



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
4086ERM.001A1

Test report

USA FCC Part 15.225, Part 15.209 and Part 15.207
CANADA RSS-210, RSS-Gen

(*) Identification of item tested	Mode 3 EV charging station. 120V AC
(*) Trademark	Teltonika Energy
(*) Model and /or type reference	TeltoCharger / EVC1310P1000
(*) Other identification of the product	FCC ID: 2BBR8-EVC131 IC ID: 30933-EVC131
(*) Features	Bluetooth, Wi-Fi, LAN, NFC reader
Manufacturer	UAB Teltonika EMS Ditvos str. 6, LT-02121 Vilnius Lithuania
Test method requested, standard	USA FCC Part 15.225 (2018): Operation within the band 13.110 -14.010. USA FCC Part 15.209 (2018): Radiated emission limits, general requirements. USA FCC Part 15.207 (2018): Conducted emission limits, general requirements. CANADA RSS-210 Issue 10 (Dec 2019). CANADA RSS-Gen Issue 5 Amendment 2 (February 2021). ICES-003 Issue 7 (October 2020). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	12-19-2023
Report template No	FDT08_23 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U(k=2)	Units
Conducted Emission	0,009 - 30	3.54	dB
Occupied Bandwidth	13.110 – 14.010	1.87	%
Radiated Spurious Emission	0,009 - 30	2.69	dB
	30-180	3.82	dB
	180-1000	2.61	dB
	1000-18000	2.92	dB
	18000-40000	2.15	dB

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item under evaluation", "Trademark", "Model and/or type reference", "General description of the device", "Other identification of the product").
2. The device under evaluation consists of a Mode 3 EV charging station. 120V AC.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples used for test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control N°	Description	Model	Serial N°	Date of reception
4086/01	EV Charger + Power Cable Type 3R	EVC1310P1000	-	4/13/2023

Sample S/01 was used for the following test(s): All conducted and radiated tests indicated in appendix A.

Test sample description

Test Sample description (compulsory information for EMC and RF testing services)

Ports..... :	Port name and description	Cable					
		Specified length [m]	Attached during test	Shielded			
	LAN	100	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
			<input type="checkbox"/>	<input type="checkbox"/>			
Supplementary information to the ports..... :							
Rated power supply..... :	Voltage and Frequency	Reference poles					
		L1	L2	L3	N	PE	
	<input checked="" type="checkbox"/>	AC: 120 V (L-L 240 V)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	DC:					
<input type="checkbox"/>	DC:						
Rated Power..... :	7.6 kW						
Clock frequencies..... :	160 MHz						
Other parameters..... :	-						
Software version..... :	V1.8.0						
Hardware version..... :	Power board v3.2 Interface board v7						
Dimensions in cm (L x W x D)..... :	341mm x 170mm x 94mm						
Mounting position..... :	<input type="checkbox"/>	Table top equipment					
	<input checked="" type="checkbox"/>	Wall/Ceiling mounted equipment					
	<input type="checkbox"/>	Floor standing equipment					
	<input type="checkbox"/>	Hand-held equipment					
	<input type="checkbox"/>	Other:					
Modules/parts..... :	Module/parts of test item	Type	Manufacturer				
Accessories (not part of the test item)..... :	Description	Type	Manufacturer				
	Programming cable for ESP						
	Programming cable for STM						

Documents as provided by the applicant	Description	File name	Issue date
	Declaration Equipment Data		6/16/2023
Copy of marking plate:			

Identification of the client

Teltonika Energy UAB
Ditvos str. 6, LT-02121 Vilnius
Lithuania

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	04-26-2023
Date (finish)	12-15-2023

Document history

Report number	Date	Description
4086ERM.001	07-20-2023	First release
4086ERM.001A1	12-19-2023	Second release. The whole document, typographical error, Supply voltage was modified. Page 1, Cover, A new clause & a new standard have been added Page 3, Uncertainty has been added to the report. Page 8, Missing test case has been added to the Summary. Page 28-30, missing test case: Continuous conducted emission on Power leads - Intentional radiators, was added on the test report This modification of test report cancels and replaces the test report 4086ERM.001

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Qi Zhang, Koji Nishimoto, Sravani Gollamudi, and Victor Albrecht.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

FCC PART 15 PARAGRAPH / RSS-210					
Report Section	15C Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
A.1		RSS-Gen 6.7	99% Occupied Bandwidth	P	N/A
A.2	§ 15.225 (a) 6 dB Bandwidth	RSS-210 Clause B.6 (a)(i)	Field Strength of emissions within the band 13.553 MHz – 13.567 MHz	P	N/A
A.3	§ 15.225 (b) 6 dB Bandwidth	RSS-210 B.6 (a)(ii)	Field Strength of emissions within the band 13.410 MHz – 13.553 MHz and 13.567 – 13.710 MHz	P	N/A
A.4	§ 15.225 (c) 6 dB Bandwidth	RSS-210 B.6 (a)(iii)	Field Strength of emissions within the band 13.110 MHz – 13.410 MHz and 13.710 – 14.010 MHz	P	N/A
A.5	§ 15.225 (d) 6 dB Bandwidth	RSS-210 B.6 (a)(iv)	Field Strength of emissions outside of the band 13.110 MHz – 13.410 MHz	P	N/A
A.6	§ 15.225 (e) 6 dB Bandwidth	RSS-210 Clause B.6 (b)	Frequency Tolerance of the carrier signal.	P	N/A
A.7	§ 15.207 (a)	ICES-003 Issue 7 Clause 3.2.1	Continuous conducted emission on Power leads - Intentional radiators	P	N/A
<u>Supplementary information and remarks:</u> None					

List of equipment used during the test

Conducted Measurements

Control Num	Equipment	Manufacturer	Serial	Model	Next calibration
1039	FSV40 Signal Analyser 40GHz	Rohde & Schwarz	101627	FSV40	2024-11-01
1073	Pulse limiter	Narda	111WX70503	PMM PL01	N/A
1107	Ethernet SNMP Thermometer-RF1	Hw Group	60038026952	HWg-STE Plain	2024-10-18
1110	Ethernet SNMP Thermometer-MR	Hw Group	60038026956	HWg-STE Plain	2024-10-18
1314	Wireless Measurement Software R&S EMC32	Rohde & Schwarz	1040-OT102236	-	N/A
1374	ESR7 EMI Test Receiver	Rohde & Schwarz	102390	ESR7	2024-05-26
1379	Two Line V-Network	Rohde & Schwarz	101498	ENV216	2024-05-31
1488	Climatic Chamber T10-F40-C	TPS	--	T10-F40-C	2023-12-15

Radiated Measurements

Control Num	Equipment	Manufacturer	Serial	Model	Next calibration
878	DC Power supply	Ametek Prog	1707A01783	Prog-DC-PS	N/A
1062	Active Loop Antenna	ETS Lindgren	00208517	6502	2023-05-31
1012	ESR26 EMI Test Receiver	Rohde & Schwarz	101478	ESR26	2025-01-18
1014	FSV40 Signal Analyzer 40GHz	Rhode & Schwarz	101626	FSV40	2024-08-01
1065	3142E Biconilog Antenna	Ets Lindgren	208587	3142E	2023-08-13
1108	Ethernet SNMP Thermometer-CR Room	Hw Group	60038026954	HWg-STE Plain	2024-10-18
1111	Ethernet SNMP Thermometer-SAC	Hw Group	60038026577	HWg-STE Plain	2024-10-18
1179	Semi-Anechoic Chamber	Frankonia	F169021	SAC 3plus 'L'	N/A
1314	Wireless Measurement Software R&S EMC32	Rohde & Schwarz	1040-OT102236	-	N/A

Appendix A: Test results

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Product Information

The following information is provided by the client:

Information	Description
Operating Frequency Band or Bands	13.56 MHz
Operating Frequency or Frequencies	13.56 MHz
Channel Bandwidth	--
Extreme operating conditions	
- Temperature range	-20 °C to +50 °C
Nominal Voltage	
- Supply Voltage	120V AC

Test modes available:

- Nominal Operating Frequency: 13.56 MHz

Description Of Test Conditions

Test Conditions	Description
TC/01	<p><u>Power supply (V):</u> $V_{nom} = 120\text{ V}$ $V_{min} = 102\text{ V}$ $V_{max} = 138\text{ V}$</p> <p><u>Temperature (°C):</u> Temperature range: -20°C to $+50\text{ }^{\circ}\text{C}$</p> <p>The subscript nom indicates normal test conditions. The subscripts min and max indicate extreme test conditions (minimum and maximum respectively).</p> <p><u>Test Frequencies for Conducted and Radiated tests:</u> 13.56 MHz</p>

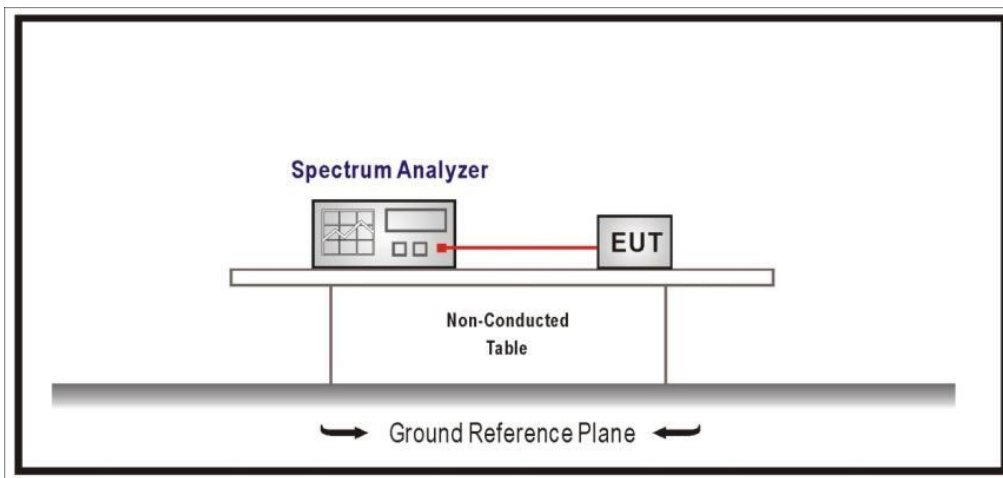
A.1: 99% Occupied Bandwidth

Limits:	Product standard:	RSS-Gen
	Test standard:	RSS-Gen 6.7

LIMITS

The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs

Test Setup

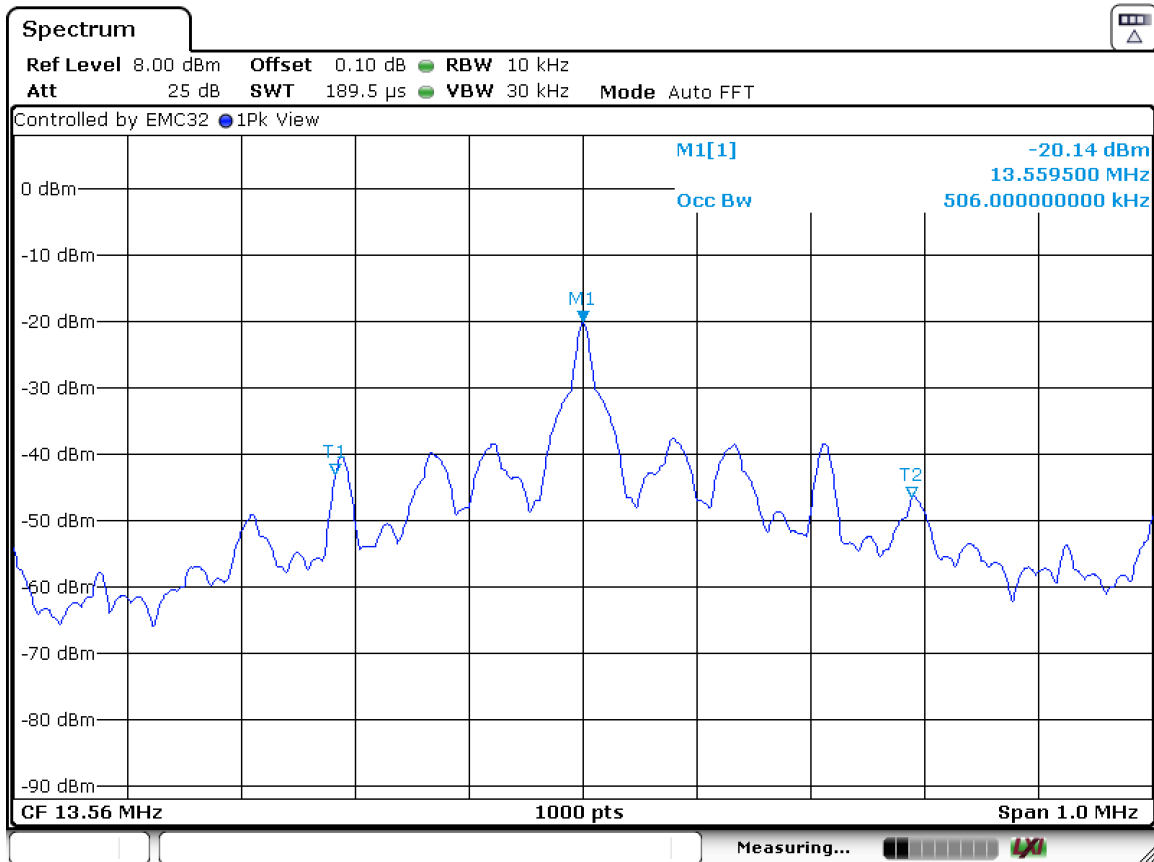


Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

NFC Operating Frequency: 13.56MHz

Center Frequency (MHz)	13.5595
99% bandwidth (kHz)	506

Test Results (Cont.):



Date: 1.MAY.2023 19:06:34

A.2: Field strength of emissions within the band 13.553 MHz – 13.567 MHz

Limits:	Product standard:	Part 15 Subpart C §15.225 and RSS-210
	Test standard:	Part 15 Subpart C §15.225(a) and RSS-210 clause B.6 (a)(i)

LIMITS

The field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 15,848 microvolts/meter (84 dB μ V/m) at 30 meters.

Test Setup

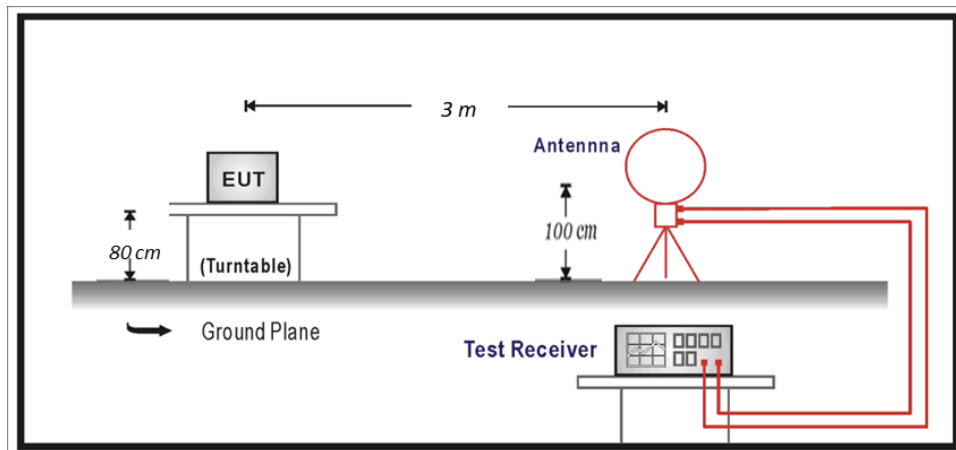
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz) is situated at a distance of 3 m.

For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° to find the maximum radiated emission.

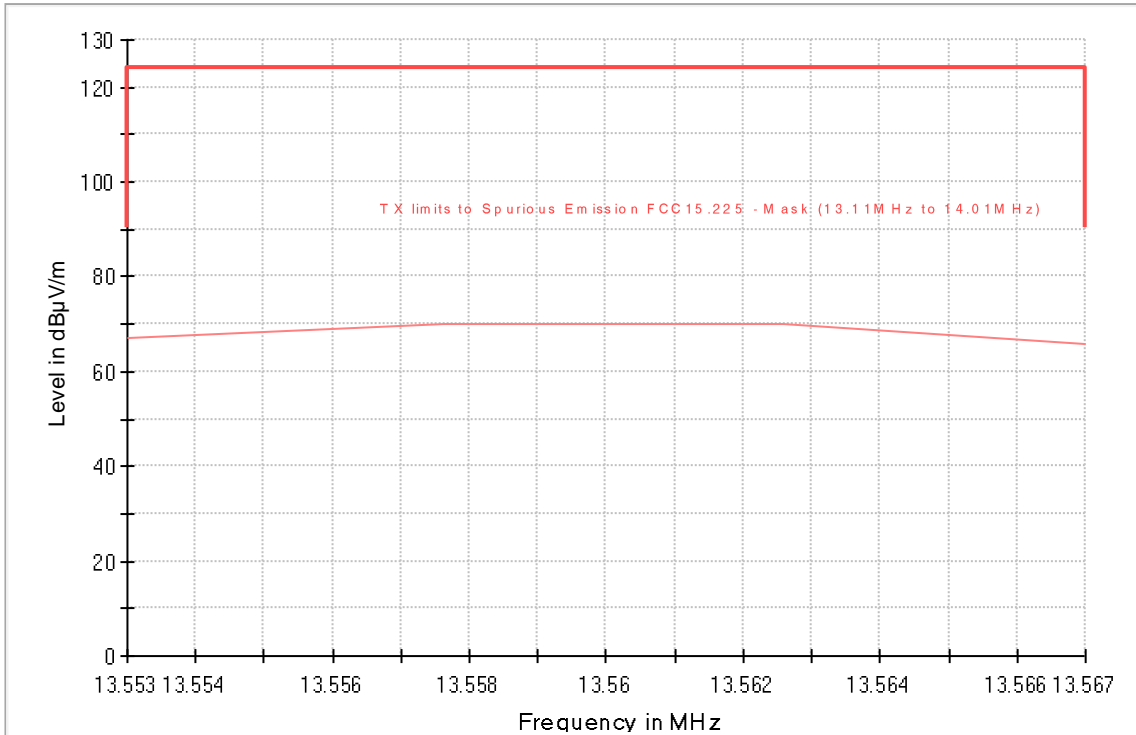
Three different orientations (X, Y, and Z) of receiving loop antenna orientation were tested to determine the worst case shown in the following test results.

Radiated measurements setup 9 kHz to 30 MHz.



Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

Band 13.553 MHz – 13.567 MHz



— PK+_MAXH — TX limits to Spurious Emission FCC15.225 -Mask (13.11MHz to 14.01MHz)

Limit and Margin

Frequency (MHz)	PK+_MAXH (dBµV/m)	Pol	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
13.557625	70.0	H	54.0	124.0

A.3: Field strength of emissions within the band 13.410 MH – 13.553 MHz and 13.567 – 13.710 MHz

Limits:	Product standard:	Part 15 Subpart C §15.225 and RSS-210
	Test standard:	Part 15 Subpart C §15.225(b) and RSS-210 clause B.6 (a)(ii)

LIMITS
 The field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 334 microvolts/meter (50.47 dBµV/m) at 30 meters.

Test Setup

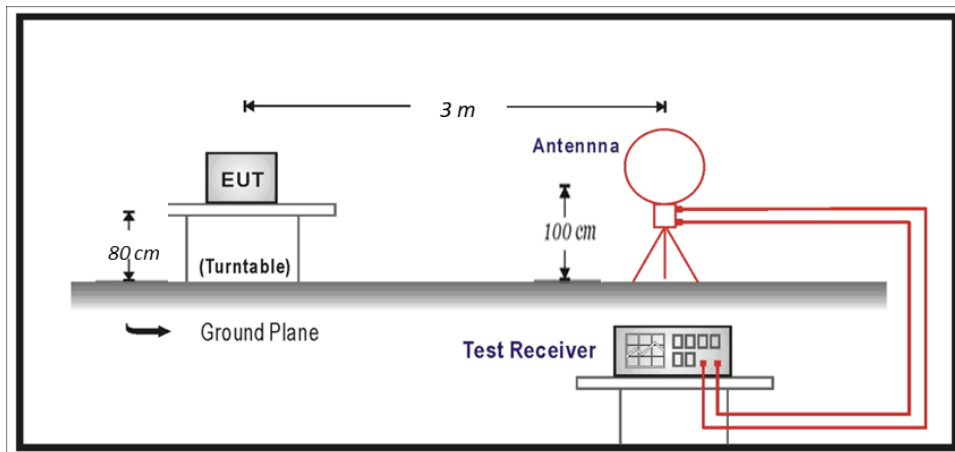
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz) is situated at a distance of 3 m.

For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° to find the maximum radiated emission.

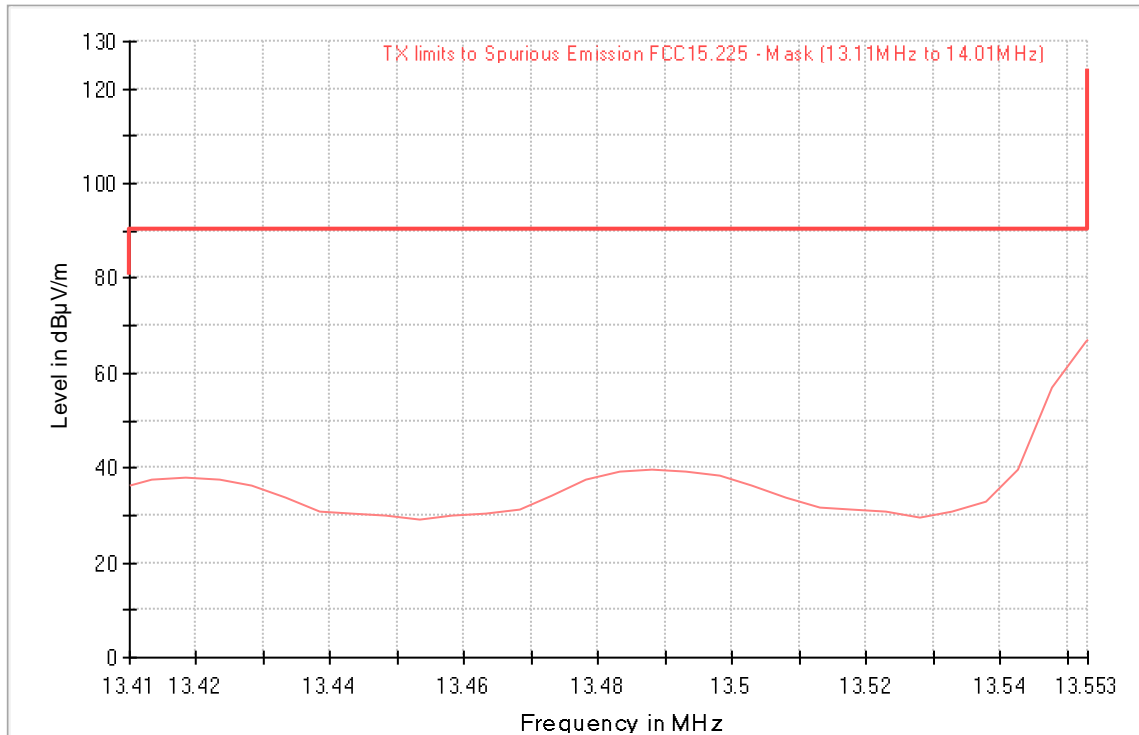
Three different orientations (X, Y, and Z) of receiving loop antenna orientation were tested to determine the worst case shown in the following test results.

Radiated measurements setup 9 kHz to 30 MHz.



Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

Band 13.410 MHz – 13.553 MHz



— PK+_MAXH — TX limits to Spurious Emission FCC15.225 - Mask (13.11MHz to 14.01MHz)

Limit and Margin

Frequency (MHz)	PK+_MAXH (dBµV/m)	Poi	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
13.552975	68.3	H	22.2	90.5

A.4: Field strength of emissions within the band 13.110 MHz – 13.410 MHz and 13.710 – 14.010 MHz

Limits:	Product standard:	Part 15 Subpart C §15.225 and RSS-210
	Test standard:	Part 15 Subpart C §15.225(c) and RSS-210 clause B.6 (a)(iii)

LIMITS

The field strength of any emissions within the band 13.553 – 13.567 MHz shall not exceed 106 microvolts/meter (40.51 dBµV/m) at 30 meters.

Test Setup

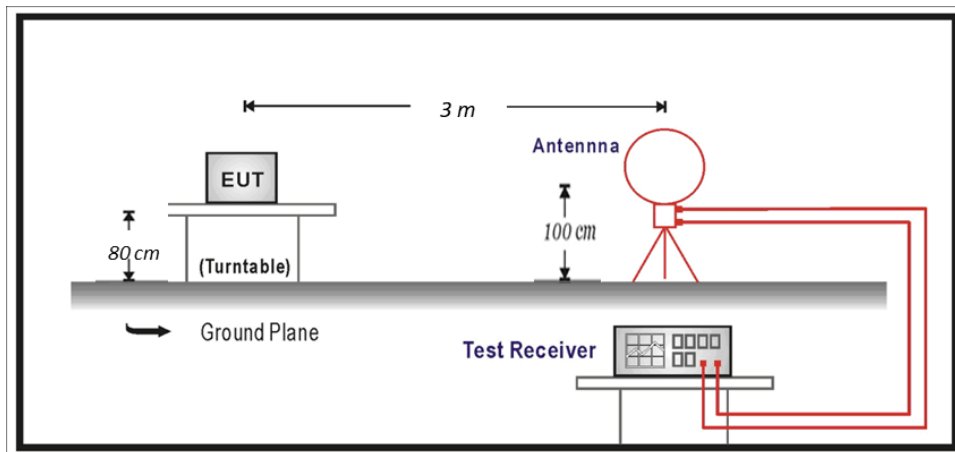
All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz) is situated at a distance of 3 m.

For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° to find the maximum radiated emission.

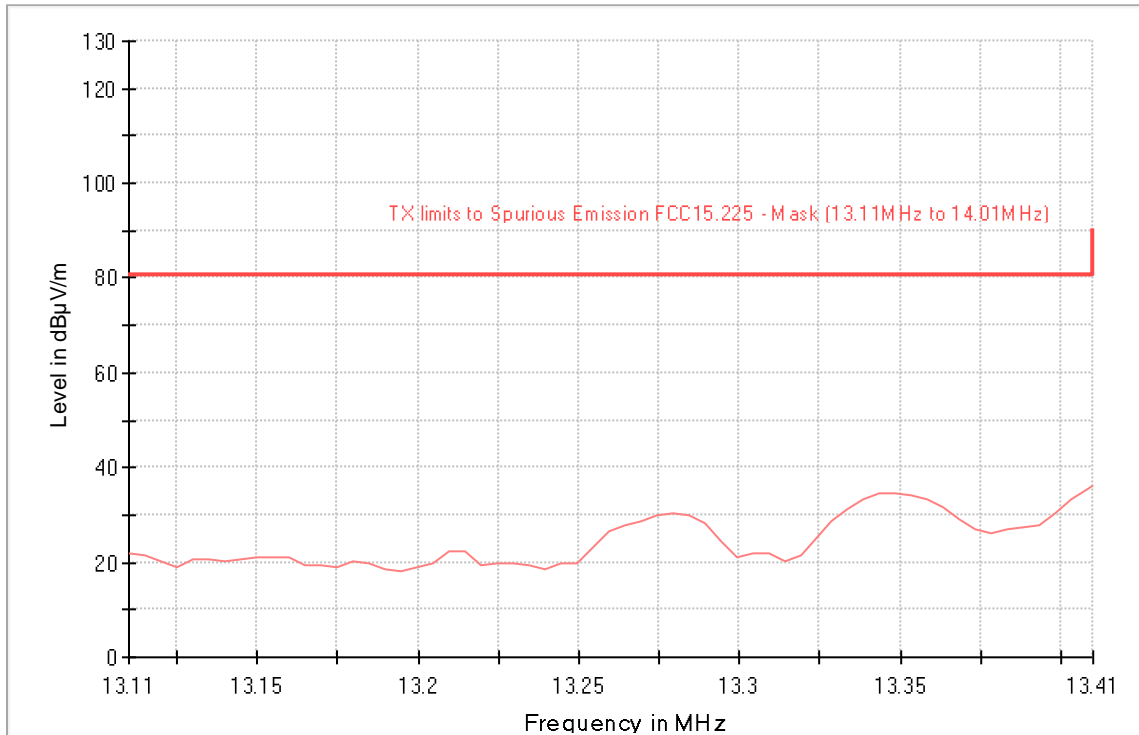
Three different orientations (X, Y, and Z) of receiving loop antenna orientation were tested to determine the worst case shown in the following test results.

Radiated measurements setup 9 kHz to 30 MHz.



Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

Band 13.110 MHz – 13.410 MHz

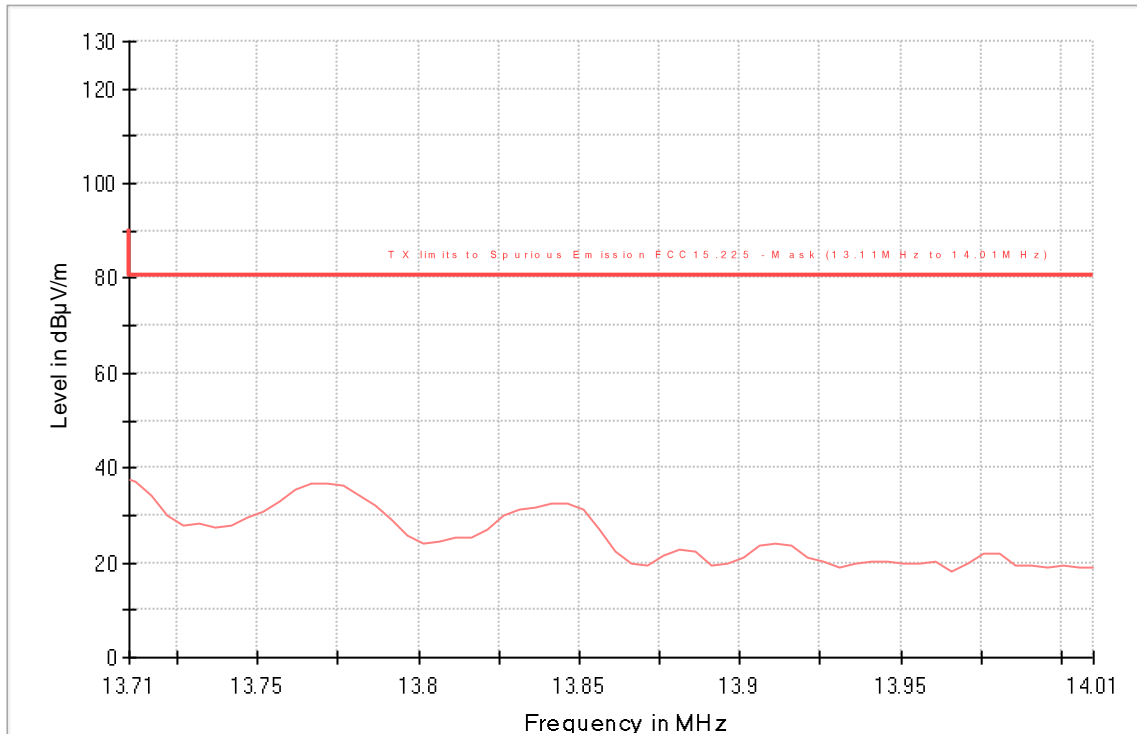


— PK+_MAXH — TX limits to Spurious Emission FCC15.225 -Mask (13.11MHz to 14.01MHz)

Frequency (MHz)	PK+_MAXH (dBµV/m)	Pol	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
13.274050	29.9	H	50.6	80.5
13.343700	34.4	H	46.1	80.5

Test Results (Cont.)

Band 13.710 MHz – 14.010 MHz



— PK+_MAXH — TX limits to Spurious Emission FCC15.225 -Mask (13.11MHz to 14.01MHz)

Frequency (MHz)	PK+_MAXH (dBµV/m)	Pol	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
13.771550	36.7	H	43.8	80.5
13.841200	32.3	H	48.2	80.5

A.5: Field Strength of emissions outside of the band 13.110 MHz – 13.410 MHz

Limits:	Product standard:	Part 15 Subpart C §15.225 and RSS-210
	Test standard:	Part 15 Subpart C §15.225(d) and RSS-210 clause B.6 (a)(iv)

LIMITS: FCC 47 Subpart C, clause 15.225
The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209

§ 15.209 (a) Radiated emission limits; general requirements: Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	300
1.705 - 30.0	30	29.54	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

LIMITS: RSS-210, Issue 10, Clause B.6 (iv)
The field strength of any emissions outside the band 40.65-40.71 MHz, except harmonic emissions, shall not exceed the general field strength limits specified in RSS-Gen, Clause 8.9 - Transmitter emission limits.

Clause 8.9 - Transmitter emission limits: Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter’s fundamental emission.

Table 5 – General field strength limits at frequencies above 30 MHz

Frequency Range (MHz)	Field strength (µV/m at 3m)
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Table 6 – General field strength limits at frequencies below 30 MHz

Frequency Range (MHz)	Magnetic field strength (µA/m)	Measurement distance (m)
0.009-0.490 ⁽¹⁾	6.37/F(kHz)	300
0.490-1.705	63.7/F(kHz)	30
1.705 - 30.0	0.08	30

Note 1: The emission limits f or the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Test Setup

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Loop antenna for the range between 9 kHz to 30 MHz and Bilog antenna for the range between 30 MHz to 1 GHz) is situated at a distance of 3 m.

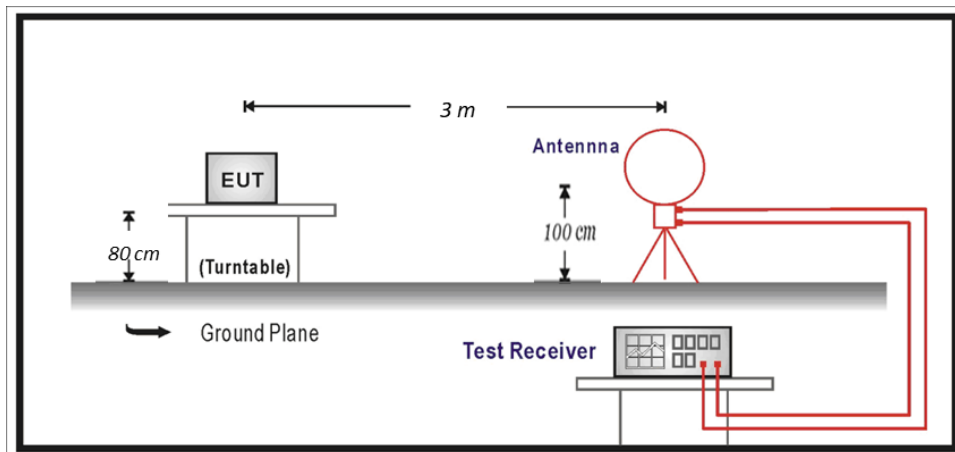
For radiated emissions in the range 9 kHz to 30 MHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 40 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and in the range between 30 MHz and 200 MHz the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

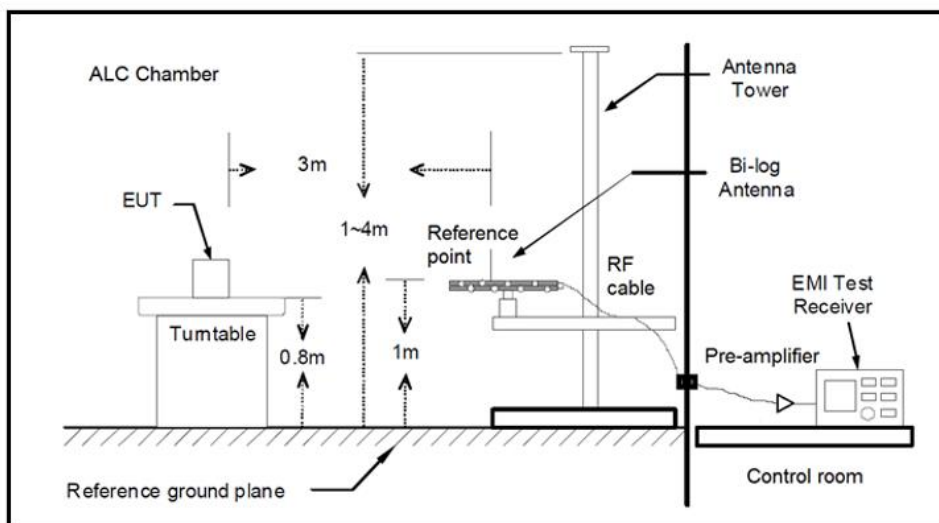
In the range between 9 kHz and 30 MHz three different orientations (X, Y, and Z) of receiving loop antenna were tested to determine the worst case shown in the following test results.

Test Setup (Cont.):

Radiated measurements setup 9 kHz to 30 MHz

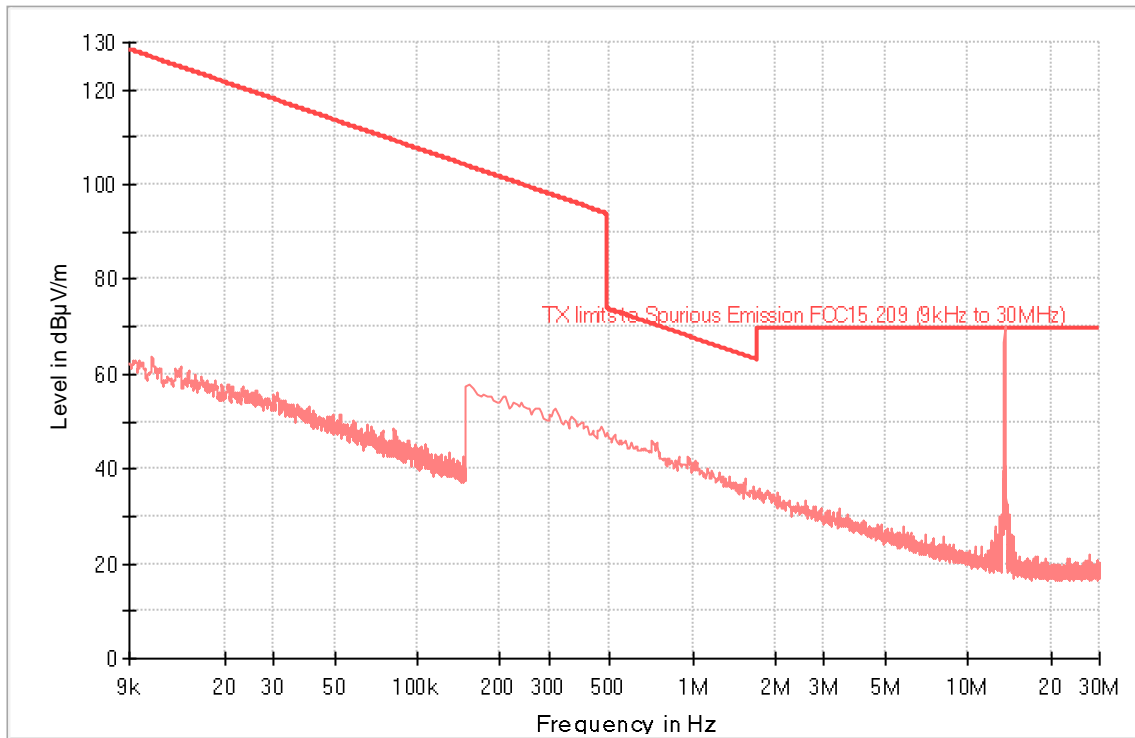


Radiated measurements setup 30 MHz to 200 MHz



Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

Frequency Range: 9 kHz – 30 MHz



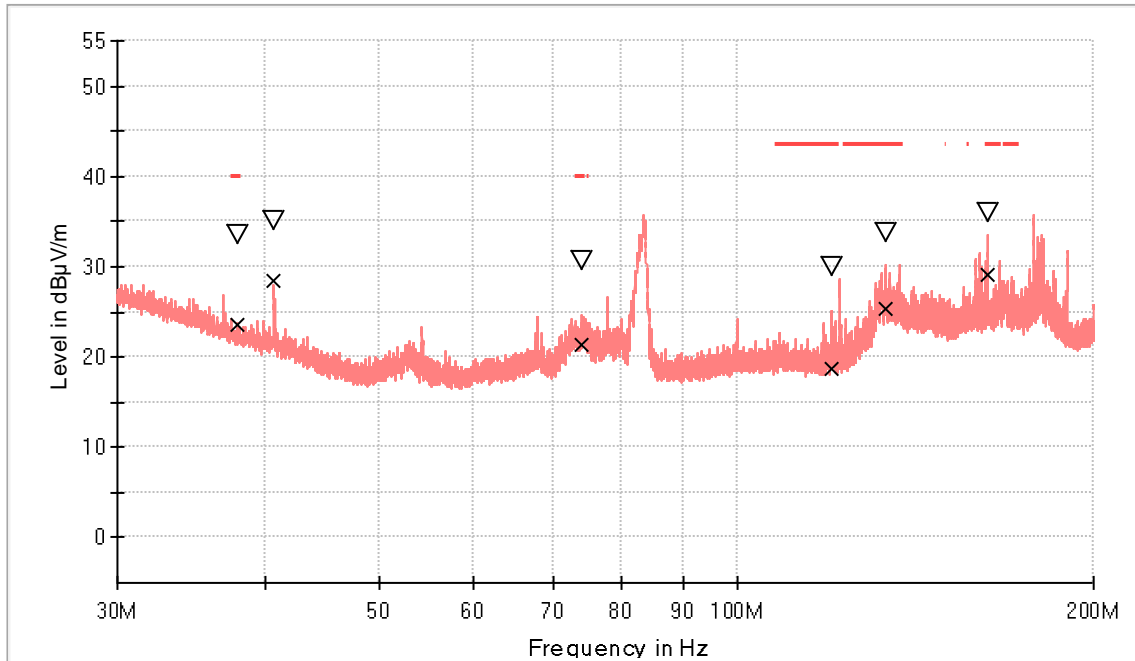
— TX limits to Spurious Emission FCC15.209 (9kHz to 30MHz) — PK+_MAXH

Maximizations

Frequency (MHz)	PK+_MAXH (dBµV/m)	Pol	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
0.742025	45.6	H	24.6	70.2
12.915850	29.5	H	40.0	69.5
14.124775	30.4	H	39.1	69.5

Test Results (Cont.)

Frequency Range: 30 MHz – 200 MHz



- PK+_MAXH
- - - TX limits to Spurious Emission FCC15.225 (30MHz to 1GHz) Restricted Bands QPK Limit
- ▽ MaxPeak-PK+ (Single)
- × QuasiPeak-QPK (Single)

Maximizations

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBµV/m)
37.854000	33.4	23.5	H	16.5	40.0
40.676000	35.1	28.5	V	---	---
73.962000	30.7	21.3	V	18.7	40.0
120.312500	30.0	18.7	V	24.8	43.5
133.343000	33.8	25.4	V	18.2	43.5
162.974000	36.0	29.1	V	14.4	43.5

A.6: Frequency tolerance of the carrier signal

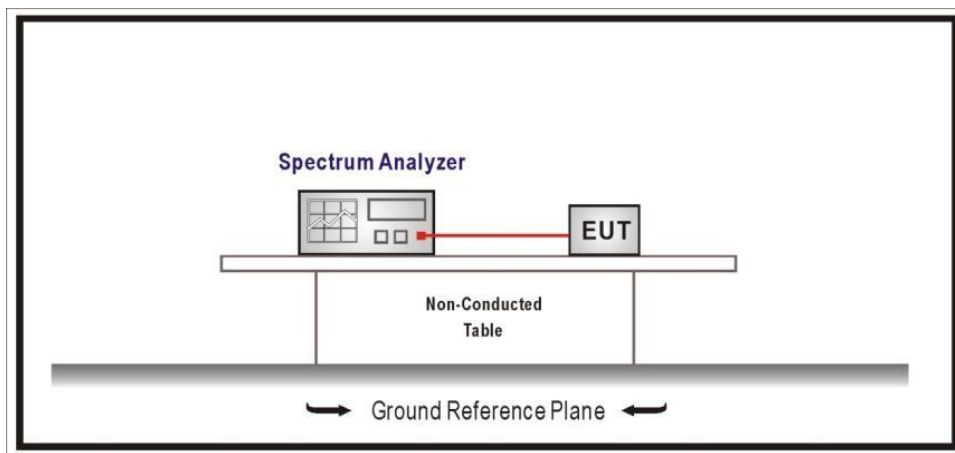
Limits:	Product standard:	Part 15 Subpart C §15.225 and RSS-210
	Test standard:	Part 15 Subpart C §15.225(e) and RSS-210 clause B.6

LIMITS

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

Test Setup



Tested Samples:	S/01
Tested Conditions Modes:	TC/01
Test Results:	PASS

Nominal Operating Frequency: 13.56 MHz
Frequency stability over temperature variations.

Temperature (°C)	Frequency Error (kHz)	Frequency Error (%)
+50	-1.1	-0.0081
+40	-0.5	-0.0037
+30	-1.0	-0.0074
+20	0.5	0.0037
+10	-0.5	-0.0037
0	0.5	0.0037
-10	1.0	0.0074
-20	0.5	0.0037

Frequency stability over voltage variations.

AC Supply voltage	Voltage (V)	Frequency Error (kHz)	Frequency Error (%)
Vmax	138	-0.5	-0.0037
Vmin	102	0.5	0.0037

A.7. Continuous conducted emission on Power Leads - Intentional Radiators

Limits:	Product standard:	FCC CFR 47, Part 15, Subpart C (2018 Edition), Secs. 15.207 & ICES-003 Issue 7 – Update October (2020)
	Test standard:	FCC CFR 47, Part 15, Subpart C (2018 Edition), Secs. 15.207 & ICES-003 Issue 7 – Update October (2020); ANSI C63.4 (2014)

LIMITS: FCC 47 Subpart C, clause 15.207

§ 15.207 (a) Conducted limits; general requirements:

Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges:

Frequency range (MHz)	Limit	
	Quasi-peak [dB(µV) ¹⁾	Average [dB(µV) ¹⁾
0,15 to 0,5	66-56 ²⁾	56-46 ²⁾
0,5 to 5	56	46
5 to 30	60	50

¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

LIMITS: ICES 003, Issue 7, clause 3.2.1

3.2.1 Conducted emission limits: The ITE or digital apparatus shall comply with the conducted emission limits specified in table 1 at its AC mains power terminals. The product under test shall comply with both the quasi-peak and the average limits.

Where the product under test is powered through an external device (for example, through an external power supply, or by means of a device providing power over Ethernet to the product under test), the conducted emission limits apply at the AC ma ins power terminals of the external device, while this is powering the product under test: see ICES-Gen, clause 8.8.

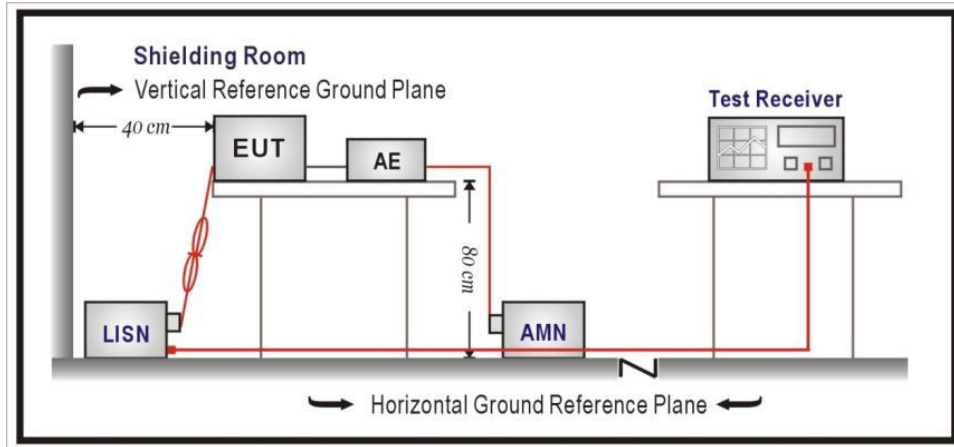
Frequency range (MHz)	Limit	
	Quasi-peak (dBµV)	Average (dBµV)
0,15 to 0,5	66-56 ⁱ⁾	56-46 ⁱ⁾
0,5 to 5	56	46
5 to 30	60	50

Note: the more stringent limit applies at transition frequencies.

i) The limit level in dBµV decreases linearly with the logarithm of frequency.

Test Setup

The EUT is placed on the test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rest of the EUT. The EUT is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 ohms LISN port.



Tested Samples:

S/01

Tested Conditions Modes:

TC/01

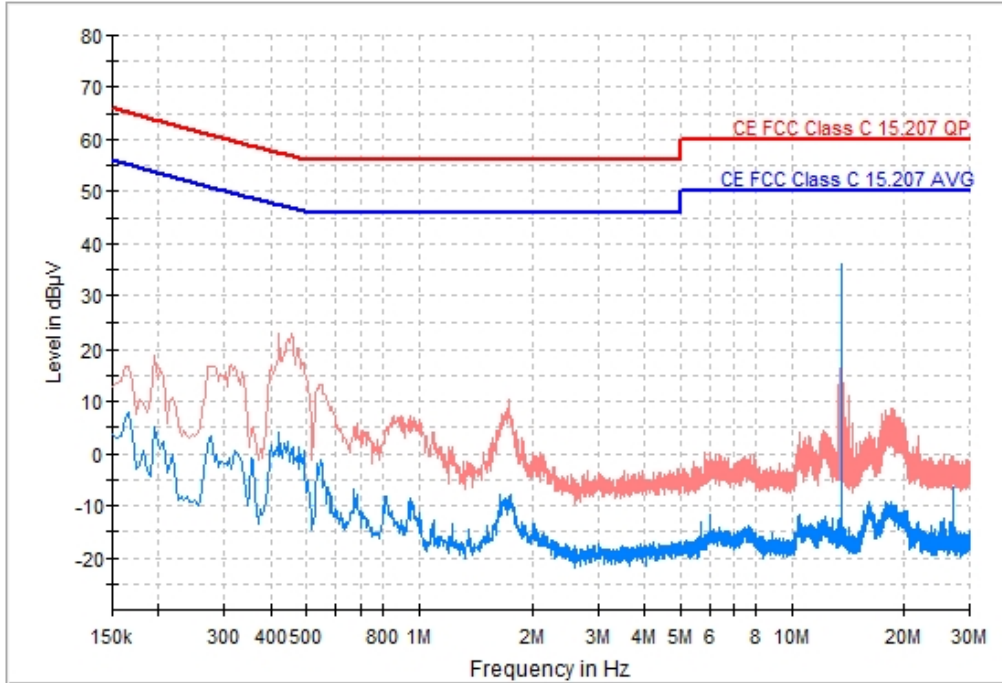
Test Results:

CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Test condition mode; hh: wire

Crmmnnhh	Description	Result
CC0101L1	Neutral wire noise.	P
CC01010N	Phase wire noise.	P

Test Results (Cont.):

CC0101L1



— CE FCC Class C 15.207 AVG — CE FCC Class C 15.207 QP
— PK+_CLRWR — AVG_CLRWR

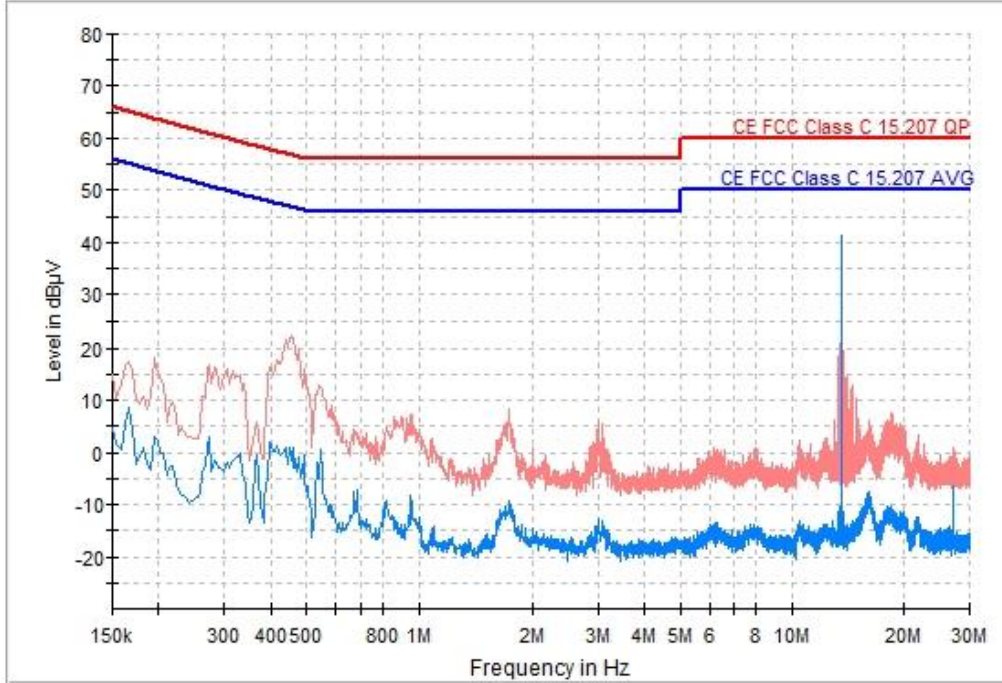
Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)	Line	Margin - AVG (dB)	Limit - AVG (dBµV)
0.166000	16.6	8.1	L1	47.0	55.1
0.422000	22.6	4.2	L1	43.1	47.3
0.446000	22.1	2.4	L1	44.5	46.9
0.806000	2.0	-8.1	L1	54.1	46.0
1.642000	4.7	-7.8	L1	53.8	46.0
2.150000	-0.6	-15.2	L1	61.2	46.0
6.026000	-0.8	-11.6	L1	61.6	50.0
10.346000	1.6	-12.2	L1	62.2	50.0
13.558000	36.0	35.9	L1	14.1	50.0
27.118000	-0.4	-6.6	L1	56.6	50.0

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	IF BW	Meas. Time
150 kHz - 30 MHz	4 kHz	PK+ ; AVG	9 kHz	0.01 s

Test Results (Cont.):

CC01010N



— CE FCC Class C 15.207 AVG
— CE FCC Class C 15.207 QP
— PK+_CLRWR
— AVG_CLRWR

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)	Line	Margin - AVG (dB)	Limit - AVG (dBµV)
0.166000	17.3	8.8	N	46.3	55.1
0.398000	16.4	2.0	N	45.7	47.7
0.546000	12.5	0.5	N	45.5	46.0
0.954000	6.9	-8.3	N	54.3	46.0
1.738000	8.2	-9.3	N	55.3	46.0
3.014000	6.0	-12.8	N	58.8	46.0
4.718000	-4.9	-16.3	N	62.3	46.0
6.230000	0.3	-13.5	N	63.5	50.0
13.558000	41.3	41.2	N	8.8	50.0
27.118000	0.8	-6.6	N	56.6	50.0

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	IF BW	Meas. Time
150 kHz - 30 MHz	4 kHz	PK+ ; AVG	9 kHz	0.01 s