5131A-UL865NA Report No: T130930W11-D

FCC 47 CFR PART 15 SUBPART B FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E & INDUSTRY CANADA RSS-132 & RSS-133 TEST REPORT

for

2G,3G wireless module

MODEL: UL865-NAR, UL865-NAD

Test Report Number: T130930W11-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., New Taipei City 24891, Taiwan. (R.O.C.)

TEL: 886-2-2299-9720

FAX: 886-2-2299-9721 E-Mail: service@ccsrf.com

Issued Date: October 14, 2013







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Revision History

Report No: T130930W11-D

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 14, 2013	Initial Issue	ALL	Rachel Wu

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1 TEST RESULT CERTIFICATION

Product:	2G,3G wireless module		
Model:	UL865-NAR, UL865-NAD		
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: October 10~11, 2013			
Test Voltage: 120VAC, 60Hz			

EMISSION							
Standard	Item Result Rema		Remarks				
FCC 47 CFR Part 15 Subpart B,	Conducted (Power Port)	PASS	Meet Class B limit				
ICES-003 Issue 5-2012 ANSI C63.4-2009	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:	Reviewed by:
Gary Du	Angel Chenf
Gary Wu Section Manager	Angel Cheng Section Manager

2 EUT DESCRIPTION

Product	2G,3G wireless module				
Brand Name	Telit				
Model	UL865-NAR,	UL865-NAR, UL865-NAD			
	Model	Difference on HW	Difference on FW		
Madal Diagramana	UL865-NAR	Both products have the	Both product share the same FW with exception of the		
Model Discrepancy		same PCB and the	features related to Voice Calls		
	UL865-NAD	components.	that are disabled on the		
			UL865-NAD		
Applicant	TELIT COMMUNICATIONS S.P.A.				
Identify Number	T130930W11				
Received Date	September 30, 2013				
EUT Power Rating	Powered from Host device. (DC 3.8V)				

I/O Port

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

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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: GPRS 850 Mode
Mode 2: PCS 1900 Mode
Mode 3: WCDMA Band II Mode
Mode 4: WCDMA Band V Mode
Mode 5: Idle Mode

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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 ~ 5			
Emission	Radiated Emission	Mode 1 ~ 5			

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 sustain action.
- 5. Adjust to the test mode and begin to have 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.

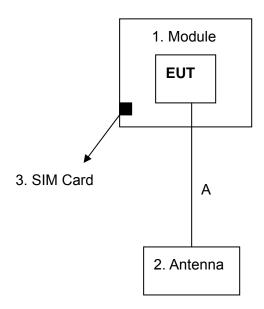
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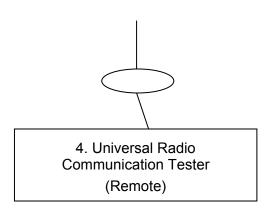
No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Power Cord
1.	Module	N/A	N/A	N/A	AT4	N/A
2.	GSM Antenna	N/A	N/A	N/A	N/A	N/A
3.	SIM Card	N/A	N/A	N/A	N/A	N/A
4. Universal Radio Communication Tester (Remote)		8960	MY48360990	N/A	Agilent	Unshielded, 1.8m

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





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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:

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Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	±1.2575 dB
	30~200MHz	±3.9163 dB
Radiated emissions	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

EDECLIENCY (MU-)	Class A	A (dBuV)	Class B (dBuV)			
FREQUENCY (MHz)	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		

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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	06/05/2014							
LISN	SCHWARZBECK	NSLK 8127	8127-541	12/10/2013							
ISN	FCC	FCC-TLISN-T2-02-09	100105	07/29/2014							
ISN	FCC	FCC-TLISN-T4-02	20395	05/30/2014							
ISN	FCC	FCC-TLISN-T8-02-09	100106	07/30/2014							
Capacitive Voltage Probe	FCC	F-CVP-1	100185	03/24/2014							
Test S/W		CCS-3A1-CE									

Note:

1. 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)

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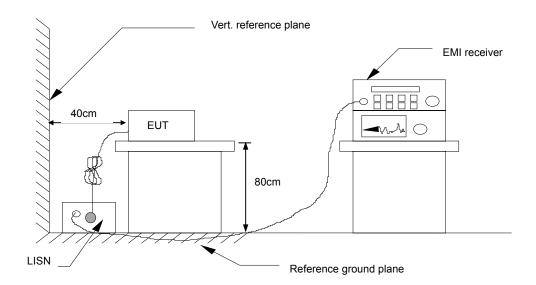
Procedure of Preliminary Test

- 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

Correction Factor (dB) = LISN Factor + Cable Loss

Result (dBuV) = Raw reading converted to dBuV and CF added

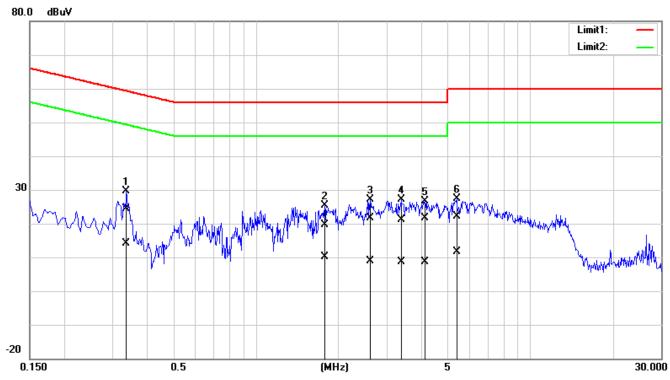
Limit (dBuV) = Limit stated in standard = Result (dBuV) - Limit (dBuV)

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6.6. TEST RESULTS

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	24℃, 50% RH	Test Mode	Mode 1
Tested by	Moore Cheng	Line	L1

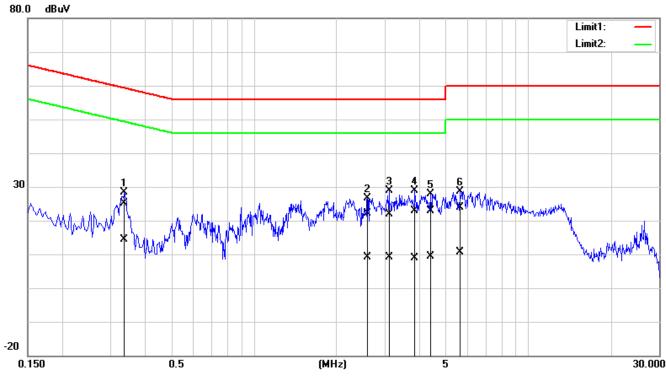


NO.	Frequency (MHz)	QuasiPeak reading	reading	factor	result	result	QuasiPeak limit	limit	margin	margin	Remark (Pass/Fail)
		(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3379	24.00	13.60	0.48	24.48	14.08	59.25	49.25	-34.77	-35.17	Pass
2	1.7860	19.29	9.93	0.29	19.58	10.22	56.00	46.00	-36.42	-35.78	Pass
3*	2.6220	21.37	8.64	0.31	21.68	8.95	56.00	46.00	-34.32	-37.05	Pass
4	3.3860	20.88	8.42	0.32	21.20	8.74	56.00	46.00	-34.80	-37.26	Pass
5	4.1460	21.27	8.23	0.33	21.60	8.56	56.00	46.00	-34.40	-37.44	Pass
6	5.3940	21.72	11.28	0.35	22.07	11.63	60.00	50.00	-37.93	-38.37	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	25.6°C, 58% RH	Test Mode	Mode 1
Tested by	Moore Cheng	Line	L2

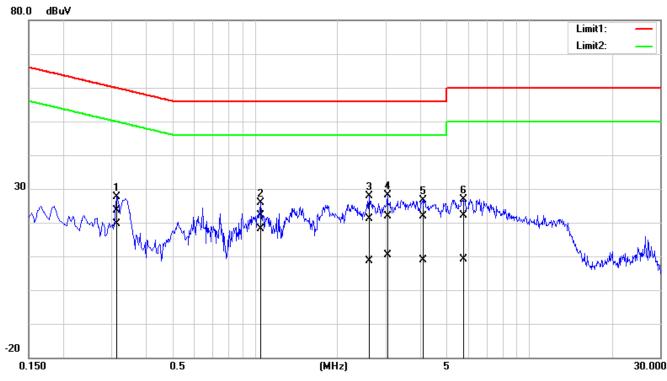


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.3379	24.96	14.28	0.17	25.13	14.45	59.25	49.25	-34.12	-34.80	Pass
2	2.6020	21.90	8.90	0.22	22.12	9.12	56.00	46.00	-33.88	-36.88	Pass
3	3.1220	21.57	8.98	0.23	21.80	9.21	56.00	46.00	-34.20	-36.79	Pass
4	3.8620	22.61	8.60	0.26	22.87	8.86	56.00	46.00	-33.13	-37.14	Pass
5*	4.4300	22.62	9.17	0.28	22.90	9.45	56.00	46.00	-33.10	-36.55	Pass
6	5.6779	23.66	10.25	0.32	23.98	10.57	60.00	50.00	-36.02	-39.43	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	24℃, 50% RH	Test Mode	Mode 2
Tested by	Moore Cheng	Line	L1

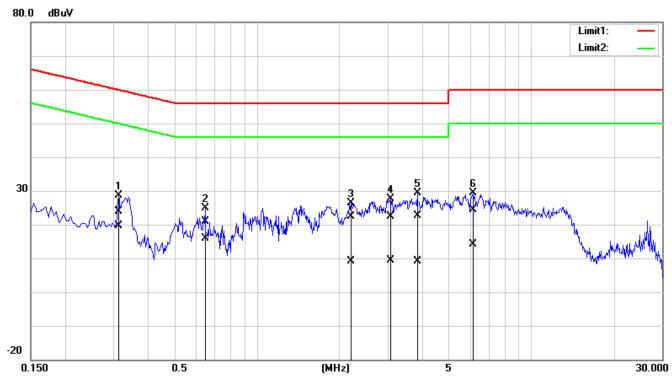


	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	(MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	(Pass/Fail)
	(IVII-12)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Fass/Fall)
1	0.3140	23.15	19.00	0.53	23.68	19.53	59.86	49.86	-36.18	-30.33	Pass
2*	1.0500	21.88	17.83	0.25	22.13	18.08	56.00	46.00	-33.87	-27.92	Pass
3	2.6140	20.92	8.40	0.31	21.23	8.71	56.00	46.00	-34.77	-37.29	Pass
4	3.0460	21.56	10.16	0.31	21.87	10.47	56.00	46.00	-34.13	-35.53	Pass
5	4.0939	21.52	8.44	0.33	21.85	8.77	56.00	46.00	-34.15	-37.23	Pass
6	5.7580	21.84	8.74	0.37	22.21	9.11	60.00	50.00	-37.79	-40.89	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	25.6°C, 58% RH	Test Mode	Mode 2
Tested by	Moore Cheng	Line	L2

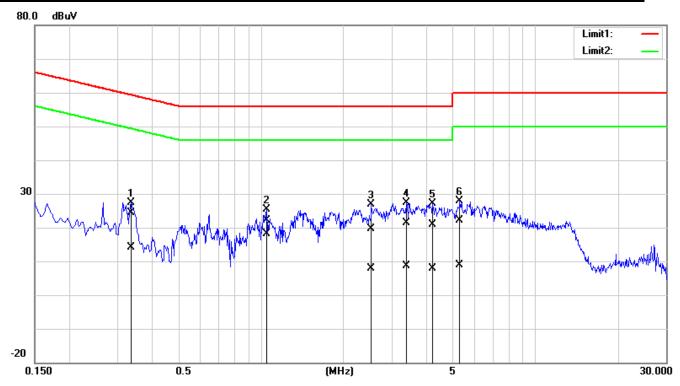


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.3140	23.64	19.35	0.17	23.81	19.52	59.86	49.86	-36.05	-30.34	Pass
2*	0.6500	20.80	15.61	0.17	20.97	15.78	56.00	46.00	-35.03	-30.22	Pass
3	2.2020	22.06	8.96	0.20	22.26	9.16	56.00	46.00	-33.74	-36.84	Pass
4	3.0820	22.09	9.21	0.23	22.32	9.44	56.00	46.00	-33.68	-36.56	Pass
5	3.8420	22.33	8.85	0.26	22.59	9.11	56.00	46.00	-33.41	-36.89	Pass
6	6.1460	23.94	13.70	0.32	24.26	14.02	60.00	50.00	-35.74	-35.98	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	24℃, 50% RH	Test Mode	Mode 3
Tested by	Moore Cheng	Line	L1

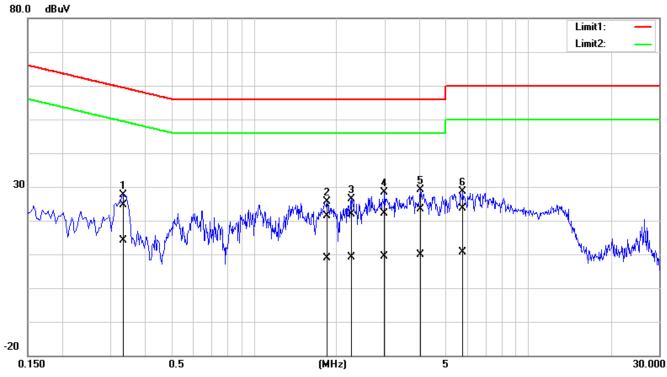


	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	(MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	(Pass/Fail)
	(1011 12)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(F a55/1 all)
1	0.3379	23.98	13.62	0.48	24.46	14.10	59.25	49.25	-34.79	-35.15	Pass
2*	1.0500	21.81	17.80	0.25	22.06	18.05	56.00	46.00	-33.94	-27.95	Pass
3	2.5340	19.43	7.46	0.31	19.74	7.77	56.00	46.00	-36.26	-38.23	Pass
4	3.4020	21.07	8.28	0.32	21.39	8.60	56.00	46.00	-34.61	-37.40	Pass
5	4.2340	20.62	7.57	0.33	20.95	7.90	56.00	46.00	-35.05	-38.10	Pass
6	5.3300	21.77	8.62	0.35	22.12	8.97	60.00	50.00	-37.88	-41.03	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	25.6°C, 58% RH	Test Mode	Mode 3
Tested by	Moore Cheng	Line	L2

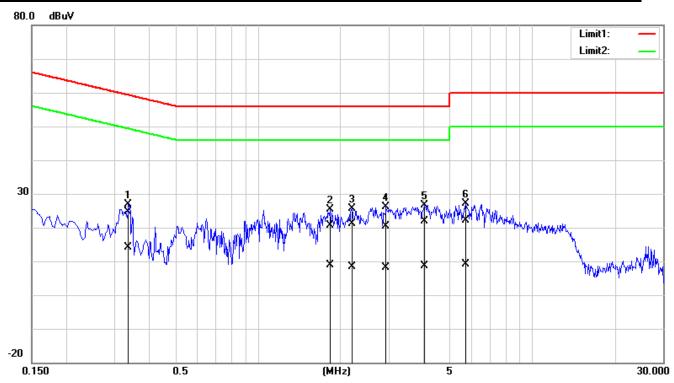


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.3339	24.54	13.94	0.17	24.71	14.11	59.35	49.35	-34.64	-35.24	Pass
2	1.8500	21.10	8.59	0.20	21.30	8.79	56.00	46.00	-34.70	-37.21	Pass
3	2.2620	21.60	8.83	0.21	21.81	9.04	56.00	46.00	-34.19	-36.96	Pass
4	3.0020	22.01	9.11	0.23	22.24	9.34	56.00	46.00	-33.76	-36.66	Pass
5*	4.0580	23.18	9.54	0.26	23.44	9.80	56.00	46.00	-32.56	-36.20	Pass
6	5.7819	23.42	10.19	0.32	23.74	10.51	60.00	50.00	-36.26	-39.49	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	24℃, 50% RH	Test Mode	Mode 4
Tested by	Moore Cheng	Line	L1

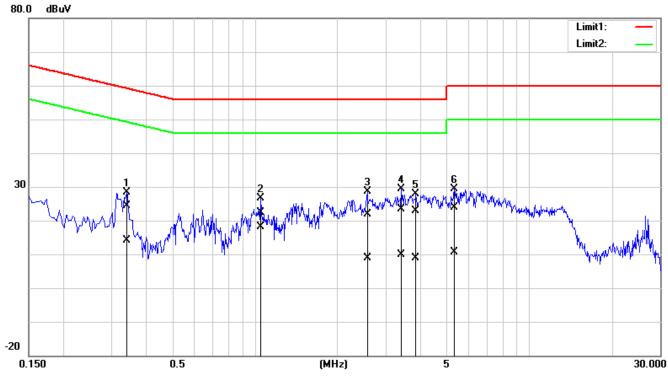


	Fraguanay	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	Frequency (MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	(Pass/Fail)
	(IVII IZ)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Fass/Fall)
1	0.3379	24.04	13.70	0.48	24.52	14.18	59.25	49.25	-34.73	-35.07	Pass
2	1.8300	20.22	8.52	0.29	20.51	8.81	56.00	46.00	-35.49	-37.19	Pass
3	2.2100	20.81	8.13	0.30	21.11	8.43	56.00	46.00	-34.89	-37.57	Pass
4	2.9420	20.09	7.89	0.32	20.41	8.21	56.00	46.00	-35.59	-37.79	Pass
5*	4.0660	21.55	8.31	0.33	21.88	8.64	56.00	46.00	-34.12	-37.36	Pass
6	5.7260	21.88	8.74	0.37	22.25	9.11	60.00	50.00	-37.75	-40.89	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	25.6°C, 58% RH	Test Mode	Mode 4
Tested by	Moore Cheng	Line	L2

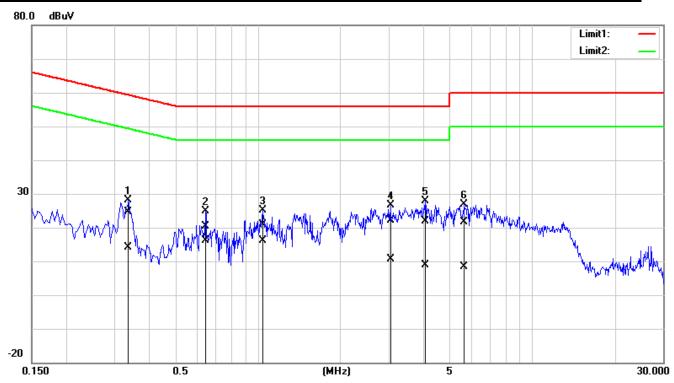


NO.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark (Pass/Fail)
1	0.3420	24.30	13.98	0.17	24.47	14.15	59.15	49.15	-34.68	-35.00	Pass
2*	1.0500	22.23	17.96	0.17	22.40	18.13	56.00	46.00	-33.60	-27.87	Pass
3	2.5780	21.68	8.65	0.22	21.90	8.87	56.00	46.00	-34.10	-37.13	Pass
4	3.4300	23.18	9.74	0.24	23.42	9.98	56.00	46.00	-32.58	-36.02	Pass
5	3.8660	22.53	8.72	0.26	22.79	8.98	56.00	46.00	-33.21	-37.02	Pass
6	5.3460	23.70	10.29	0.30	24.00	10.59	60.00	50.00	-36.00	-39.41	Pass

REMARKS: L2 = Line Two (Neutral Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	24℃, 50% RH	Test Mode	Mode 5
Tested by	Moore Cheng	Line	L1

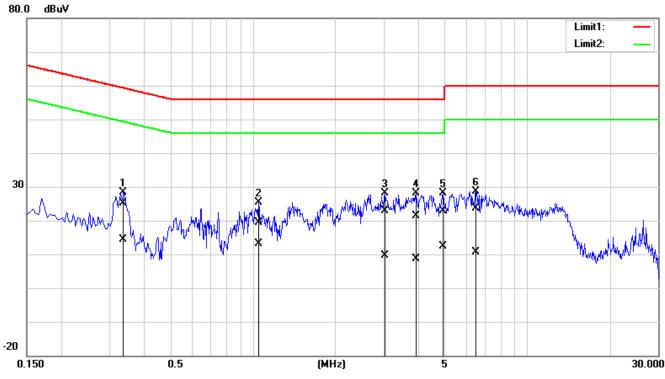


	Frequency	QuasiPeak	Average	Correction	QuasiPeak	Average	QuasiPeak	Average	QuasiPeak	Average	Remark
NO.	(MHz)	reading	reading	factor	result	result	limit	limit	margin	margin	(Pass/Fail)
	(1011 12)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	(Fass/Fall)
1	0.3379	24.04	13.61	0.48	24.52	14.09	59.25	49.25	-34.73	-35.16	Pass
2*	0.6460	20.07	15.94	0.31	20.38	16.25	56.00	46.00	-35.62	-29.75	Pass
3	1.0460	20.53	15.96	0.25	20.78	16.21	56.00	46.00	-35.22	-29.79	Pass
4	3.0460	21.70	10.20	0.31	22.01	10.51	56.00	46.00	-33.99	-35.49	Pass
5	4.0900	21.60	8.66	0.33	21.93	8.99	56.00	46.00	-34.07	-37.01	Pass
6	5.6700	21.27	8.06	0.36	21.63	8.42	60.00	50.00	-38.37	-41.58	Pass

REMARKS: L1 = Line One (Live Line)

CCS Conduction Test

Model No.	BH-1105	Test Date	2013/10/18
Environmental Conditions	25.6°C, 58% RH	Test Mode	Mode 5
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	0.3379	25.00	14.30	0.17	25.17	14.47	59.25	49.25	-34.08	-34.78	Pass
2*	1.0540	19.20	12.90	0.17	19.37	13.07	56.00	46.00	-36.63	-32.93	Pass
3	3.0380	22.58	9.36	0.23	22.81	9.59	56.00	46.00	-33.19	-36.41	Pass
4	3.9580	21.17	8.31	0.26	21.43	8.57	56.00	46.00	-34.57	-37.43	Pass
5	4.9460	22.48	12.10	0.28	22.76	12.38	56.00	46.00	-33.24	-33.62	Pass
6	6.5060	23.36	10.39	0.33	23.69	10.72	60.00	50.00	-36.31	-39.28	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:

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• • • • • • • • • • • • • • • • • • • •	, and the second
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	5 th harmonic of the highest frequency or 40GHz, whichever is lower

Below 1GHz (for digital device)

EDECLIENCY (MU-)	dBuV/m (At 10m)			
FREQUENCY (MHz)	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

Above 1GHz (for all device)

Frequency	Class A (dBu	V/m) (At 10m)	Class B (dBuV/m) (At 3m)		
(MHZ)	Average Peak		Average	Peak	
Above 1000	49.5	69.5	54	74	

NOTE: (1) The lower limit shall apply at the transition frequencies.

- (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
- (3) The measurement above 1GHz is at close-in distances 3m, and determine the limit L2 corresponding to the close-in distance d2 by applying the following relation: L2 = L1 (d1/d2), where L1 is the specified limit in microvolts per metre (uV/m) at the distance d1 (10m), L2 is the new limit for distance d2 (3m).

So the new Class A limit above 1GHz at 3m is as following table:

Frequency	Class A (dBuV/m) (At 3m)			
(MHZ)	Average	Peak		
Above 1000	60	80		

7.2. TEST INSTRUMENTS

	1	Wugu 10M Chamber		
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250297	10/03/2014
EMI Test Receiver	R&S	ESCI	100961	09/01/2014
EMI Test Receiver	R&S	ESCI	100962	09/01/2014
Pre-Amplifier	HP	8447D	2944A07754	06/05/2014
Pre-Amplifier	HP	8447D	2944A08150	06/05/2014
Pre-Amplifier	EMC	EMC012645	980056	05/09/2014
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	08/05/2014
Bilog Antenna	TESEQ	CBL 6112D	31674	09/30/2014
Bilog Antenna	TESEQ	CBL6112D	31675	09/30/2014
Horn Antenna	EMCO	3117	55167	01/08/2014
Horn Antenna	EMCO	3116	26370	01/07/2014
Coaxial Cable	Huber+Suhner	104PEA	33948/4PEA	05/09/2014
Coaxial Cable	Huber+Suhner	104PEA	33949/4PEA	05/09/2014
Coaxial Cable	Huber+Suhner	104	330026/4	05/09/2014
Coaxial Cable	Huber+Suhner	104	330029/4	05/09/2014
Coaxial Cable	Huber+Suhner	104	329382/4	05/09/2014
Coaxial Cable	Huber+Suhner	104	330028/4	05/09/2014
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Antenna Tower	Sunol Sciences	TLT2	031010-5	N.C.R.
Controller	Sunol Sciences	SC104V	031010-1	N.C.R.
Site NSA	ccs	N/A	N/A	11/04/2013
Site VSWR	ccs	N/A	N/A	12/02/2013
Test S/W		EZ-EMC (CCS-3	BA1RE)	

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

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^{2.} N.C.R = No Calibration Request.

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

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The basic test procedure was in accordance with ANSI C63.4-2009 and ICES-003: 2004.

Frequency range 30MHz ~ 1GHz

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position.
- 2. The EUT was set 10 meters away form the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3. The height of antenna is varied from one meter to four meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was turned to heights for 1 meter to 4 meters and the turn table was turned form 0 degrees to 360 degrees to find the maximum reading.
- 5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

Frequency range above 1GHz

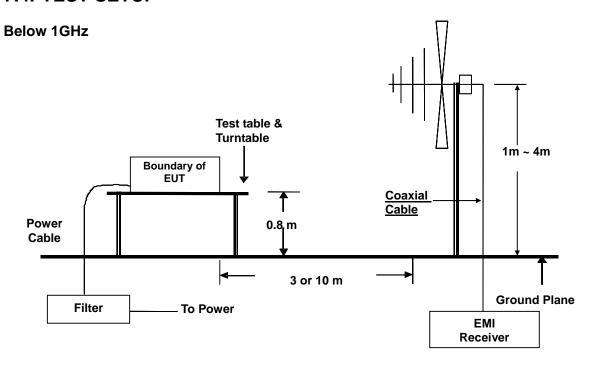
- 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position.
- 2. The EUT was set 3 meters away form the directional antenna, which was pointed towards the source of the emission within the EUT. This could be done by either pointing the antenna at an angle towards the source of the emission, or by rotating the EUT, in both height and polarization, to maximize the measured emission.
- 3. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3 dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was turned to heights and the rotatable table was turned form 0 degrees to 360 degrees to find the maximum reading.
- 5. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.

NOTE:

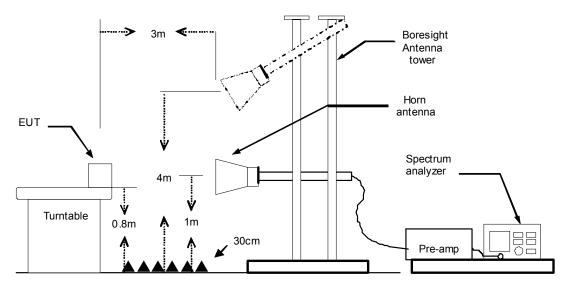
- The resolution bandwidth is 1MHz and video bandwidth of test spectrum analyzer is 1 MHz for peak detection at above 1GHz. The resolution bandwidth is 1MHz and video bandwidth of test spectrum analyzer is 100Hz for average detection at frequency above 1 GHz.
- 2. For measurement of frequency above 1GHz, the EUT was set 3 meters away from the directional antenna.

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7.4. TEST SETUP



Above 1GHz



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

7.5. DATA SAMPLE:

Below 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (·)	Remark
xx.xx	16.49	9.86	26.35	30.00	-3.65	116.00	101.00	QP

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Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Remark
xx.xx	60.80	-14.59	46.21	74.00	-27.79	200	351	peak
XX.XX	52.05	-13.17	38.88	54.00	-15.12	200	135	AVG

Frequency (MHz) = Emission frequency in MHz

Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)

Limit (dBuV/m) = Limit stated in standard

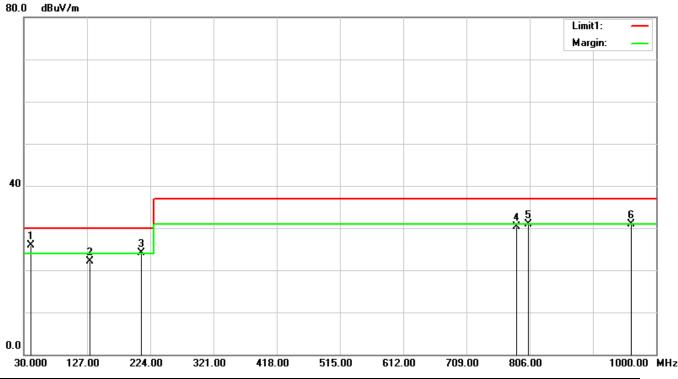
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)

Q.P. = Quasi-Peak

7.6. TEST RESULTS

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 1		
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09		
Antenna Pole	Vertical	Antenna Distance	10m		
Detector Function:	Quasi-peak.	Tested by	Moore Cheng		
Standard	FCC CLASS B W/ CISPR 22 CLASS B LIMIT				



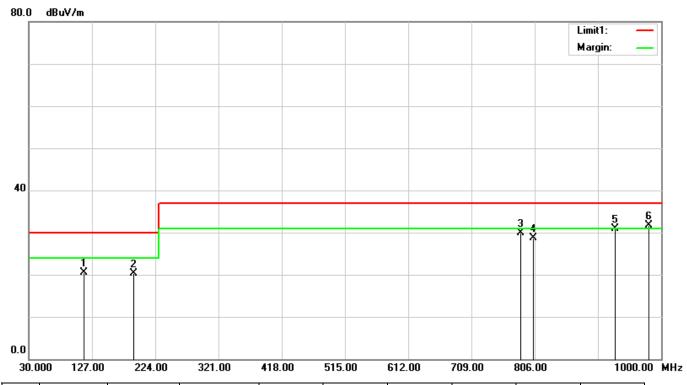
No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	40.6700	39.71	-13.76	25.95	30.00	-4.05	161	0	QP
2	130.8800	35.46	-13.45	22.01	30.00	-7.99	100	117	QP
3	210.4200	38.99	-14.84	24.15	30.00	-5.85	100	285	QP
4	785.6300	32.93	-2.54	30.39	37.00	-6.61	100	166	QP
5	804.0600	33.26	-2.30	30.96	37.00	-6.04	400	0	QP
6	962.1700	30.56	0.26	30.82	37.00	-6.18	400	0	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

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Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 1			
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09			
Antenna Pole	Horizontal	Antenna Distance	10m			
Detector Function:	Quasi-peak.	Tested by	Moore Cheng			
Standard FCC CLASS B W/ CISPR 22 CLASS B LIMIT						

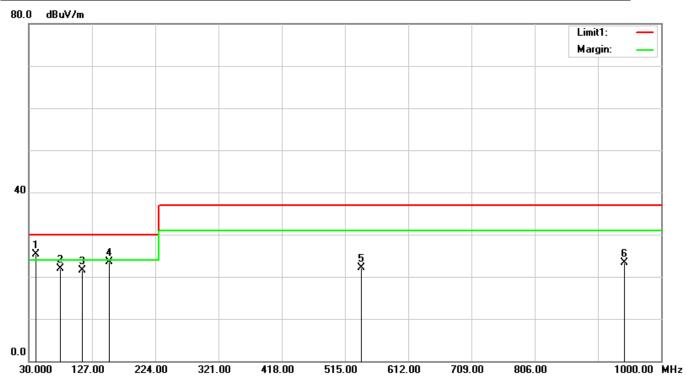


No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	114.3900	34.47	-14.01	20.46	30.00	-9.54	395	246	QP
2	191.0200	36.04	-15.66	20.38	30.00	-9.62	395	160	QP
3	784.6600	33.70	-3.71	29.99	37.00	-7.01	395	359	QP
4	804.0600	32.11	-3.49	28.62	37.00	-8.38	394	0	QP
5	929.1900	33.43	-2.50	30.93	37.00	-6.07	394	0	QP
6	981.5700	33.17	-1.50	31.67	37.00	-5.33	394	0	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 2				
Environmental Conditions	12h (hll% RH llast llata		2013/10/9				
Antenna Pole	Vertical	Antenna Distance	10m				
Detector Function:	Tested by	Moore Cheng					
Standard	FCC CLASS B W/ CISPR 22 CLASS B LIMIT						



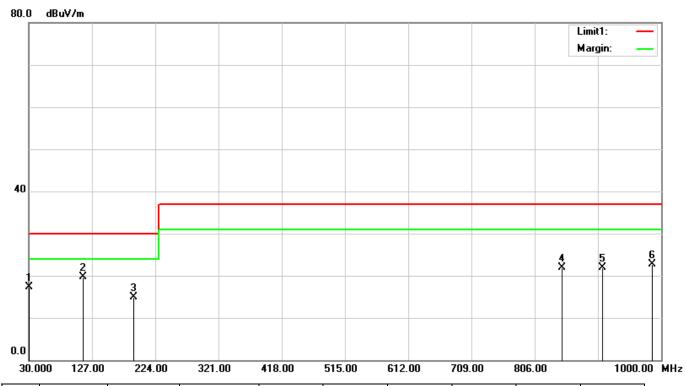
No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	40.6700	38.98	-13.76	25.22	30.00	-4.78	172	0	QP
2	78.5000	40.41	-18.43	21.98	30.00	-8.02	100	280	QP
3	111.4800	35.28	-13.80	21.48	30.00	-8.52	100	47	QP
4	153.1900	37.90	-14.39	23.51	30.00	-6.49	400	249	QP
5	540.2200	27.08	-5.07	22.01	37.00	-14.99	400	360	QP
6	943.7400	23.13	0.14	23.27	37.00	-13.73	400	0	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

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Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 2				
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09				
Antenna Pole	Horizontal	Antenna Distance	10m				
Detector Function:	Quasi-peak.	Tested by	Moore Cheng				
Standard	FCC CLASS B W/ CISPR 22 CLASS B LIMIT						

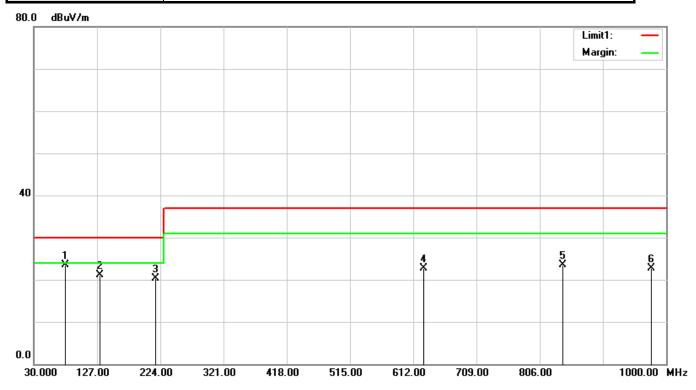


No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.9700	26.51	-9.27	17.24	30.00	-12.76	399	336	QP
2	113.4200	33.76	-14.09	19.67	30.00	-10.33	399	280	QP
3	191.0200	30.48	-15.66	14.82	30.00	-15.18	398	0	QP
4	847.7100	24.60	-2.79	21.81	37.00	-15.19	100	182	QP
5	909.7900	24.09	-2.18	21.91	37.00	-15.09	100	62	QP
6	986.4200	23.96	-1.29	22.67	37.00	-14.33	118	0	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 3				
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10				
Antenna Pole	Vertical	Antenna Distance	10m				
Detector Function:	or Function: Quasi-peak. Tested by Moore Cheng						
Standard	randard FCC CLASS B W/ CISPR 22 CLASS B LIMIT						



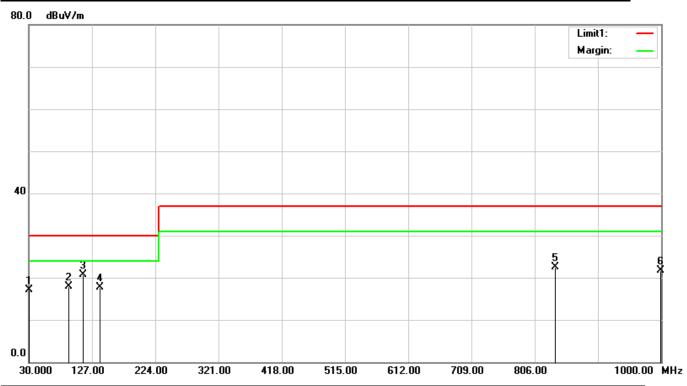
No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	78.5000	41.93	-18.43	23.50	30.00	-6.50	399	276	QP
2	130.8800	34.60	-13.45	21.15	30.00	-8.85	399	231	QP
3	216.2400	35.05	-14.81	20.24	30.00	-9.76	100	223	QP
4	627.5200	27.06	-4.41	22.65	37.00	-14.35	100	59	QP
5	840.9200	25.50	-1.94	23.56	37.00	-13.44	233	360	QP
6	977.6900	22.49	0.15	22.64	37.00	-14.36	399	93	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

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Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 3			
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10			
Antenna Pole	Horizontal	Antenna Distance	10m			
Detector Function:	Quasi-peak.	Tested by	Moore Cheng			
Standard FCC CLASS B W/ CISPR 22 CLASS B LIMIT						



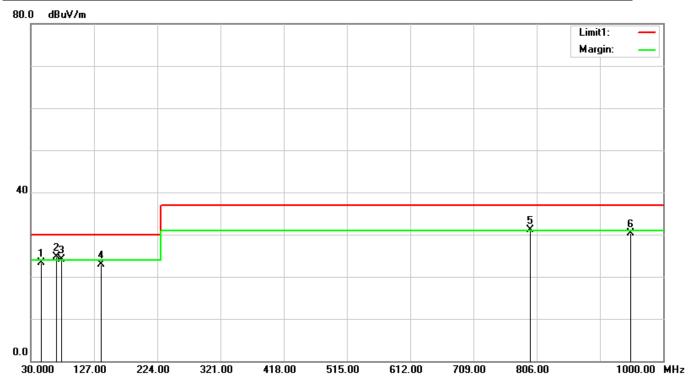
No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.9700	26.43	-9.27	17.16	30.00	-12.84	100	359	QP
2	91.1100	34.73	-16.75	17.98	30.00	-12.02	400	50	QP
3	113.4200	34.72	-14.09	20.63	30.00	-9.37	400	41	QP
4	138.6400	31.84	-14.10	17.74	30.00	-12.26	100	319	QP
5	837.0400	25.44	-2.96	22.48	37.00	-14.52	370	360	QP
6	999.0300	22.51	-0.76	21.75	37.00	-15.25	399	360	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

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Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 4				
Environmental Conditions	12h (hll% RH last liata		2013/10/10				
Antenna Pole	Vertical	Antenna Distance	10m				
Detector Function:	Quasi-peak.	Tested by	Moore Cheng				
Standard	dard FCC CLASS B W/ CISPR 22 CLASS B LIMIT						

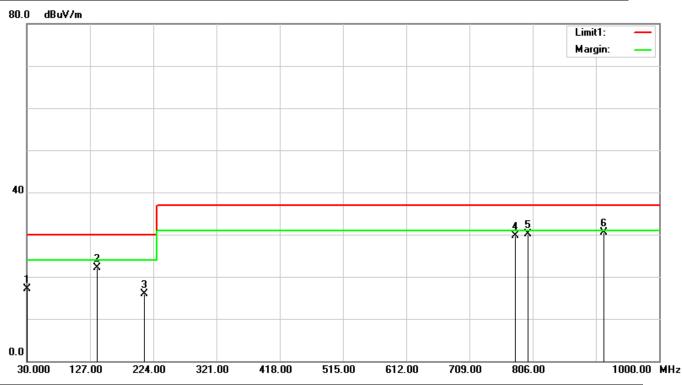


No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	46.4900	40.15	-16.75	23.40	30.00	-6.60	139	360	QP
2	68.8000	43.98	-19.32	24.66	30.00	-5.34	399	359	QP
3	77.5300	42.64	-18.54	24.10	30.00	-5.90	100	220	QP
4	137.6700	36.56	-13.67	22.89	30.00	-7.11	100	66	QP
5	796.3000	33.45	-2.40	31.05	37.00	-5.95	290	360	QP
6	950.5300	29.97	0.34	30.31	37.00	-6.69	399	182	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 4					
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10					
Antenna Pole	Horizontal	Antenna Distance	10m					
Detector Function:	Quasi-peak.	Tested by	Moore Cheng					
Standard	FCC CLASS B W/ CISF	FCC CLASS B W/ CISPR 22 CLASS B LIMIT						

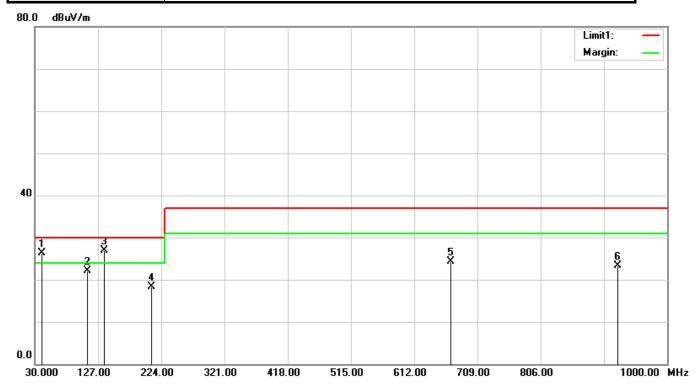


No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.0000	25.78	-8.74	17.04	30.00	-12.96	399	360	QP
2	137.6700	36.27	-14.08	22.19	30.00	-7.81	400	134	QP
3	210.4200	31.32	-15.47	15.85	30.00	-14.15	400	168	QP
4	779.8100	33.55	-3.76	29.79	37.00	-7.21	323	360	QP
5	799.2100	33.58	-3.56	30.02	37.00	-6.98	161	360	QP
6	915.6100	32.86	-2.27	30.59	37.00	-6.41	396	360	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 5			
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09			
Antenna Pole	Vertical	Antenna Distance	10m			
Detector Function:	Quasi-peak.	Tested by	Moore Cheng			
Standard	FCC CLASS B W/ CISPR 22 CLASS B LIMIT					

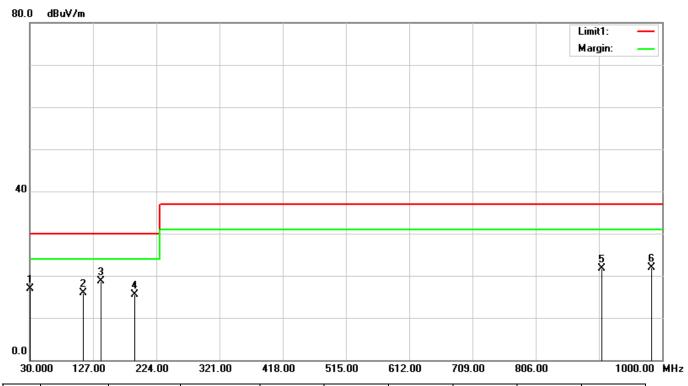


No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	40.6700	40.01	-13.76	26.25	30.00	-3.75	168	0	QP
2	110.5100	36.08	-13.88	22.20	30.00	-7.80	100	86	QP
3	136.7000	40.54	-13.63	26.91	30.00	-3.09	100	65	QP
4	209.4500	33.26	-14.86	18.40	30.00	-11.60	399	164	QP
5	668.2600	28.41	-4.03	24.38	37.00	-12.62	100	338	QP
6	924.3400	23.70	-0.49	23.21	37.00	-13.79	399	264	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Below 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 5				
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09				
Antenna Pole	Horizontal	Antenna Distance	10m				
Detector Function:	Quasi-peak.	Tested by	Moore Cheng				
Standard	FCC CLASS B W/ CISP	CC CLASS B W/ CISPR 22 CLASS B LIMIT					



No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	30.9700	26.23	-9.27	16.96	30.00	-13.04	399	198	QP
2	111.4800	30.10	-14.24	15.86	30.00	-14.14	399	135	QP
3	138.6400	32.83	-14.10	18.73	30.00	-11.27	399	53	QP
4	191.0200	31.16	-15.66	15.50	30.00	-14.50	399	0	QP
5	906.8800	23.75	-2.13	21.62	37.00	-15.38	332	0	QP
6	983.5100	23.42	-1.42	22.00	37.00	-15.00	340	0	QP

- 1. The other emission levels were very low against the limit.
- 2. 30MHz to 1000MHz test is Applicable CISPR 22 standard.

Above 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 1
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09
Antenna Pole	Vertical	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	13495.000	57.13	-3.67	53.46	74.00	-20.54	147	0	peak
2	13495.000	46.27	-3.67	42.60	54.00	-11.40	147	0	AVG
3	14379.000	57.15	-2.57	54.58	74.00	-19.42	202	181	peak
4	14379.000	46.10	-2.57	43.53	54.00	-10.47	202	181	AVG
5	15237.500	56.79	-1.43	55.36	74.00	-18.64	202	74	peak
6	15237.500	45.95	-1.43	44.52	54.00	-9.48	202	74	AVG
7	16002.500	56.28	-1.16	55.12	74.00	-18.88	100	47	peak
8	16002.500	45.80	-1.16	44.64	54.00	-9.36	100	47	AVG
9	16801.500	54.92	0.91	55.83	74.00	-18.17	100	358	peak
10	16801.500	44.13	0.91	45.04	54.00	-8.96	100	358	AVG
11	17396.500	55.25	0.85	56.10	74.00	-17.90	100	117	peak
12	17396.500	44.48	0.85	45.33	54.00	-8.67	100	117	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Model No.	UL865-NAR	Test Mode	Mode 1
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09
Antenna Pole	Horizontal	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Domark
NO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	12585.500	55.93	-3.18	52.75	74.00	-21.25	100	324	peak
2	12585.500	45.09	-3.18	41.91	54.00	-12.09	100	324	AVG
3	14268.500	56.62	-2.92	53.70	74.00	-20.30	202	43	peak
4	14268.500	45.78	-2.92	42.86	54.00	-11.14	202	43	AVG
5	15067.500	56.34	-1.75	54.59	74.00	-19.41	199	0	peak
6	15067.500	45.42	-1.75	43.67	54.00	-10.33	199	0	AVG
7	16002.500	56.28	-1.16	55.12	74.00	-18.88	100	47	peak
8	16002.500	45.48	-1.16	44.32	54.00	-9.68	100	47	AVG
9	16801.500	54.92	0.91	55.83	74.00	-18.17	100	358	peak
10	16801.500	44.11	0.91	45.02	54.00	-8.98	100	358	AVG
11	17396.500	55.25	0.85	56.10	74.00	-17.90	100	117	peak
12	17396.500	44.47	0.85	45.32	54.00	-8.68	100	117	AVG

- The other emission levels were very low against the limit.
 Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Above 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 2
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09
Antenna Pole	Vertical	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Domark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	13418.500	56.65	-3.58	53.07	74.00	-20.93	199	0	peak
2	13418.500	46.13	-3.58	42.55	54.00	-11.45	199	0	AVG
3	14396.000	57.24	-2.52	54.72	74.00	-19.28	100	109	peak
4	14396.000	46.13	-2.52	43.61	54.00	-10.39	100	109	AVG
5	15135.500	56.11	-1.62	54.49	74.00	-19.51	202	1	peak
6	15135.500	45.22	-1.62	43.60	54.00	-10.40	202	1	AVG
7	15917.500	56.14	-1.13	55.01	74.00	-18.99	199	0	peak
8	15917.500	45.43	-1.13	44.30	54.00	-9.70	199	0	AVG
9	16801.500	55.25	0.91	56.16	74.00	-17.84	202	0	peak
10	16801.500	44.32	0.91	45.23	54.00	-8.77	202	0	AVG
11	17549.500	55.09	0.72	55.81	74.00	-18.19	202	343	peak
12	17549.500	44.23	0.72	44.95	54.00	-9.05	202	343	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Model No.	UL865-NAR	Test Mode	Mode 2
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09
		Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Domark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	1960.500	68.73	-18.01	50.72	74.00	-23.28	100	359	peak
2	14234.500	57.31	-3.01	54.30	74.00	-19.70	202	0	peak
3	14234.500	46.56	-3.01	43.55	54.00	-10.45	202	0	AVG
4	15016.500	56.88	-1.84	55.04	74.00	-18.96	126	0	peak
5	15016.500	46.10	-1.84	44.26	54.00	-9.74	126	0	AVG
6	15960.000	56.22	-1.14	55.08	74.00	-18.92	136	0	peak
7	15960.000	45.34	-1.14	44.20	54.00	-9.80	136	0	AVG
8	16614.500	55.47	0.62	56.09	74.00	-17.91	202	0	peak
9	16614.500	44.54	0.62	45.16	54.00	-8.84	202	0	AVG
10	17464.500	55.36	0.78	56.14	74.00	-17.86	100	1	peak
11	17464.500	44.51	0.78	45.29	54.00	-8.71	100	1	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Above 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 3
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10
		Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Domark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	13469.500	56.76	-3.73	53.03	74.00	-20.97	100	354	peak
2	13469.500	45.91	-3.73	42.18	54.00	-11.82	100	354	AVG
3	14260.000	56.31	-3.05	53.26	74.00	-20.74	202	219	peak
4	14260.000	45.62	-3.05	42.57	54.00	-11.43	202	219	AVG
5	15178.000	56.86	-0.62	56.24	74.00	-17.76	100	0	peak
6	15178.000	46.08	-0.62	45.46	54.00	-8.54	100	0	AVG
7	15951.500	55.64	-0.07	55.57	74.00	-18.43	100	359	peak
8	15951.500	44.79	-0.07	44.72	54.00	-9.28	100	359	AVG
9	16801.500	54.96	0.85	55.81	74.00	-18.19	202	325	peak
10	16801.500	44.18	0.85	45.03	54.00	-8.97	202	325	AVG
11	17277.500	55.38	0.93	56.31	74.00	-17.69	100	250	peak
12	17277.500	44.55	0.93	45.48	54.00	-8.52	100	250	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Model No.	UL865-NAR	Test Mode	Mode 3
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10
Antenna Pole	Horizontal	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	12534.500	55.58	-2.72	52.86	74.00	-21.14	100	360	peak
2	12534.500	44.83	-2.72	42.11	54.00	-11.89	100	360	AVG
3	14370.500	56.20	-2.80	53.40	74.00	-20.60	177	360	peak
4	14370.500	45.41	-2.80	42.61	54.00	-11.39	177	360	AVG
5	15135.500	55.91	-0.67	55.24	74.00	-18.76	105	360	peak
6	15135.500	45.34	-0.67	44.67	54.00	-9.33	105	360	AVG
7	15849.500	55.34	-0.09	55.25	74.00	-18.75	136	360	peak
8	15849.500	44.62	-0.09	44.53	54.00	-9.47	136	360	AVG
9	16614.500	54.26	0.78	55.04	74.00	-18.96	100	3	peak
10	16614.500	43.58	0.78	44.36	54.00	-9.64	100	3	AVG
11	17286.000	55.39	0.93	56.32	74.00	-17.68	100	209	peak
12	17286.000	44.65	0.93	45.58	54.00	-8.42	100	209	AVG

- The other emission levels were very low against the limit.
 Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Above 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 4
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10
	Vertical	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	12645.000	57.46	-2.79	54.67	74.00	-19.33	100	360	peak
2	12645.000	46.74	-2.79	43.95	54.00	-10.05	100	360	AVG
3	14387.500	55.72	-2.76	52.96	74.00	-21.04	178	360	peak
4	14387.500	45.06	-2.76	42.30	54.00	-11.70	178	360	AVG
5	15203.500	56.28	-0.58	55.70	74.00	-18.30	202	359	peak
6	15203.500	45.51	-0.58	44.93	54.00	-9.07	202	359	AVG
7	15994.000	55.68	-0.05	55.63	74.00	-18.37	202	0	peak
8	15994.000	44.80	-0.05	44.75	54.00	-9.25	202	0	AVG
9	16640.000	54.71	0.80	55.51	74.00	-18.49	100	217	peak
10	16640.000	44.15	0.80	44.95	54.00	-9.05	100	217	AVG
11	17507.000	55.06	0.96	56.02	74.00	-17.98	106	360	peak
12	17507.000	44.18	0.96	45.14	54.00	-8.86	106	360	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Model No.	UL865-NAR	Test Mode	Mode 4
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/10
Antenna Pole	Horizontal	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	12611.000	56.49	-2.76	53.73	74.00	-20.27	100	347	peak
2	12611.000	45.72	-2.76	42.96	54.00	-11.04	100	347	AVG
3	14438.500	56.55	-2.65	53.90	74.00	-20.10	100	197	peak
4	14438.500	45.78	-2.65	43.13	54.00	-10.87	100	197	AVG
5	15169.500	56.79	-0.62	56.17	74.00	-17.83	100	288	peak
6	15169.500	46.11	-0.62	45.49	54.00	-8.51	100	288	AVG
7	15994.000	55.89	-0.05	55.84	74.00	-18.16	100	137	peak
8	15994.000	45.02	-0.05	44.97	54.00	-9.03	100	137	AVG
9	16597.500	54.89	0.79	55.68	74.00	-18.32	104	360	peak
10	16597.500	44.04	0.79	44.83	54.00	-9.17	104	360	AVG
11	17430.500	55.47	0.94	56.41	74.00	-17.59	100	54	peak
12	17430.500	44.74	0.94	45.68	54.00	-8.32	100	54	AVG

- The other emission levels were very low against the limit.
 Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

2: 5131A-UL865NA Report No: T130930W11-D

Above 1000MHz

Model No.	UL865-NAR	Test Mode	Mode 5
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09
Antenna Pole	Vertical	Antenna Distance	3m
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz
Detector Function:	Average & Peak	Tested by	Moore Cheng

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Domark
INO.	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	Remark
1	12568.500	56.84	-3.18	53.66	74.00	-20.34	100	201	peak
2	12568.500	46.03	-3.18	42.85	54.00	-11.15	100	201	AVG
3	14379.000	55.80	-2.57	53.23	74.00	-20.77	100	324	peak
4	14379.000	45.03	-2.57	42.46	54.00	-11.54	100	324	AVG
5	15050.500	56.25	-1.78	54.47	74.00	-19.53	100	47	peak
6	15050.500	45.58	-1.78	43.80	54.00	-10.20	100	47	AVG
7	16019.500	55.56	-1.09	54.47	74.00	-19.53	199	0	peak
8	16019.500	44.77	-1.09	43.68	54.00	-10.32	199	0	AVG
9	16665.500	55.04	0.70	55.74	74.00	-18.26	100	278	peak
10	16665.500	44.19	0.70	44.89	54.00	-9.11	100	278	AVG
11	17464.500	55.37	0.78	56.15	74.00	-17.85	147	0	peak
12	17464.500	44.49	0.78	45.27	54.00	-8.73	147	0	AVG

- 1. The other emission levels were very low against the limit.
- 2. Margin (dB) = Result (dBuV/m) Limit (dBuV/m)

Model No.	UL865-NAR Test Mode		Mode 5	
Environmental Conditions	26℃, 60% RH	Test Date	2013/10/09	
Antenna Pole		Antenna Distance	3m	
Highest frequency generated or used	1900MHz	Upper frequency	9.5GHz	
Detector Function:	Average & Peak	Tested by	Moore Cheng	

No.	Frequency	Reading	Correction	Result	Limit	Margin	Height	Degree	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(°)	
1	12551.500	56.39	-3.18	53.21	74.00	-20.79	202	3	peak
2	12551.500	45.65	-3.18	42.47	54.00	-11.53	202	3	AVG
3	14268.500	56.61	-2.92	53.69	74.00	-20.31	105	0	peak
4	14268.500	45.78	-2.92	42.86	54.00	-11.14	105	0	AVG
5	15152.500	56.53	-1.59	54.94	74.00	-19.06	100	3	peak
6	15152.500	45.64	-1.59	44.05	54.00	-9.95	100	3	AVG
7	16053.500	55.58	-0.98	54.60	74.00	-19.40	202	328	peak
8	16053.500	44.85	-0.98	43.87	54.00	-10.13	202	328	AVG
9	16776.000	55.52	0.88	56.40	74.00	-17.60	100	224	peak
10	16776.000	44.43	0.88	45.31	54.00	-8.69	100	224	AVG
11	17430.500	55.22	0.81	56.03	74.00	-17.97	100	116	peak
12	17430.500	44.31	0.81	45.12	54.00	-8.88	100	116	AVG

- The other emission levels were very low against the limit.
 Margin (dB) = Result (dBuV/m) Limit (dBuV/m)