

FCC Part 15B

Measurement and Test Report

For

Cordelia Lighting Inc.

20101 S.Santa Fe Avenue, Rancho Dominguez, CA 90221, USA

FCC ID: 2AQVC-TF1045R3

FCC Rule(s): FCC Part 15 Subpart B

Product Description: Track Light

Tested Model: EVTF1045R3-35

Report No.: STR18078383I

Sample Receipt Date: 2018-07-30

Tested Date: 2018-07-31 to 2018-08-29

Issued Date: 2018-08-29

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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM Test Technology Co., Ltd.



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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Cordelia Lighting Inc.
Address of applicant: 20101 S.Santa Fe Avenue, Rancho Dominguez, CA
90221, USA

Manufacturer: Cordelia Lighting Inc.
Address of manufacturer: 20101 S.Santa Fe Avenue, Rancho Dominguez, CA
90221, USA

General Description of EUT	
Product Name:	Track Light
Trade Name:	/
Model No.:	EVTF1045R3-35
Adding Model(s):	/
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	AC120V 60Hz
Rated Current:	/
Rated Power:	32W
Power Adapter Model:	/
Lowest Internal Frequency:	16MHz
Classification of ITE:	Class B

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 15 Subpart B: Unintentional Radiators.

ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

FCC – Registration No.: 125990

Shenzhen SEM Test Technology Co., Ltd. Laboratory has been recognized to perform compliance testing on equipment subject to the Commissions Declaration Of Conformity (DOC). The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	Power Supply Mode
TM1	Receiving	/	AC 120V/60Hz

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ± 3.74 dB
		0.15-30MHz ± 3.34 dB
Radiated Emissions	Radiated	30-200MHz ± 4.52 dB
		0.2-1GHz ± 5.56 dB
		1-6GHz ± 3.84 dB
		6-18GHz ± 3.92 dB

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due Date
Spectrum Analyzer	Agilent	E4407B	MY41440400	2018-05-22	2019-05-21
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2018-05-22	2019-05-21
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2018-05-22	2019-05-21
Amplifier	Agilent	8447F	3113A06717	2018-05-22	2019-05-21
Amplifier	C&D	PAP-1G18	2002	2018-05-22	2019-05-21
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-08	2020-06-07
Horn Antenna	ETS	3117	00086197	2017-06-08	2020-06-07
Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-08	2020-06-07
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2018-05-22	2019-05-21
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2018-05-22	2019-05-21
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2018-05-22	2019-05-21



2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

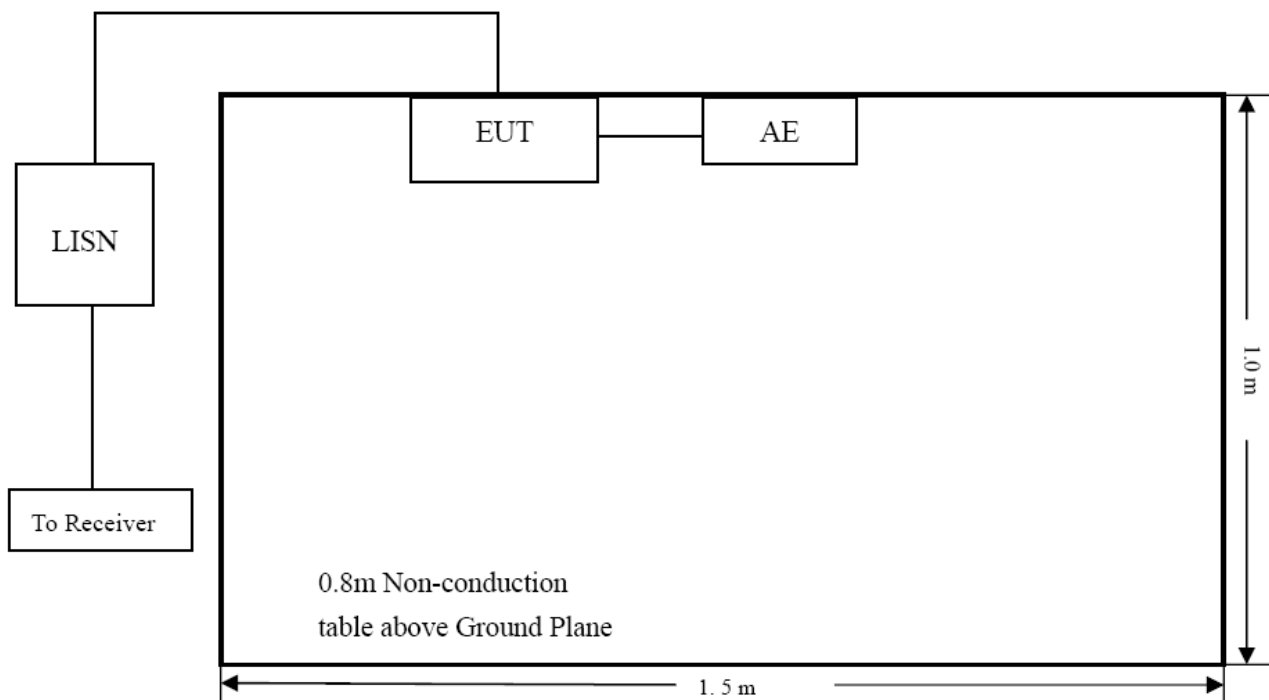
N/A: not applicable

3. Conducted Emissions

3.1 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.2 Basic Test Setup Block Diagram



3.3 Environmental Conditions

Temperature:	24 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

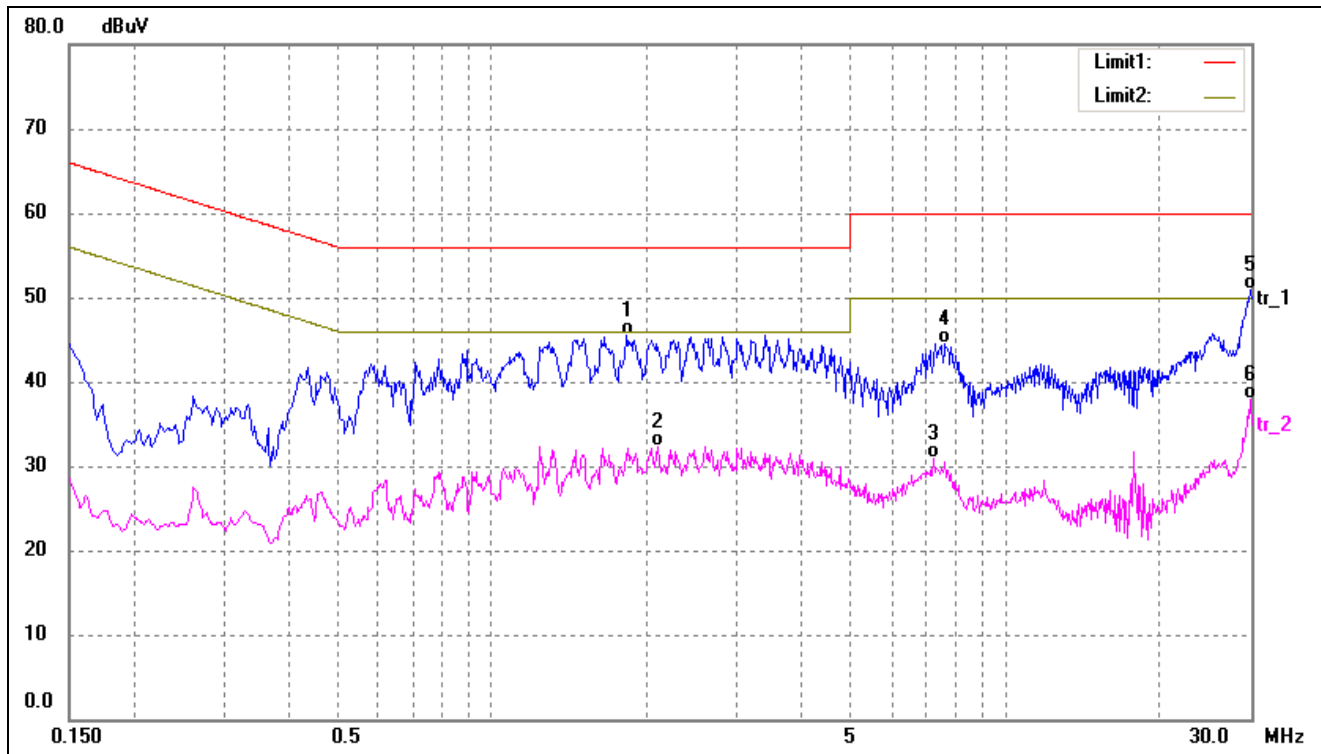
3.4 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

-8.57 dB at 29.9860MHz in the **Neutral, QP** detector, 0.15-30MHz

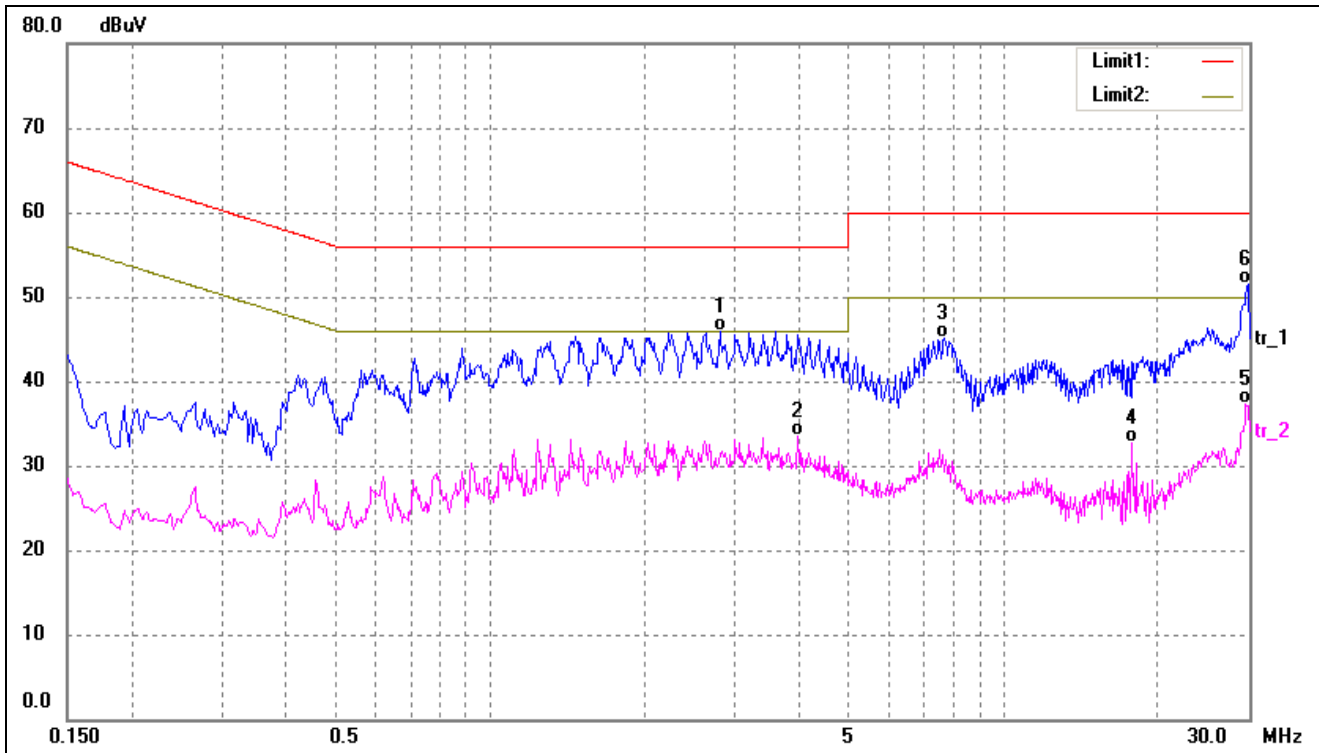
3.5 Conducted Emissions Test Data

Test mode:	TM1	Polarity:	Line
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	1.8260	34.89	10.59	45.48	56.00	-10.52	QP
2	2.1060	21.72	10.62	32.34	46.00	-13.66	AVG
3	7.2340	19.96	10.85	30.81	50.00	-19.19	AVG
4	7.6260	33.73	10.87	44.60	60.00	-15.40	QP
5*	29.8460	39.62	11.26	50.88	60.00	-9.12	QP
6	29.8460	26.73	11.26	37.99	50.00	-12.01	AVG

Test mode:	TM1	Polarity:	Neutral
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No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	2.8060	35.23	10.67	45.90	56.00	-10.10	QP
2	3.9780	22.70	10.71	33.41	46.00	-12.59	AVG
3	7.6620	34.14	10.87	45.01	60.00	-14.99	QP
4	17.7340	21.69	11.11	32.80	50.00	-17.20	AVG
5	29.6580	25.99	11.26	37.25	50.00	-12.75	AVG
6*	29.9860	40.17	11.26	51.43	60.00	-8.57	QP

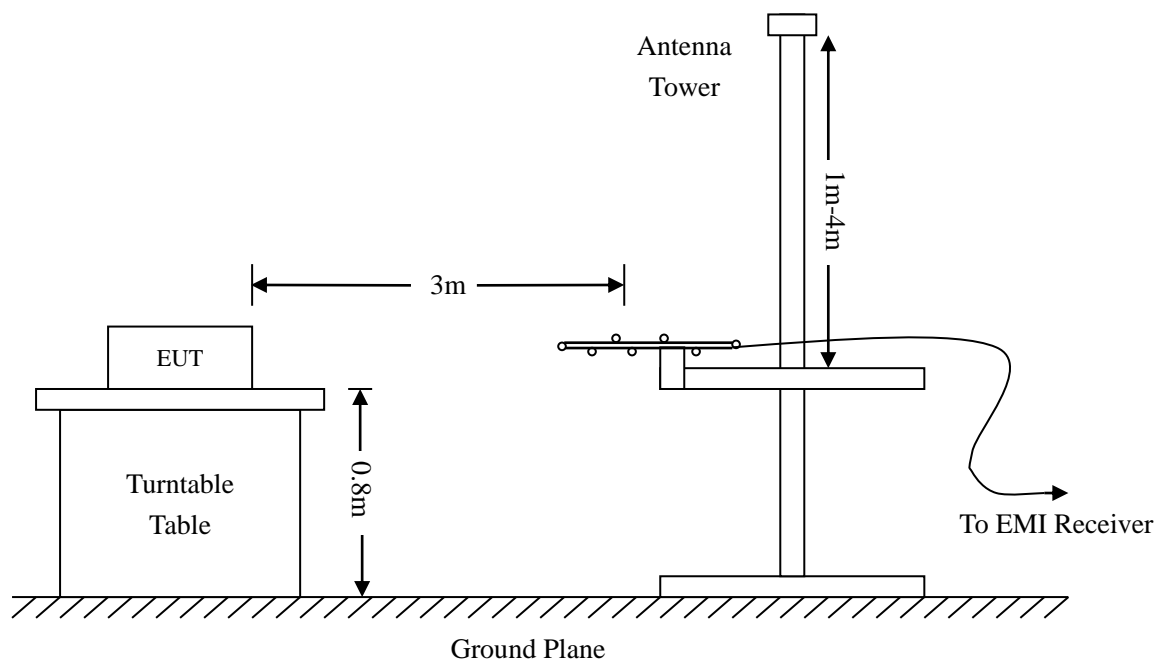
4. RADIATED EMISSION

4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



4.2 Test Receiver Setup

Frequency :9kHz-30MHz

RBW=10KHz,

VBW =30KHz

Sweep time= Auto

Trace = max hold

Detector function = peak

Frequency :30MHz-1GHz

RBW=120KHz,

VBW=300KHz

Sweep time= Auto

Trace = max hold

Detector function = peak, QP

Frequency :Above 1GHz

RBW=1MHz,

VBW=3MHz(Peak), 10Hz(AV)

Sweep time= Auto

Trace = max hold

Detector function = peak, AV

4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $-6\text{dB}\mu\text{V}$ means the emission is $6\text{dB}\mu\text{V}$ below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.4 Environmental Conditions

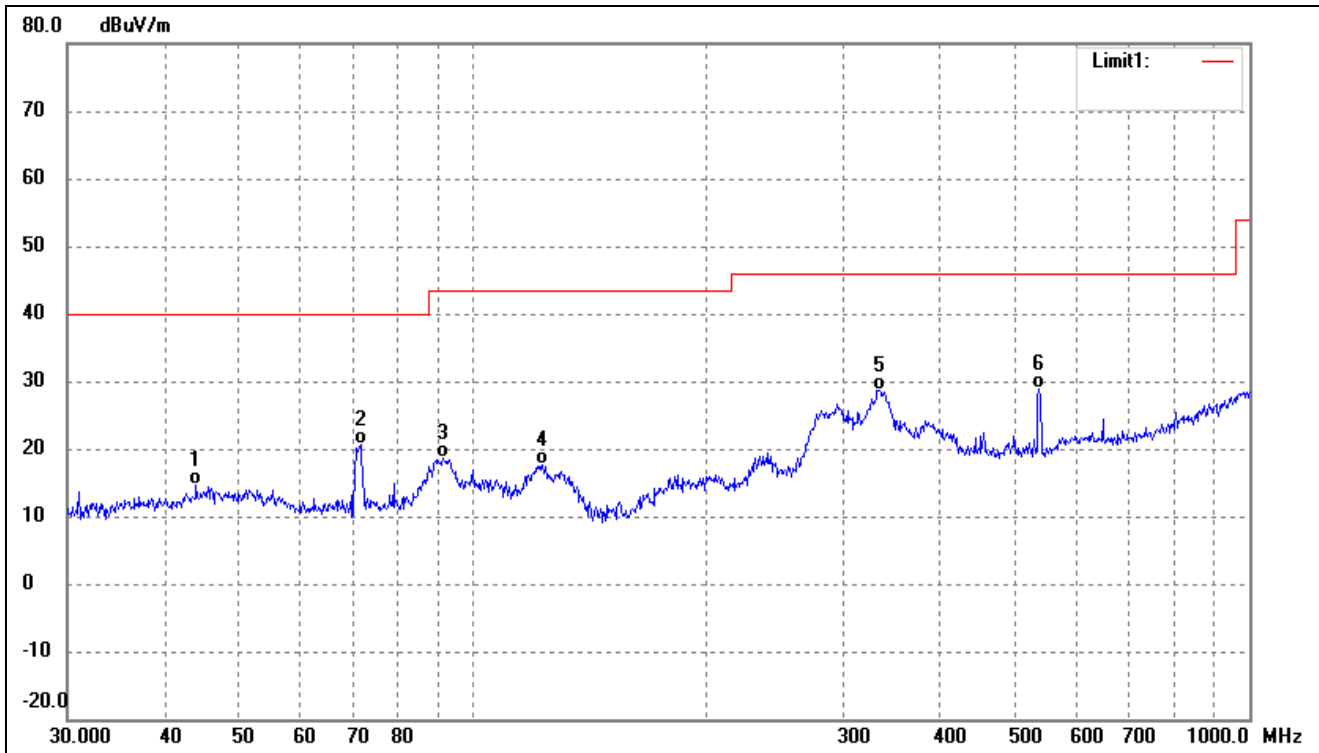
Temperature:	24 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

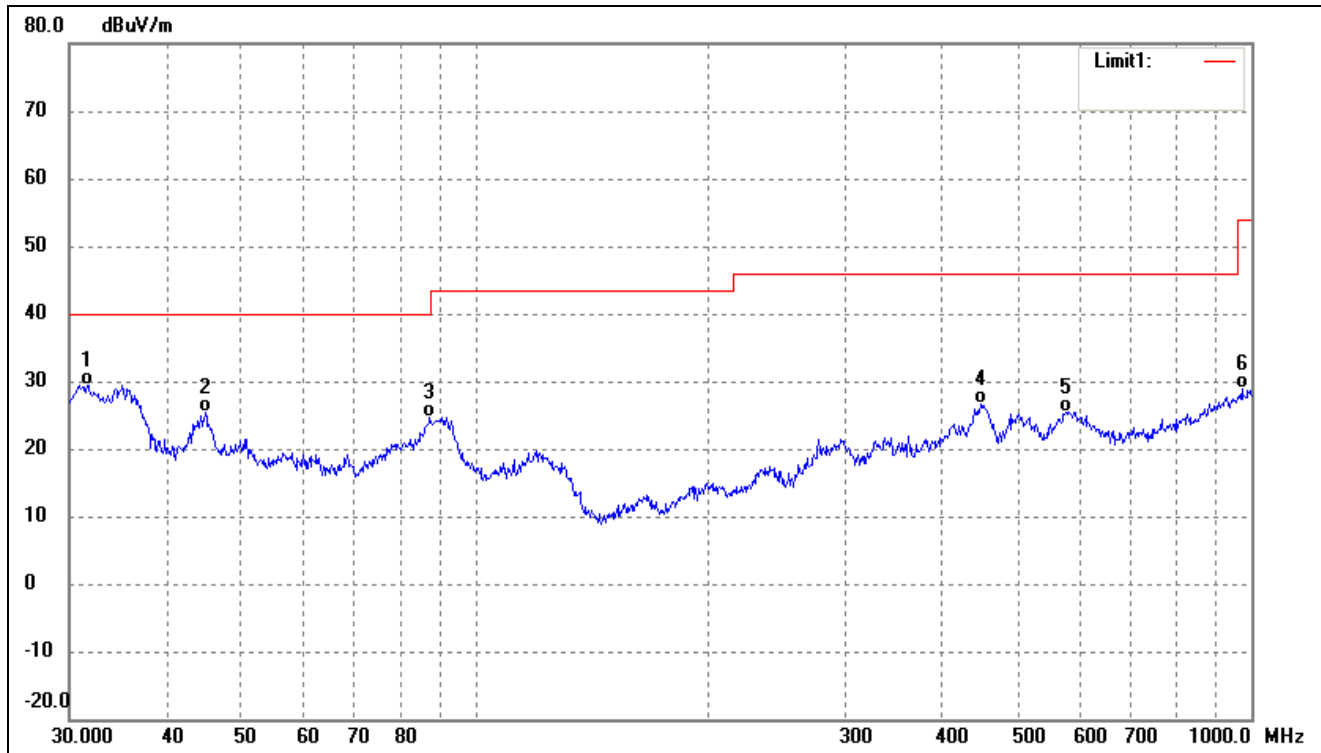
-10.63dB at 31.6202MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

Test mode:	TM1	Polarity:	Horizontal
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	43.9658	28.68	-14.02	14.66	40.00	-25.34	204	100	QP
2	71.5806	38.87	-18.25	20.62	40.00	-19.38	100	100	QP
3	91.4949	34.28	-15.74	18.54	43.50	-24.96	62	100	QP
4	122.8340	35.35	-17.79	17.56	43.50	-25.94	94	100	QP
5	333.6867	37.40	-8.84	28.56	46.00	-17.44	115	100	QP
6	535.7073	36.85	-7.97	28.88	46.00	-17.12	277	100	QP

Test mode:	TM1	Polarity:	Vertical
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No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	31.6202	46.08	-16.71	29.37	40.00	-10.63	266	100	QP
2	44.9006	39.38	-13.92	25.46	40.00	-14.54	98	100	QP
3	87.4177	42.12	-17.47	24.65	40.00	-15.35	279	100	QP
4	447.9822	35.19	-8.61	26.58	46.00	-19.42	106	100	QP
5	576.6443	32.56	-7.10	25.46	46.00	-20.54	152	100	QP
6	972.3374	27.88	0.94	28.82	54.00	-25.18	328	100	QP

Emissions 1 - 13GHz

During measurements from 1 GHz to 13 GHz, only base noise was detected.

***** END OF REPORT *****