Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**02422486 001**		**Seite 1 von 22** *Page 1 of 22*
Auftraggeber: *Client:*	**Syscan-ID Inc.** **1975 Hymus Suite 225,** **Montreal,** **Quebec,** **Canada H9P 1J8**		
Gegenstand der Prüfung: *Test item:*	**Livetrack Reader**		
Bezeichnung: *Identification:*	**LSB, LS** **SSB, SS**	**Serien-Nr.:** *Serial No.*	**0000000003, 0000000004** **0000000005, 0000000006**
Wareneingangs-Nr.: *Receipt No.:*	**1403010312**	**Eingangsdatum:** *Date of receipt:*	**2010-05-21**
Prüfort: *Testing location:*	**Refer page 4 of 22 for test facilities**		
Prüfgrundlage: *Test specification:*	**FCC Part 15, Subpart C**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (India) Pvt. Ltd.** Alpha Tower, Sigma Soft Tech Park, #7, Whitefield Main Road, Varthur Kodi, Bangalore – 560066, India		

geprüft */ tested by:*

2010-07-02	Vinay.N Test Engineer	Vinay.N
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

kontrolliert */ reviewed by:*

2010-07-02	L.Narasimha Charyulu Sr. Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges */Other Aspects:* FCC ID: YPJ-LIVETRACK-ID4

Abkürzungen:				***Abbreviations:***			
	P(ass)	=	***entspricht Prüfgrundlage***		***P(ass)***	=	***passed***
	F(ail)	=	***entspricht nicht Prüfgrundlage***		***F(ail)***	=	***failed***
	N/A	=	***nicht anwendbar***		***N/A***	=	***not applicable***
	N/T	=	***nicht getestet***		***N/T***	=	***not tested***

Test Result Summary

Clause	Test Item	Result
FCC 15.209	Spurious Radiated Emissions	Pass
FCC 15.207	Conducted Emission Test on a.c. Power Line	Pass

www.tuv.com

Content

List of Test and Measurement Instruments

Wipro Technologies, Bangalore

List of Test and Measurements

Equipment	Manufacturer	Type	S/N	Calibration Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB40	100306	21.07.2010
LISN	Schwarzbeck Mess-Electronik	NSLK2128	8128-243	16.02.2011
Hybrid Log Periodic Antenna	TDK	HLP3003C	130334	16.02.2011
Broadband Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9170	9170-337	02.06.2010
Double Ridged Horn Antenna	Schwarzbeck Mess-Electronik	BBHA9120D	9120D-687	14.08.2010
Pre-Amplifier	TDK-RFSolution	PA-02	100008	14.02.2011

SAMEER-Center for Electromagnetics, Chennai

List of Test and Measurements

Equipment	Manufacturer	Type	S/N	Calibration Due Date
EMI Receiver	Rohde & Schwarz	ESIB7	10088.7490	13.02.2010
Loop Antenna	ETS Lingdren	6507	1487	17.10.2010

Testing Facilities

1) Wipro Technologies
Survey No. 70,77,78 / 8A, Dodda Kannelli,
Sarjapur Road, Bangalore – 560 035
India

2) SAMEER-Center for Electromagnetics
C.I.T.Campus, Taramani,
2nd Main Road, Chennai – 600113
India

General Product Information

Product Function and Intended Use

Handheld Low Frequency Animal RFID reader intended for Livestock Traceability

Ratings and System Details

Operating Frequency	125 kHz and 134.2 kHz,
RFID Compatibility	HDX ISO, FDX B ISO and EM4002
Communication Ports	Serial RS232 or optional Bluetooth (Class1, 100m)
Battery	7.4V Li-ion rechargeable
Power Input	12 VDC for charging battery
Weight	0.7 kg (1.5 lbs)
Display	Graphic OLED 128 x 64 pixels
Supply Voltage	Input: AC 100 ~ 240 V; 50 ~ 60 Hz Output: 12V DC 1.6A
Dimensions	650 X 100 X 30mm

Test Conditions:

Voltage: 110 V AC, 60Hz

Environmental conditions

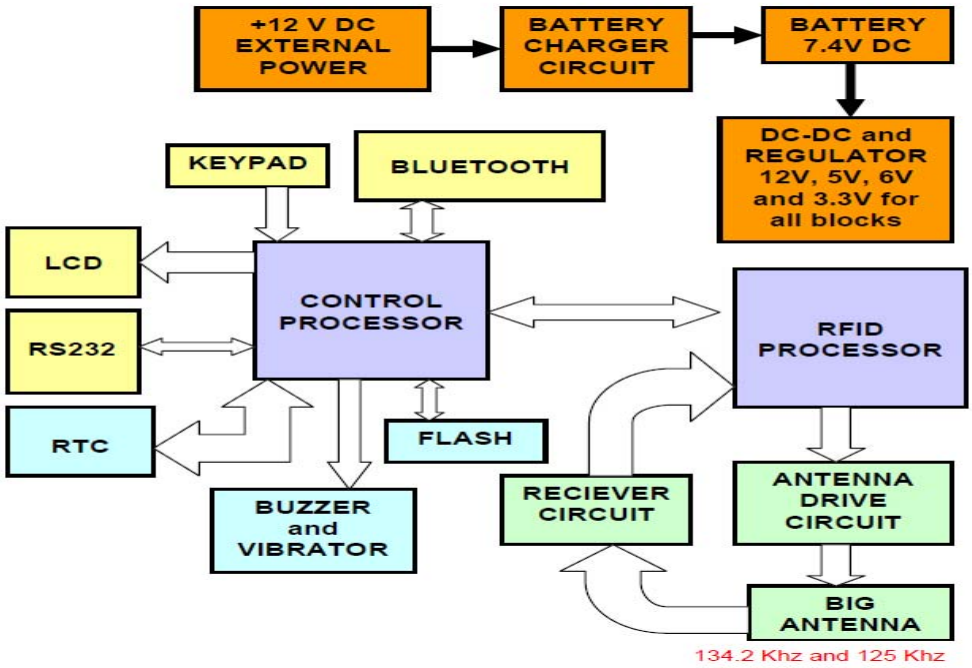
Temperature: +23 ° C

RH: 62%

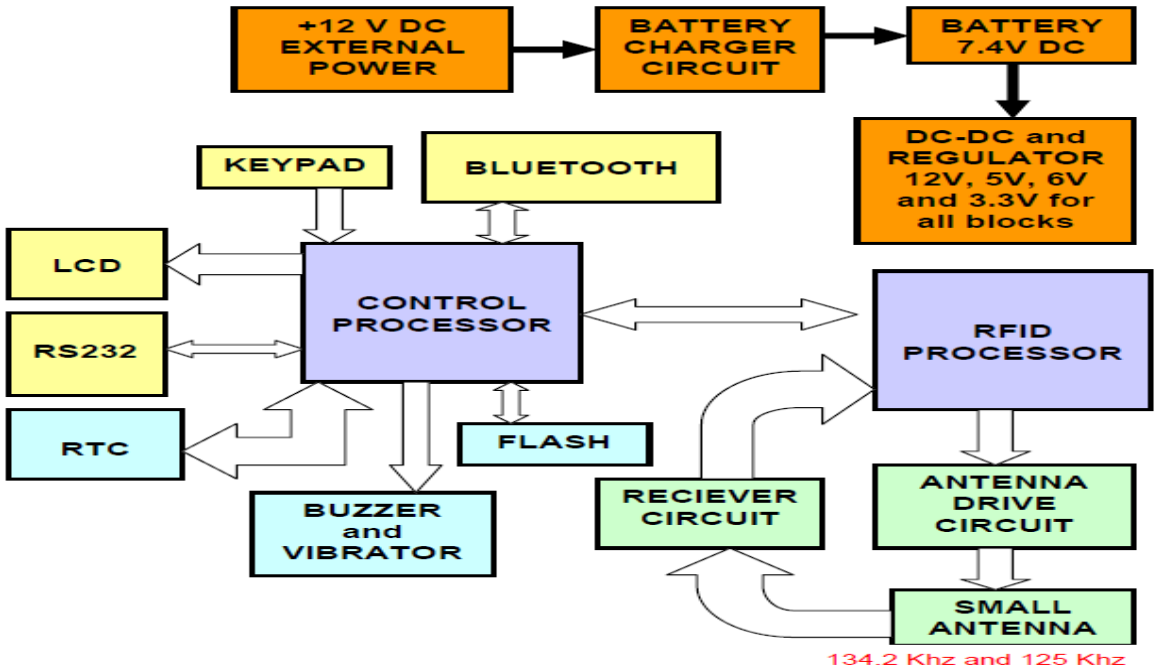
Operation Descriptions

The device is a handheld standalone Animal RFID reader which gets its power from a 7.4V Li-ion Battery pack. The battery is rechargeable through a 12V DC Adapter. Communication with the device is possible through Bluetooth and RS232 serial interfaces. The user operates with the Keypad and LCD to select Menu options. The RF processor in the reader takes care of the RF transmission and reception of data and the Control Processor handles the general overall device operation.

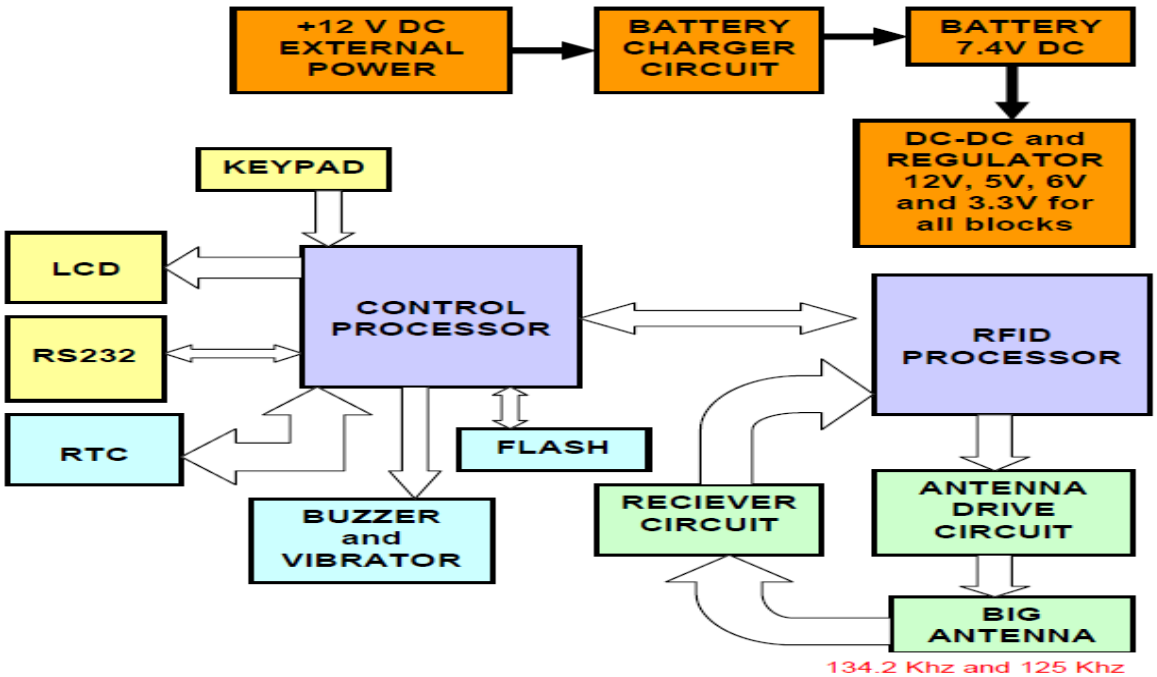
Block diagram



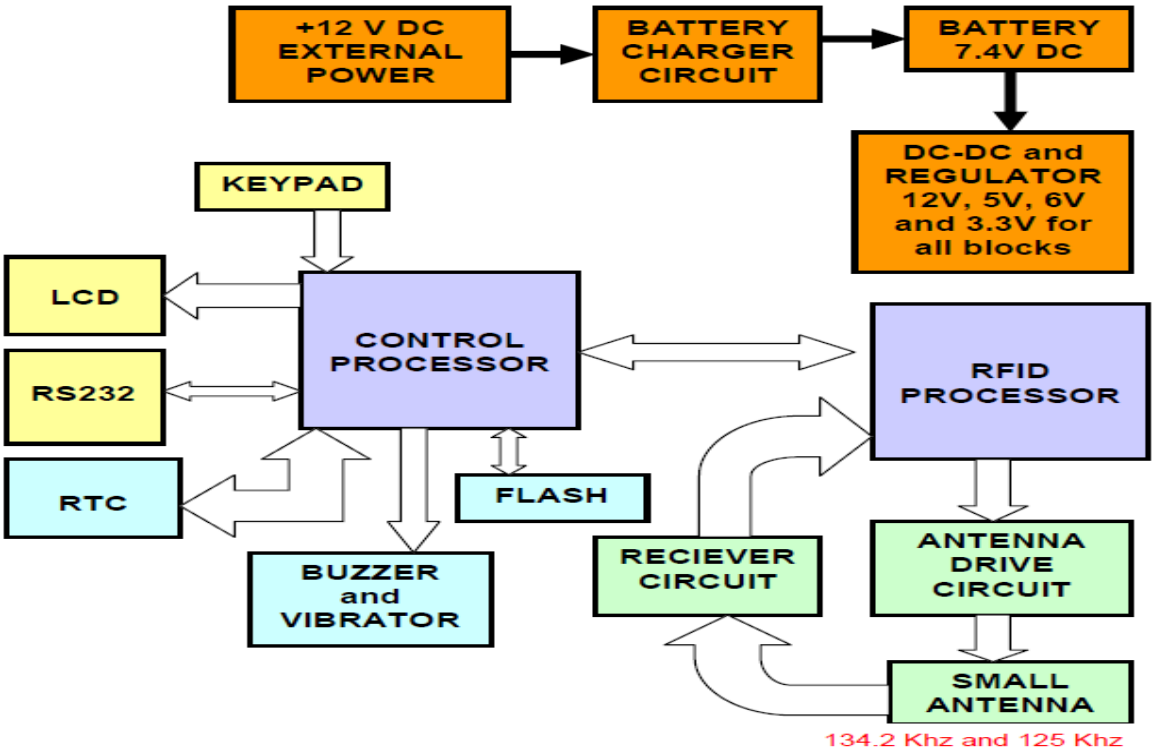
Block Diagram Model: LSB



Block Diagram Model: SSB



Block Diagram Model: LS



Block Diagram Model: SS

Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The test was performed under test mode to obtain the maximum emissions.

Test Operation and Test Software

Testing software was used to enable the continuous transmission and changing the frequency hopping channels (low/mid/high) on the EUT for the tests in this report.

Special Accessories and Auxiliary Equipment

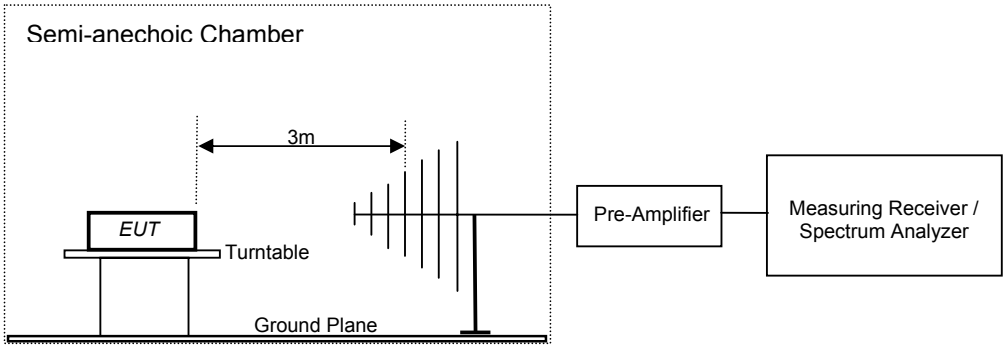
The EUT was tested together with the following additional accessory:

- Notebook computer for controlling different transmit channels and also used to enable the frequency hopping.

Test Methodology

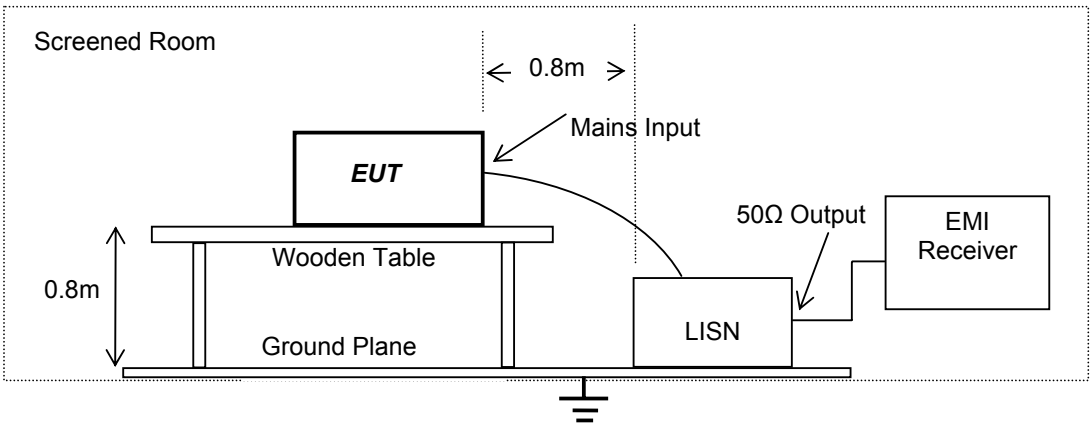
Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.4-2003. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.



Conducted Emission Test on a.c. mains line

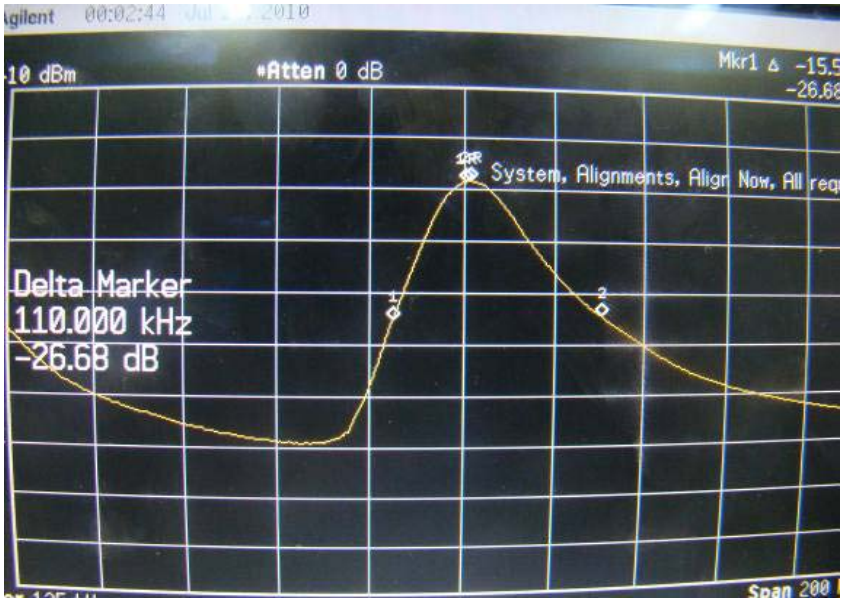
The equipment under test (EUT) was placed on a wooden table 80cm above the ground plane, the LISN was place 80cm away from the EUT. The test was performed in accordance with ANSI C63.4: 2003, with the following: an initial measurement was performed in peak and average detection mode on the live and neutral lines. The pre-scan was performed by peak detection on both live and neutral conductors. Any emissions recorded within 20dB of the relevant limit line were re-measured using quasi-peak and average detections, the 6 worst cases was recorded in the table of results.



Test Results

Occupied Bandwidth Measurement

Centre Frequency (kHz)	Lower 26 dB Frequency (kHz)	Upper 26 dB Frequency (kHz)	Occupied Bandwidth (kHz)
125.0	15.50	29.90	45.40
134.2	15.50	29.50	45.00



Centre Frequency: 125 kHz **Lower 26 dB Marker**

Centre Frequency: 125 kHz **Upper 26 dB Marker**

Centre Frequency: 134.2 kHz **Lower 26 dB Marker**

Centre Frequency: 134.2 kHz **Upper 26 dB Marker**

Spurious Radiated Emissions **Section 15.209**

Result **Pass**

Test Specification	FCC Part 15 Section 15.205, 15.209
Test Method	ANSI C63.4-2003
Supply Voltage	110 Volt 60Hz AC
Measuring Frequency Range	125 kHz (Lowest internal oscillator frequency) – 1 GHz (Up to 10th harmonic of the highest fundamental frequency)
Measuring Distance	3m
Requirement	To comply as per limits stated below

Test result:

Note: Radiated Emissions testing was performed in the X, Y and Z axis mode. The X Axis mode is the worst-case recorded in this test report.

Transmitter Frequency: 134.2 kHz

Antenna Polarization	Spurious Emission (kHz)	Field Strength (dBµA/m)	Attenuator (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
X- Axis	009.30	10.48	10	54.48	128.43	-73.75
	133.60	29.52	10	73.52	105.09	-31.57
Z- Axis	010.80	7.47	10	51.47	126.94	-75.47
	009.00	11.44	10	55.44	128.52	-73.08
	133.50	11.52	10	55.52	105.09	-49.57

Transmitter Frequency: 125 kHz

Antenna Polarization	Spurious Emission (kHz)	Field Strength (dBµA/m)	Attenuator (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
X- Axis	009.30	10.58	10	54.58	128.23	-73.65
	124.80	33.86	10	77.86	105.68	-27.82
Z- Axis	009.20	10.59	10	54.59	128.33	-73.74
	071.00	2.60	10	46.60	120.58	-63.98
	125.00	12.90	10	56.90	105.67	-48.77

Spurious emission results for frequency range 30MHz to 1GHz

Antenna Polarization	Frequency (MHz)	Field Strength (Quasi Peak) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Verdict
V	199.05	32.50	43.50	-11.00	Pass
	359.55	28.38	46.00	-17.62	Pass
	362.00	30.18	46.00	-15.82	Pass
	363.05	28.78	46.00	-17.22	Pass
	367.10	23.70	46.00	-22.30	Pass
	370.00	31.57	46.00	-14.43	Pass
H	199.05	41.44	43.50	-02.06	Pass
	362.00	40.73	46.00	-05.27	Pass
	362.55	40.94	46.00	-05.06	Pass
	366.55	41.61	46.00	-04.39	Pass
	367.10	42.55	46.00	-03.45	Pass
	370.05	13.22	46.00	-32.78	Pass

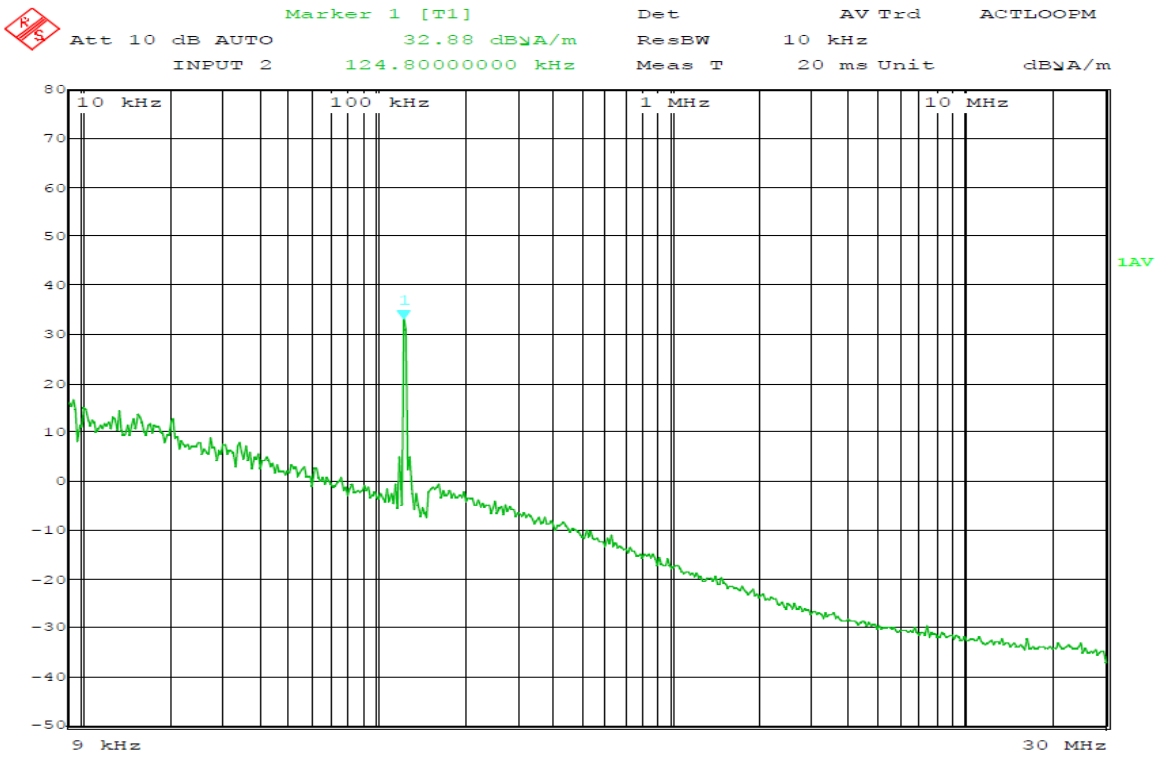
Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m) at 3m range
0.009 – 0.490	2400/F(kHz) (300m range)	48.50 – 13.80 (300m range)*
0.490 – 1.705	24000/F(kHz) (30m range)	33.80 – 23.00 (30m range)*
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

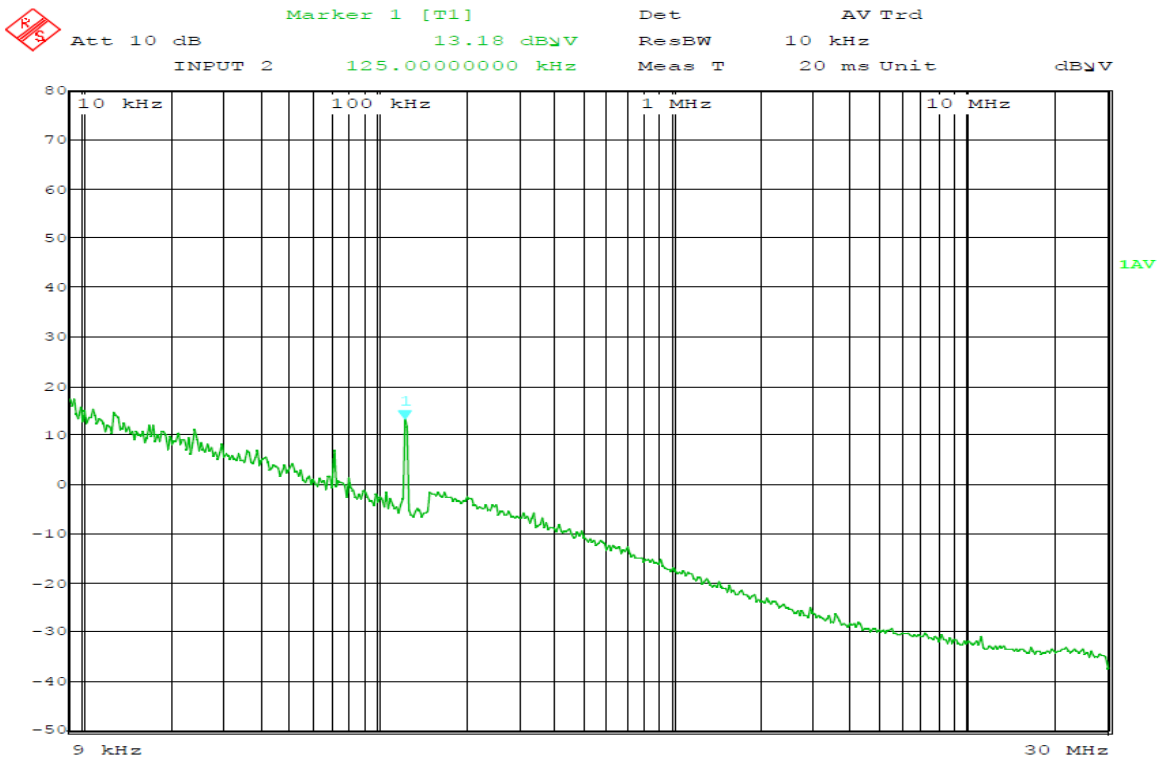
Remark: * the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz are at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88,50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

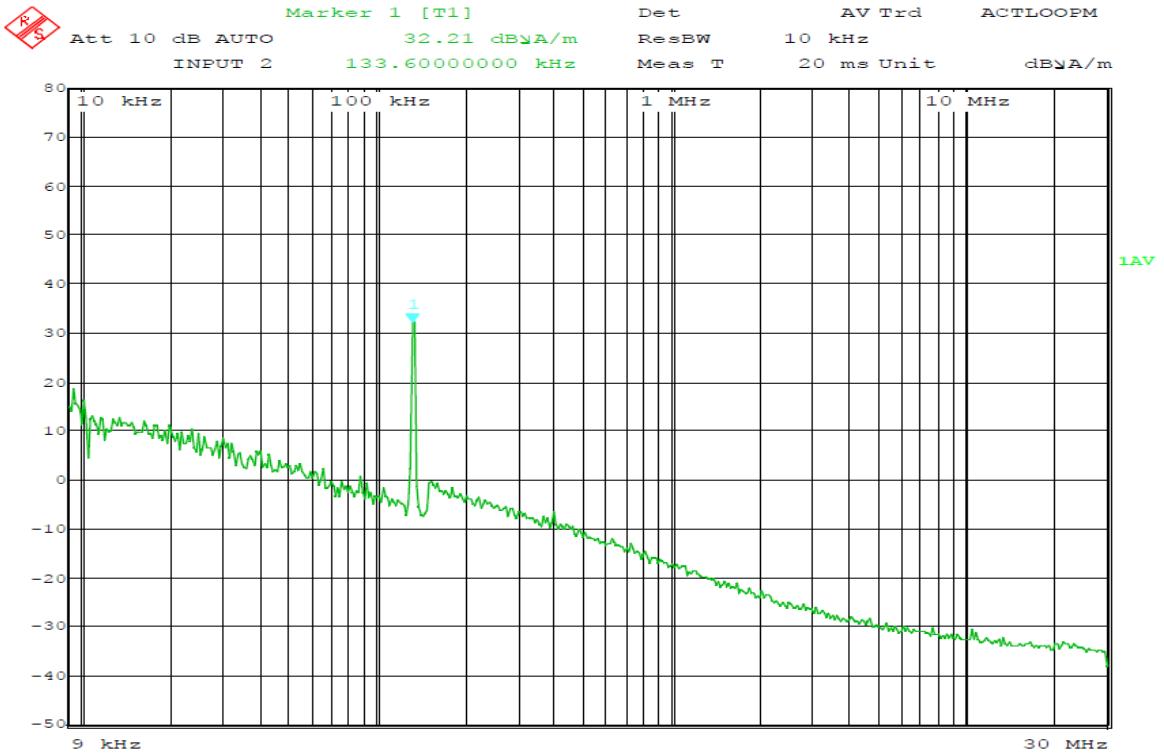
The emission limits shows in the table are based on measurements employing a CISPR quasi-peak detector and above 1000 MHz are based on the measurements employing an average detector.



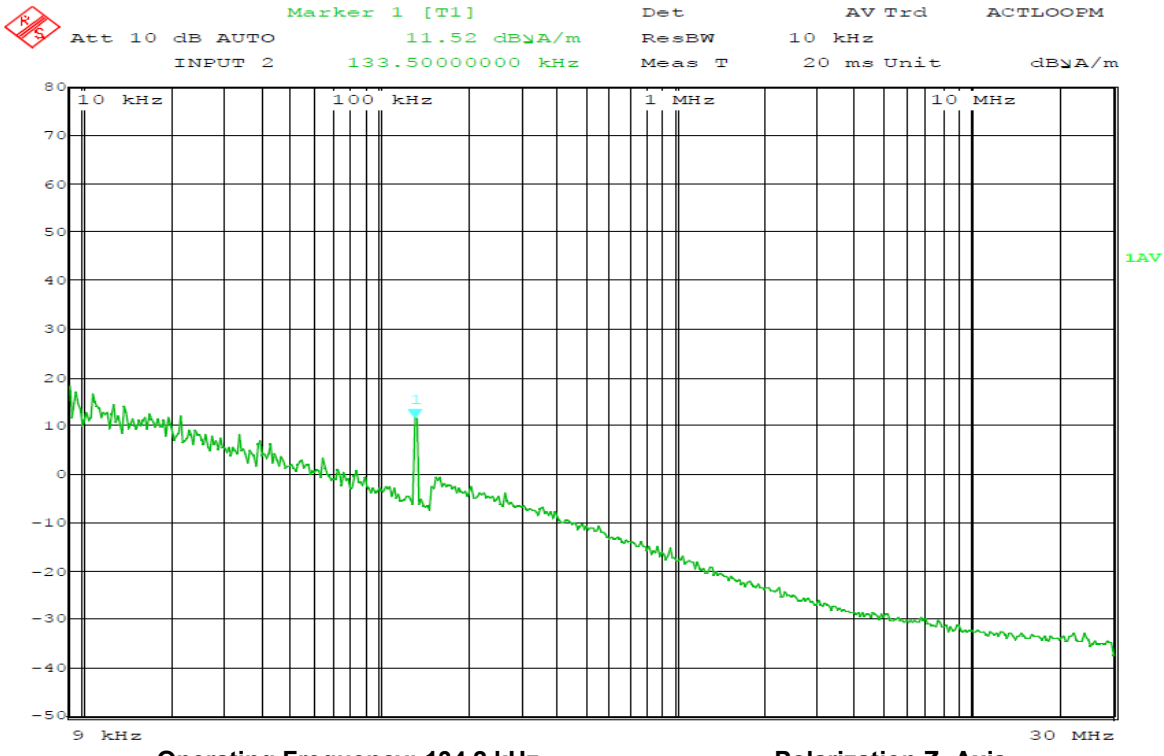
Operating Frequency: 125 kHz **Polarization X- Axis**



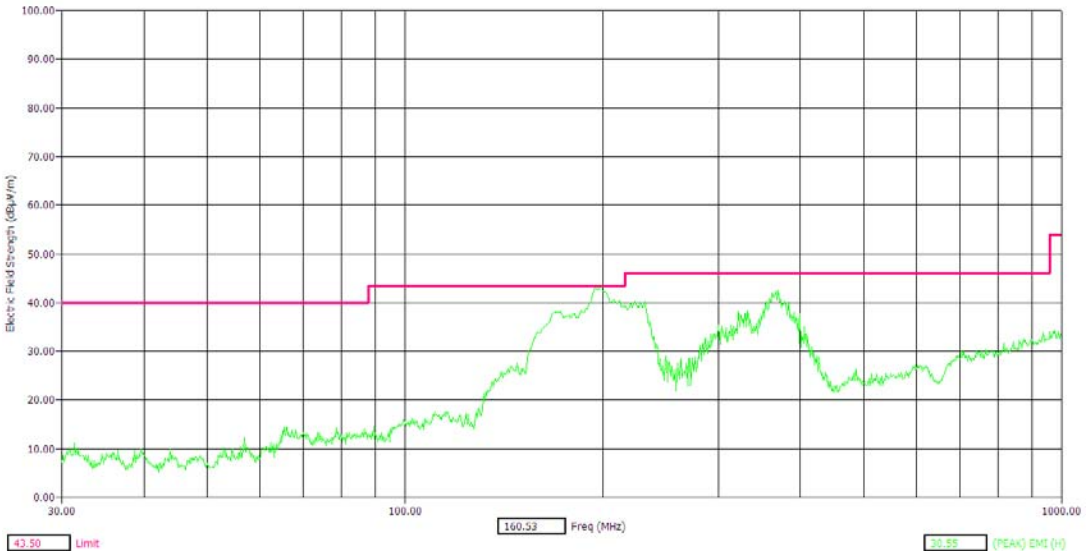
Operating Frequency: 125 kHz **Polarization Z- Axis**



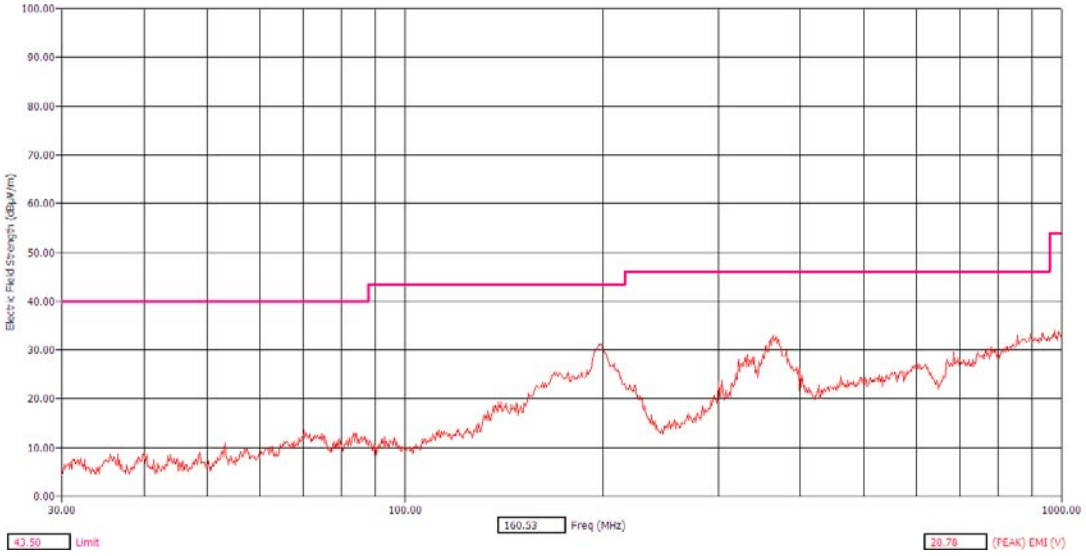
Operating Frequency: 134.2 kHz **Polarization X- Axis**



Operating Frequency: 134.2 kHz **Polarization Z- Axis**



Horizontal Polarization



Vertical Polarization

Conducted Emission Test on a.c. Power Line **Section 15.207**

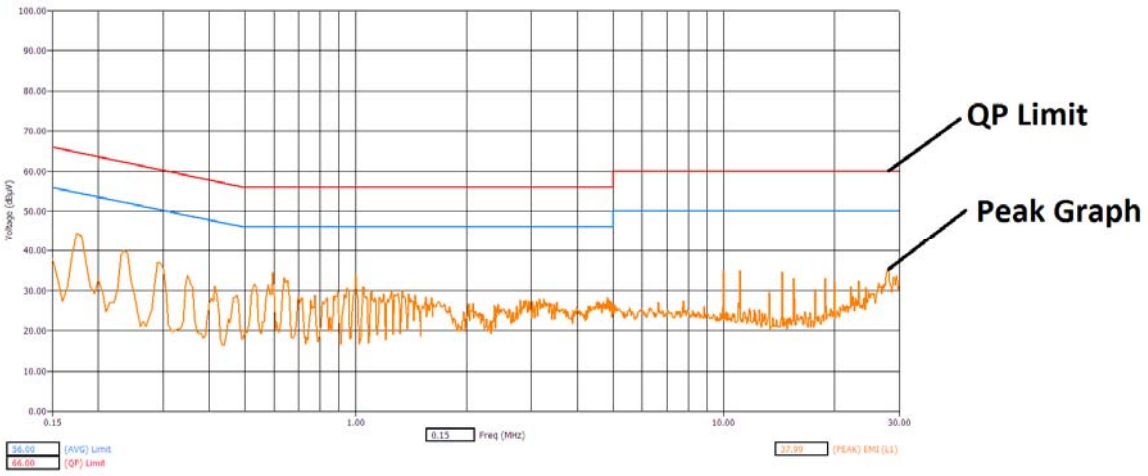
Result **Pass**

Test Specification	:	FCC Part 15 Section 15.207
Test Method	:	ANSI C63.4-2003
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	110 Volt 60Hz AC

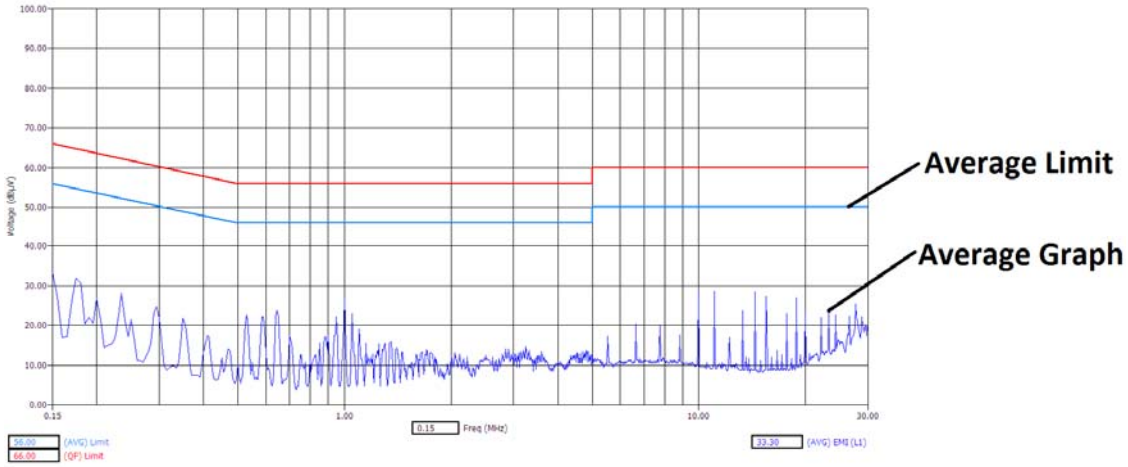
Test Result:

Conductor	Frequency of Emission (MHz)	Emission Level (QP) (dBµV)	QP Limit (dBµV)	Margin (dB)	Result
Line	0.17	43.01	64.70	-21.69	Pass
	0.23	37.35	62.31	-24.96	Pass
	0.29	33.96	60.47	-26.51	Pass
	0.54	15.03	56.00	-40.97	Pass
	0.59	31.59	56.00	-24.41	Pass
	0.65	33.69	56.00	-22.31	Pass
	0.95	29.24	56.00	-26.76	Pass
	1.00	30.65	56.00	-25.99	Pass
	2.44	26.82	56.00	-29.18	Pass
	3.15	27.86	56.00	-28.14	Pass
Neutral	0.17	41.60	64.55	-22.96	Pass
	0.23	36.68	62.12	-25.45	Pass
	0.29	33.28	60.28	-27.00	Pass
	0.53	-27.46	56.00	-28.54	Pass
	0.59	30.94	56.00	-25.06	Pass
	0.64	31.39	56.00	-24.61	Pass
	1.00	30.01	56.00	-25.99	Pass
	1.05	29.57	56.00	-26.43	Pass
	11.07	33.02	60.00	-26.98	Pass
	27.90	29.20	60.00	-30.80	Pass

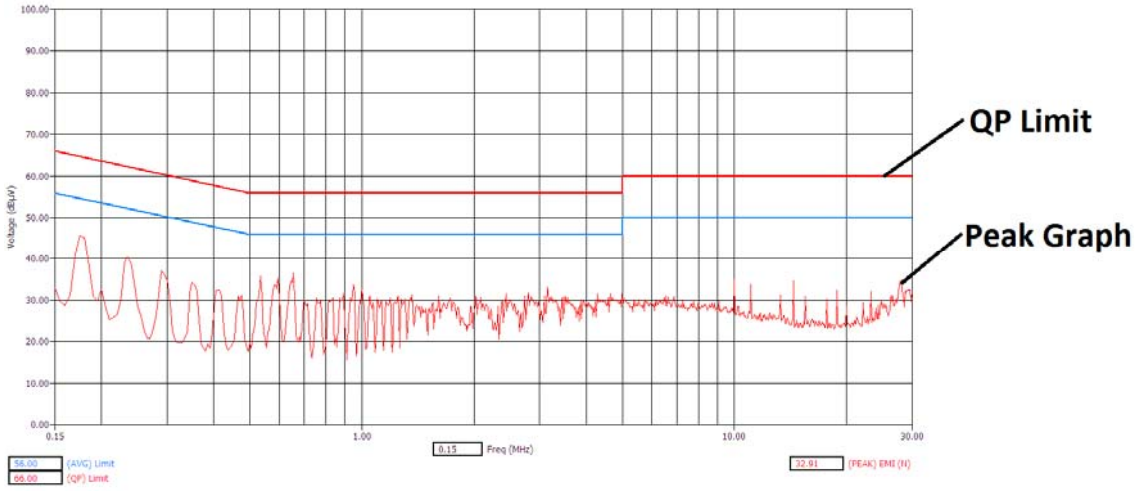
Conductor	Frequency of Emission (MHz)	Emission Level (Av) (dBµV)	Average Limit (dBµV)	Margin (dB)	Result
Line	0.17	31.39	54.70	-23.31	Pass
	0.23	26.61	52.31	-25.69	Pass
	0.29	25.39	50.47	-25.08	Pass
	0.59	21.82	46.00	-24.18	Pass
	0.65	23.76	46.00	-22.24	Pass
	0.95	22.16	46.00	-23.84	Pass
	1.00	25.31	46.00	-20.69	Pass
	2.44	13.98	46.00	-32.02	Pass
	3.15	14.32	46.00	-31.68	Pass
Neutral	0.17	31.43	54.55	-23.12	Pass
	0.23	23.43	52.12	-28.70	Pass
	0.29	22.84	50.28	-27.44	Pass
	0.53	19.89	46.00	-26.11	Pass
	0.59	15.96	46.00	-30.04	Pass
	0.64	16.67	46.00	-29.33	Pass
	1.00	25.96	46.00	-20.04	Pass
	1.05	23.41	46.00	-22.59	Pass
	11.07	29.41	50.00	-20.59	Pass
	27.90	20.05	50.00	-29.95	Pass



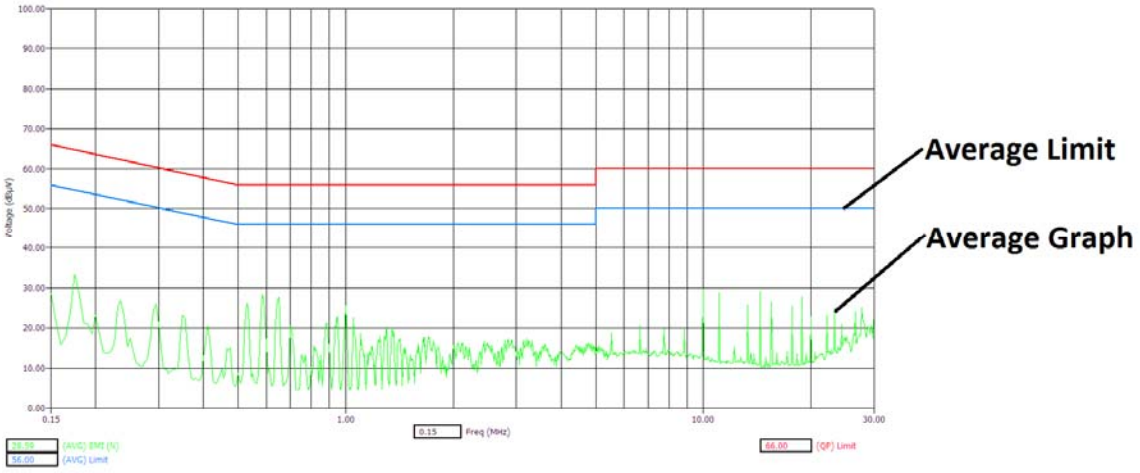
LINE: Peak



LINE: Average



NEUTRAL: Peak



NEUTRAL: Average

www.tuv.com

Limit of section 15.207

Frequency of emission (MHz)	QP Limit (dBµV)	AV Limit (dBµV/m)
0.15 – 0.5	66 – 56*	56 – 46*
0.5 – 5	56	46
5 – 30	60	50

* Decreases with the logarithm of the frequency.

End of report to be continued with Appendix