



Subject: Pre-Compliance Radiated Emissions
(RE)

Product: Wireless Power Charger

Wireless Research Center of NC

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1. Summary:

This document presents the results of engineering pre-compliance measurements approximating the following standards:

Table 1. List of EMC tests performed with their respective parameters and results.

Test and port	Standard/Test Method	Frequency	Result
RSE, Enclosure,	FCC CFR 47	30 MHz – 2 GHz	Data only

Customer:	IVO
Address:	
Test Site:	Wireless Research Center of NC Wake Forest, NC 27587
Equipment Under test (EUT):	Wireless Power Charger
Model Numbers:	Prototype
System Serial Number	None
Test Dates:	November 10, 2020

2. Test Set-up and test parameters

The following figure shows a general diagram of the radiated emissions setup used for the RSE measurements:

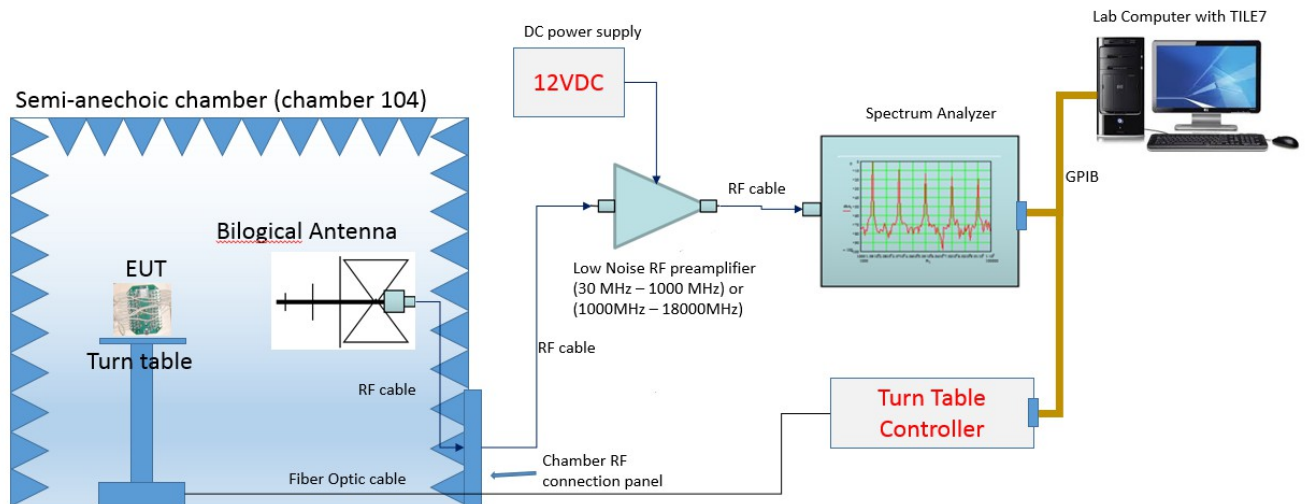


Figure 1. Diagram of the test measurement setup used at the WRCNC for performing radiated emissions measurements from 30 to 18000 MHz. (Note: The HF (1GHz – 18 GHz) RF amp is connected inside the chamber and close to the antenna).

Test parameters:

- Antenna height and EUT = 1.0 meter
- Distance Antenna to EUT = 2.7 meters
- EUT rotated 360 degrees, 1 axis, 45 degree steps (30 – 2000 MHz).
- EUT rotated 360 degrees, 1 axis, continuous (2000 – 18000 MHz).
- EUT rotated 360 degrees, 1 axis, continuous (2000 – 18000 MHz).

3. Test equipment

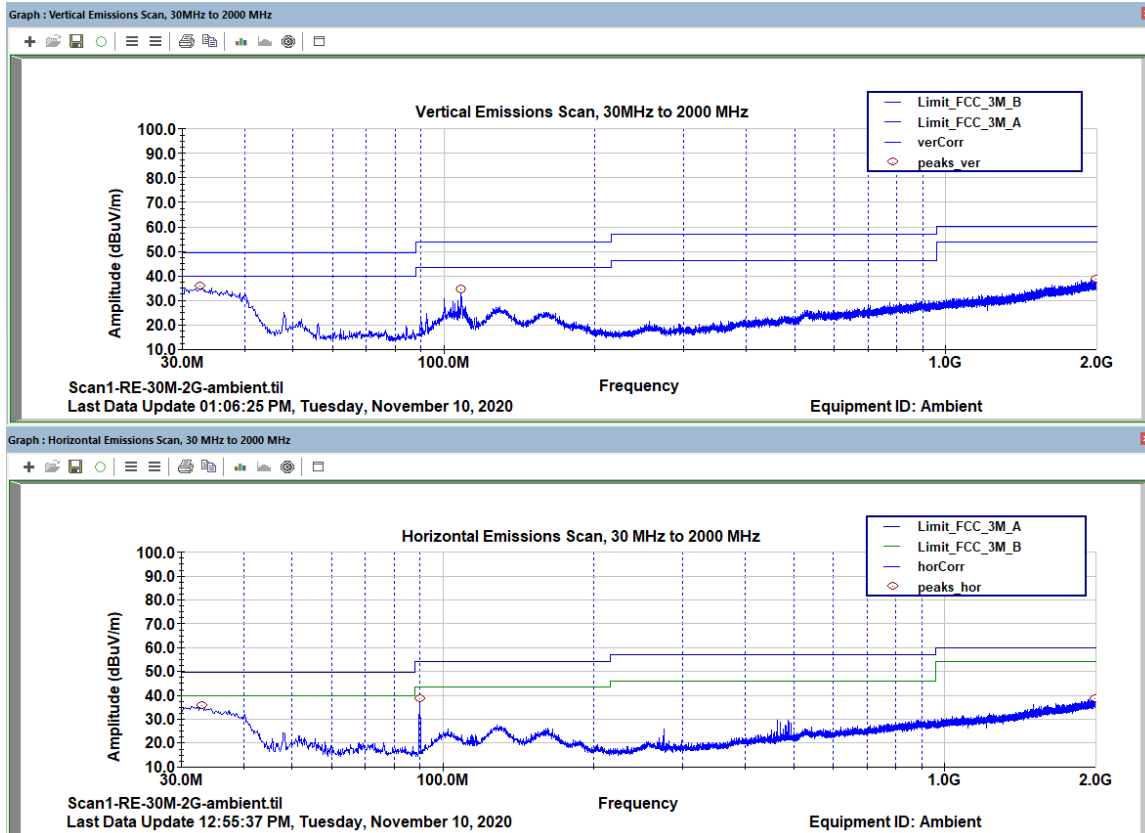
The list of test equipment and materials used for the measurements is presented below:

Table 2 List of equipment used to perform the radiated and conducted emissions tests.

Description	Manufacturer	Model	Comments
Spectrum Analyzer	Hewlett Packard	HP8593	
Amplifier, 20 MHz to 6 GHz	Minicircuits	ZX60-6013E-S+	
Amplifier, 700 MHz to 18000 MHz	Minicircuits	ZVA-183-S+	
Amplifier, 10 MHz to 4 GHz	Minicircuits	ZHL-1042J	
Bilog Antenna	SAS	3164-04	
Horn Antenna	SAS	HA-0218	Usable to 18 GHz
High Pass Filter	Minicircuits	VHF-1320+	Usable to 8 GHz
High Pass Filter	Minicircuits	VHF-2700A+	Usable up to 10 GHz
High Pass Filter	Minicircuits	VHF-3500+	Usable to 12 GHz
High Pass Filter	Minicircuits	ZDSS-3G4G-S+	Usable to 18 GHz
RF cable 1			From Antenna to chamber panel
RF cable 2			From chamber panel to RF amplifier
RF cable 3			From RF amplifier to Spectrum Analyzer
DC power supply, 12 VDC	HP or equivalent		Provides 12 VDC to RF amplifier
Turn Table controller	EMCO (ETS-Lindgren)	2090	
TILE 7	ETS-Lindgren	V7	Automation Software
USB to GPIB interface	National Instruments		Connects PC to Spectrum Analyzer
GPIB cable	Generic		Connects Spectrum Analyzer to Turn table controller

4. Results

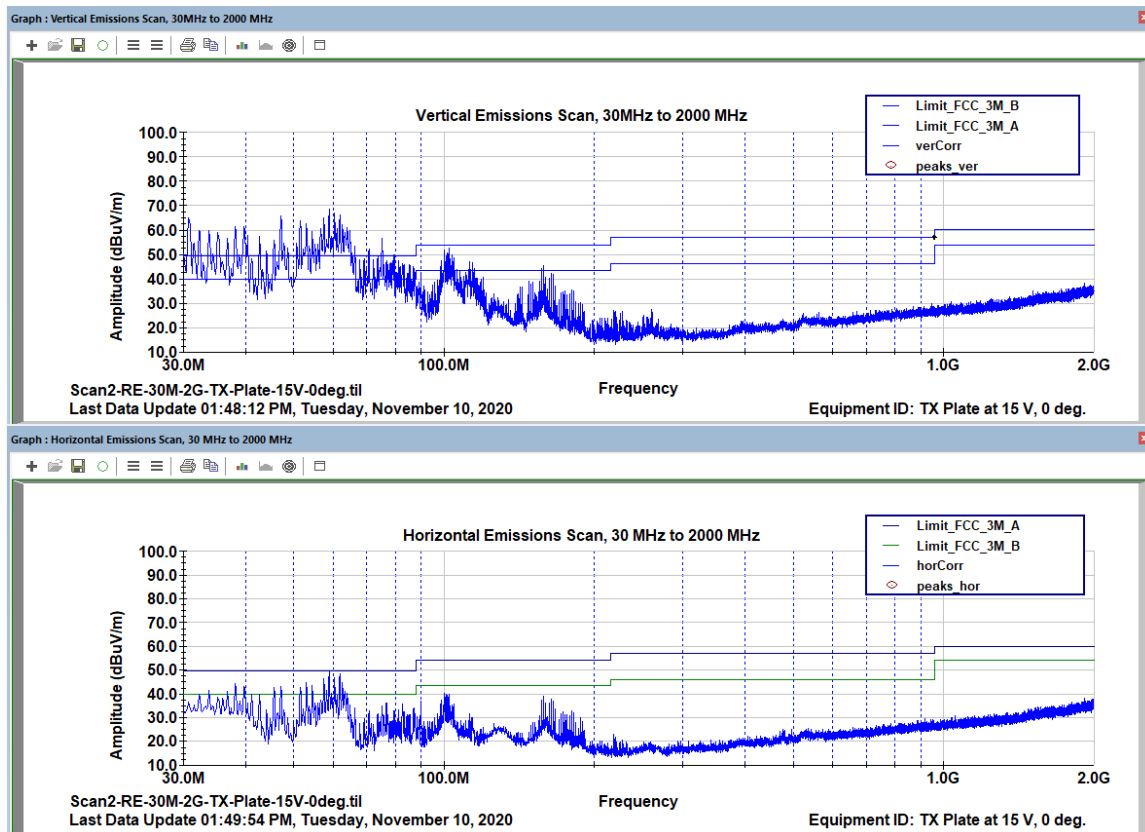
30 MHz to 2000 MHz “ambient” sweep.



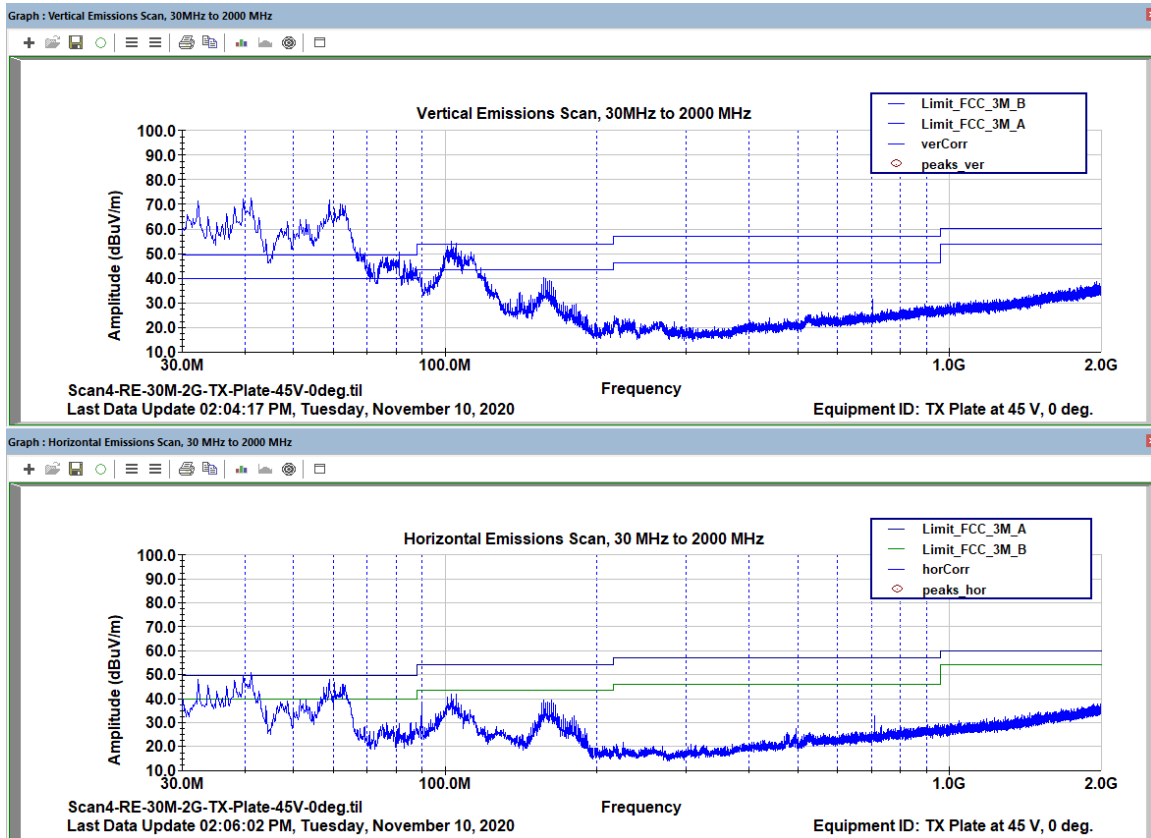
EUT inside the chamber but with no power applied. Peak at 90 MHz is chamber leakage from nearby FM radio station. Broadband peak around 50 MHz is conducted through the AC power supply in the chamber.

Measurements shown in dBuV/m to compare with FCC class A and B non-intentional/idle emissions.

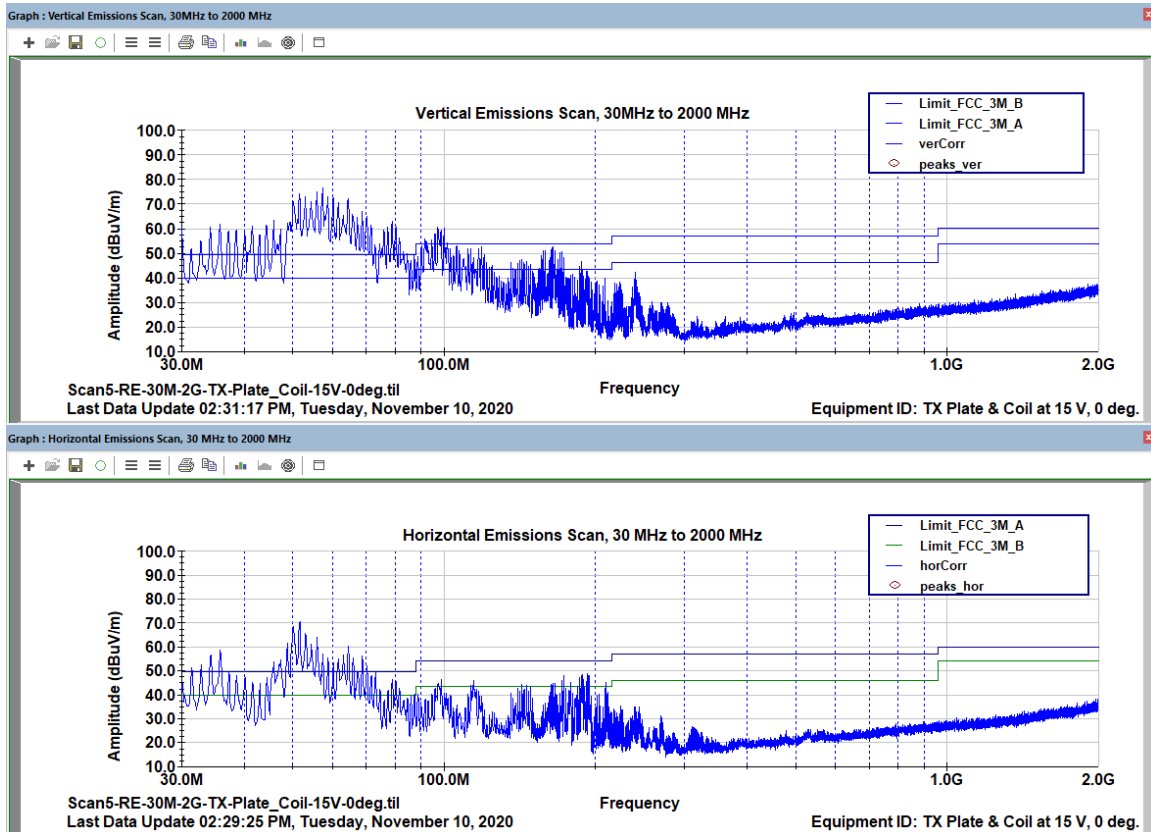
30 MHz to 2000 MHz: Transmit plate with 15 V and 0 degrees orientation to measurement antenna.



30 MHz to 2000 MHz: Transmit plate with 45 V and 0 degrees orientation to measurement antenna.



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