37.89	10.05	48.95	47.94	60.00	50.00	-11.05	-2.06	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	LE910-NVG	**Test Date**	2014/6/19
Environmental Conditions	24°C, 50% RH	**Test Mode**	Mode 3
Tested by	Moore Cheng	**Line**	L1

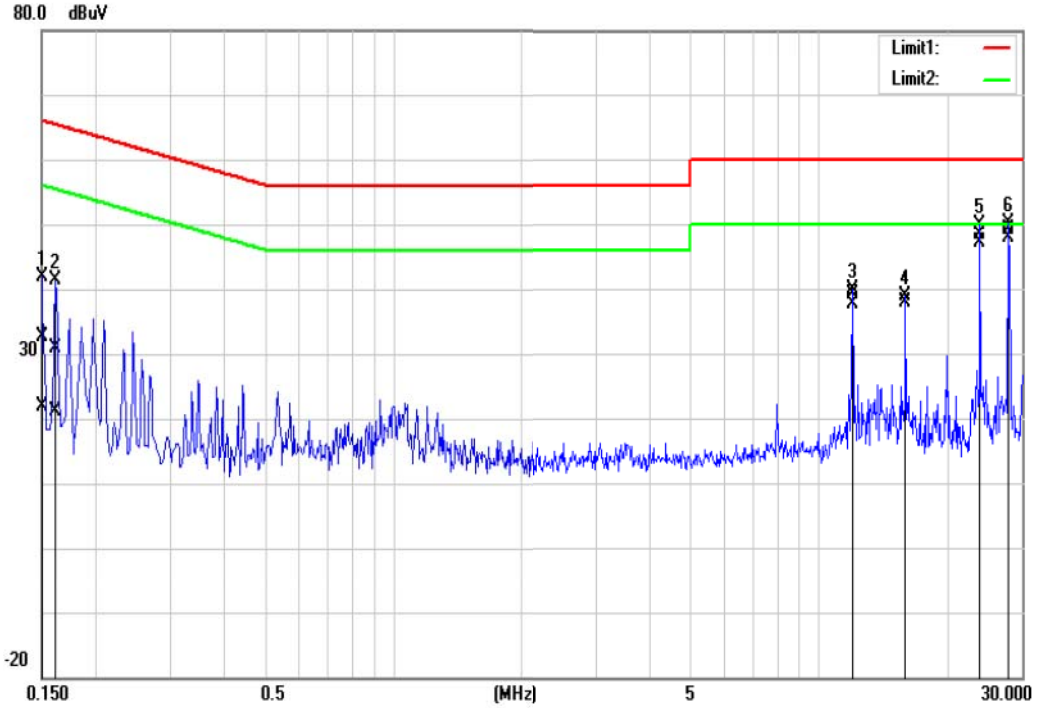


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1500	23.64	12.30	9.67	33.31	21.97	65.99	56.00	-32.68	-34.03	Pass
2	0.1660	21.36	13.14	9.65	31.01	22.79	65.15	55.16	-34.14	-32.37	Pass
3	12.0020	28.89	27.66	9.98	38.87	37.64	60.00	50.00	-21.13	-12.36	Pass
4	16.0020	28.58	27.61	10.00	38.58	37.61	60.00	50.00	-21.42	-12.39	Pass
5	24.0020	38.07	36.65	9.97	48.04	46.62	60.00	50.00	-11.96	-3.38	Pass
6*	28.0020	38.70	37.77	9.92	48.62	47.69	60.00	50.00	-11.38	-2.31	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	LE910-NVG	**Test Date**	2014/6/19
Environmental Conditions	24°C, 50% RH	**Test Mode**	Mode 3
Tested by	Moore Cheng	**Line**	L2

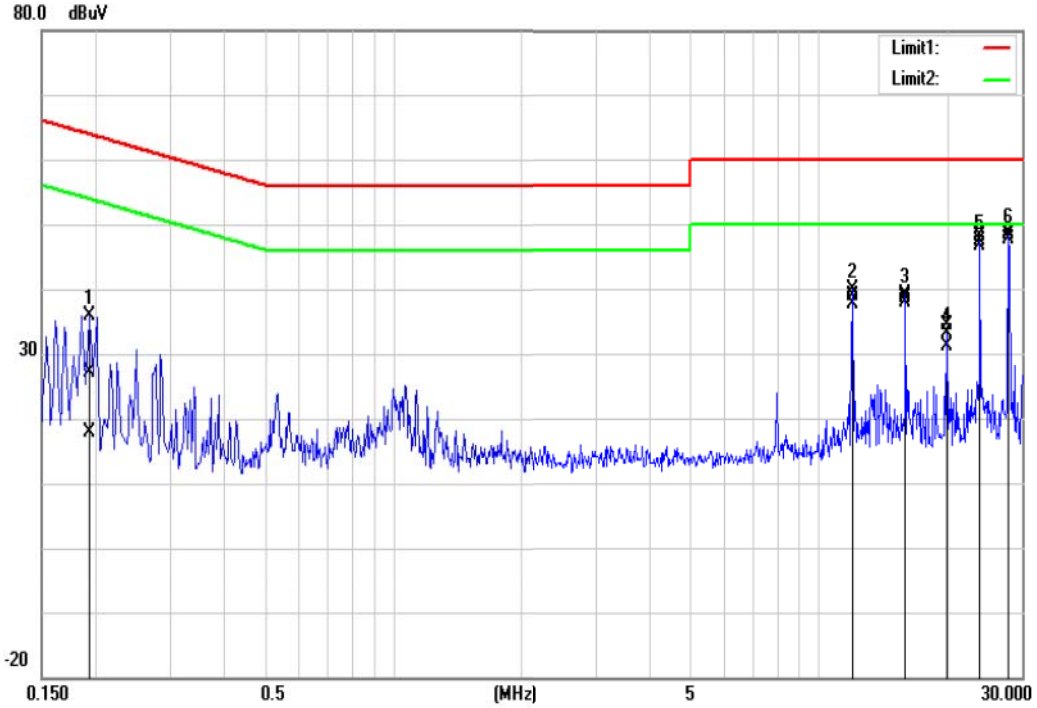


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1500	23.01	12.19	9.72	32.73	21.91	65.99	56.00	-33.26	-34.09	Pass
2	0.1620	21.29	11.50	9.71	31.00	21.21	65.36	55.36	-34.36	-34.15	Pass
3	12.0020	29.03	27.73	10.02	39.05	37.75	60.00	50.00	-20.95	-12.25	Pass
4	16.0020	28.80	27.78	10.04	38.84	37.82	60.00	50.00	-21.16	-12.18	Pass
5	24.0020	38.42	37.03	10.05	48.47	47.08	60.00	50.00	-11.53	-2.92	Pass
6*	28.0020	39.06	37.85	10.05	49.11	47.90	60.00	50.00	-10.89	-2.10	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	LE910-NVG	**Test Date**	2014/6/19
Environmental Conditions	24°C, 50% RH	**Test Mode**	Mode 4
Tested by	Moore Cheng	**Line**	L1

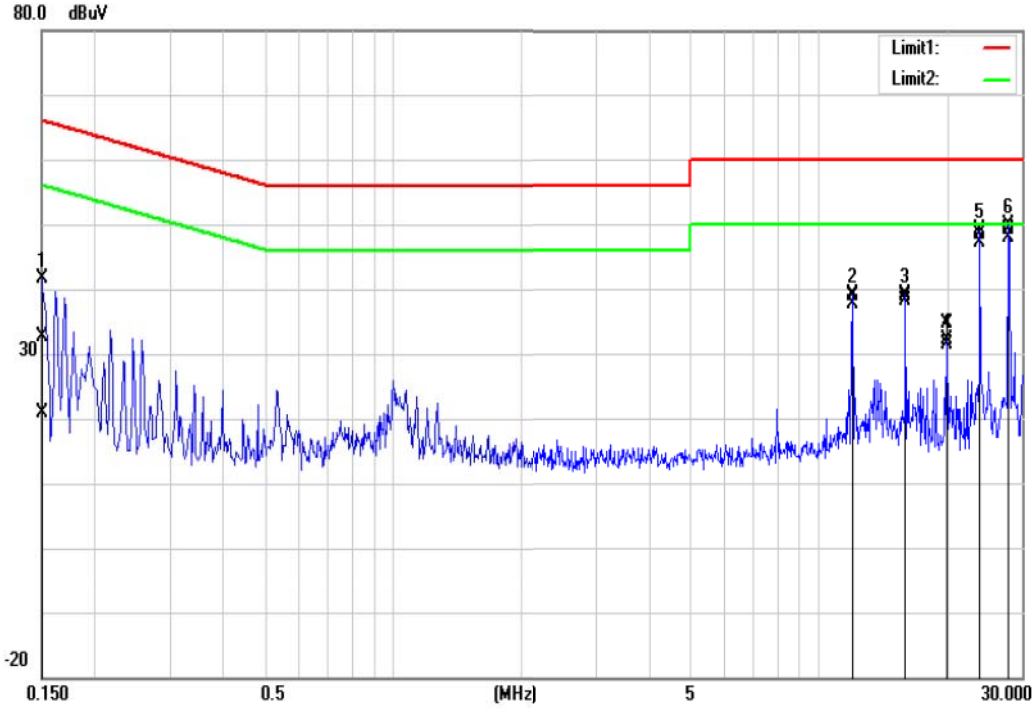


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1940	17.55	8.24	9.63	27.18	17.87	63.86	53.86	-36.68	-35.99	Pass
2	12.0020	28.94	27.60	9.98	38.92	37.58	60.00	50.00	-21.08	-12.42	Pass
3	16.0020	28.72	27.82	10.00	38.72	37.82	60.00	50.00	-21.28	-12.18	Pass
4	20.0020	24.46	21.16	10.03	34.49	31.19	60.00	50.00	-25.51	-18.81	Pass
5	24.0020	38.09	36.61	9.97	48.06	46.58	60.00	50.00	-11.94	-3.42	Pass
6*	28.0020	38.69	37.77	9.92	48.61	47.69	60.00	50.00	-11.39	-2.31	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	LE910-NVG	**Test Date**	2014/6/19
Environmental Conditions	24°C, 50% RH	**Test Mode**	Mode 4
Tested by	Moore Cheng	**Line**	L2



NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.1500	22.83	11.26	9.72	32.55	20.98	66.00	56.00	-33.45	-35.02	Pass
2	12.0020	28.86	27.61	10.02	38.88	37.63	60.00	50.00	-21.12	-12.37	Pass
3	16.0020	28.86	27.97	10.04	38.90	38.01	60.00	50.00	-21.10	-11.99	Pass
4	20.0020	24.46	21.38	10.05	34.51	31.43	60.00	50.00	-25.49	-18.57	Pass
5	24.0020	38.38	36.99	10.05	48.43	47.04	60.00	50.00	-11.57	-2.96	Pass
6*	28.0020	39.09	37.84	10.05	49.14	47.89	60.00	50.00	-10.86	-2.11	Pass

REMARKS: L2 = Line Two (Neutral Line)

7 RADIATED EMISSION MEASUREMENT

7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.75	30
1.75-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower

Below 1GHz (for digital device)

FREQUENCY (MHz)	dBuV/m (At 10m)	
	Class A	Class B
30 ~ 230	40	30
230 ~ 1000	47	37

Limit tables for non-digital device:

Class A Radiated Emission limit at 10m (for others)

Frequency (MHZ)	Field Strength Limit (uV/m)Q.P.	Field Strength Limit (dBuV/m)Q.P.
30 - 88	90	39
88 - 216	150	43.5
216 – 960	210	46.4
Above 960	300	49.5

Class B Radiated Emission limit at 3m (for others)

Frequency (MHZ)	Field Strength Limit (uV/m)Q.P.	Field Strength Limit (dBuV/m)Q.P.
30 - 88	100	40
88 - 216	150	43.5
216 – 960	200	46
Above 960	500	54