

Test Report

Report No.:	MTi240530001-01E1
Date of issue:	2024-07-27
Applicant:	SHENZHEN GTL TECHNOLOGY CO., LTD
Product name:	3 in 1 Magnetic Wireless Charger
Model(s):	CW350W
FCC ID:	2A4TT-CW350W

Shenzhen Microtest Co., Ltd. http://www.mtitest.cn

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Test Result Certification			
Applicant:	SHENZHEN GTL TECHNOLOGY CO., LTD		
Address:2/F&6/F of Building B11, Hengfeng Industrial city, Hangcheng Stre Baoan District, Shenzhen, Guangdong, China.518126			
Manufacturer:	SHENZHEN GTL TECHNOLOGY CO., LTD		
Address:	2/F&6/F of Building B11, Hengfeng Industrial city, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China.518126		
Factory:	SHENZHEN GTL TECHNOLOGY CO., LTD		
Address:	2/F&6/F of Building B11, Hengfeng Industrial city, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China.518126		
Product description			
Product name:	3 in 1 Magnetic Wireless Charger		
Trade mark:	N/A		
Model name:	CW350W		
Series Model(s):	N/A		
Standards:	47 CFR Part 15C		
Test Method:	ANSI C63.10-2013		
Date of Test			
Date of test:	2024-06-04 to 2024-07-25		
Test result:	Pass		

Test Engineer	:	Yamice Xie
		(Yanice.Xie)
Reviewed By	:	Dowid. Cee
		(David Lee)
Approved By	:	leon chen
		(Leon Chen)



1 General Description

1.1 Description of the EUT

Product name:	3 in 1 Magnetic Wireless Charger		
Model name:	CW350W		
Series Model(s):	N/A		
Model difference:	N/A		
Electrical rating:	Input:DC 9V/2A Output: Wireless Phone:5W/7.5W/10W/15W Wireless Earphone:5W Max Wireless watche:3W Max		
Accessories:	N/A		
Hardware version:	CW350W-V1.0		
Software version:	CW350W-V1.0		
Test sample(s) number:	MTi240530001-01S1001		
RF specification			
Operating frequency range:	Coil 1 (Phone): 115-205kHz Coil2 (Earphone): 115-205kHz Coil3 (Watch): 300~350kHz		
Modulation type:	ASK		
Antenna type:	Coil		

1.2 Description of test modes

No.	Emission test modes
Mode1	Wireless Output Phone(5W)+Earphone(5W)+Watch(3W)
Mode2	Wireless Output Phone(7.5W)+Earphone(5W)+Watch(3W)
Mode3	Wireless output Phone (5W)+Earphone(5W)
Mode4	Wireless output Phone(7.5W)+Earphone(5W)
Mode5	Wireless output Phone(10W)+Earphone(5W)
Mode6	Wireless output Phone(5W)+Watch(3W)
Mode7	Wireless output Phone(7.5W)+Watch(3W)
Mode8	Wireless output Phone(10W)+Watch(3W)
Mode9	Wireless output Phone(5W)
Mode10	Wireless output Phone(7.5W)
Mode11	Wireless output Phone(10W)
Mode12	Wireless output Phone(15W)
Mode13	Wireless output Earphone(5W)
Mode14	Wireless output Watch(3W)
Mode15	Stand by

The maximum output power of the EUT is simultaneously phone 7.5W max+earphone 5W max+watch 3W max.



1.3 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH
Atmospheric pressure:	98 kPa ~ 101 kPa

1.4 Description of support units

Support equipment list						
Description	Model	Serial No.	Manufacturer			
Airpods	A2515 H6LDLEZ70C6L		Apple			
iWatch	iWatch S7	M0JVGQG1VP	Apple			
MI CHARGE(18W)	MDY-08-EH	YJ2808215006999	MI			
Wireless charging load	YBZ1.1	/	YBZ			
Support cable list						
Description Length (m)		From	То			
/	/ /		/			

1.5 Measurement uncertainty

Measurement	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	±3.1dB
Occupied channel bandwidth	±3 %
Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



2 Summary of Test Result

No.	Item	Requirement	Result
1	Antenna requirement	47 CFR Part 15.203	Pass
2	Conducted Emission at AC power line	47 CFR Part 15.207(a)	Pass
3	20dB Occupied Bandwidth	47 CFR Part 15.215(c)	Pass
4	Emissions in frequency bands (below 30MHz)	47 CFR Part 15.209	Pass
5	Emissions in frequency bands (30MHz - 1GHz)	47 CFR Part 15.209	Pass



3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093



4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due	
Conducted Emission at AC power line							
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2024-03-20	2025-03-19	
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2024-03-21	2025-03-20	
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2024-03-20	2025-03-19	
		20dB Oc	cupied Bandwid	th			
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2024-03-20	2025-03-19	
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2024-03-21	2025-03-20	
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20	
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2024-03-21	2025-03-20	
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2024-03-21	2025-03-20	
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2024-03-21	2025-03-20	
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2024-03-21	2025-03-20	
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2024-03-20	2025-03-19	
9	DC Power Supply	Agilent	E3632A	MY40027695	2024-03-21	2025-03-20	
		Emissions in frequ	lency bands (bel	ow 30MHz)			
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19	
2	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22	
3	Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19	
		Emissions in freque	ency bands (30N	/IHz - 1GHz)			
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19	
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10	
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22	
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19	



5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be
	considered sufficient to comply with the provisions of this section.

5.1.1 Conclusion:

The antenna of the EUT is permanently attached. The EUT complies with the requirement of FCC PART 15.203.



6 Radio Spectrum Matter Test Results (RF)

6.1 Conducted Emission at AC power line

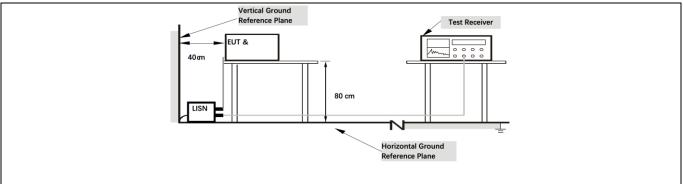
Micr©test 微测检测

Test Requirement:	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).					
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBµ	IV)			
		Quasi-peak	Average			
	0.15-0.5	66 to 56*	56 to 46*			
	0.5-5	56	46			
	5-30 60 50					
	*Decreases with the logarithm of the frequency.					
Test Method:	ANSI C63.10-2013 section 6.2					
Procedure:	Refer to ANSI C63.10-2013 section 6.2, standard test method for ac power- line conducted emissions from unlicensed wireless devices					

6.1.1 E.U.T. Operation:

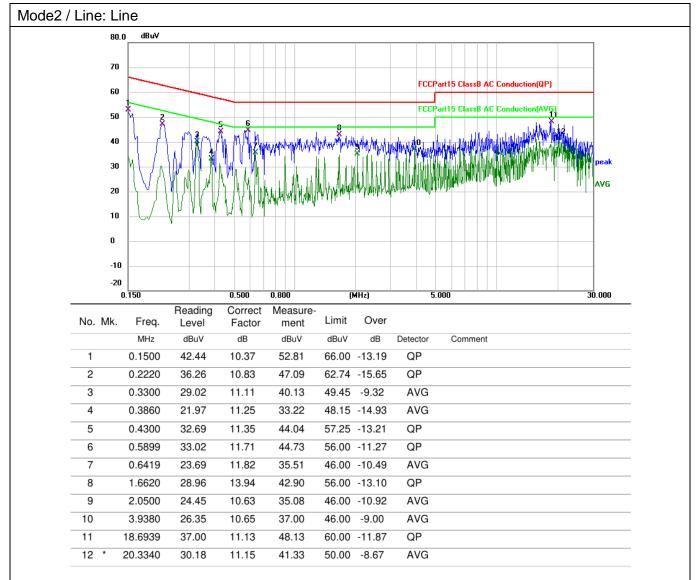
Operating Environment:						
Temperature:	26 °C	Humidi	ty: 41 %	Atmospheric Pressure:	101 kPa	
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report						

6.1.2 Test Setup Diagram:

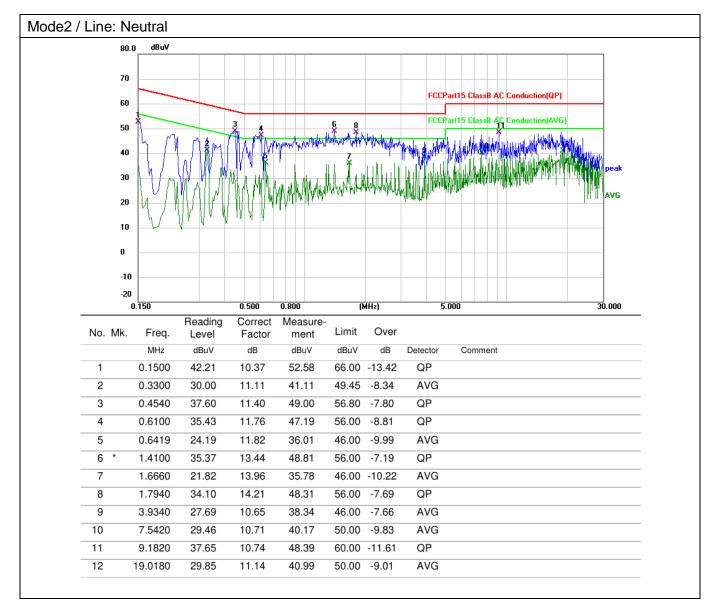




6.1.3 Test Data:









6.2 20dB Occupied Bandwidth

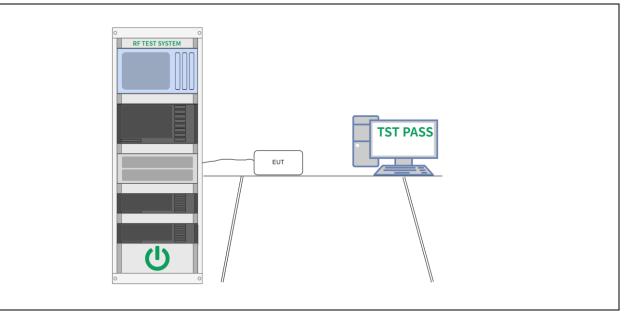
Test Requirement:	47 CFR Part 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method:	ANSI C63.10-2013, section 6.9.2
Procedure:	 a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (78W) shall be approximately three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "-xx dB down" requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the "-xx dB down amplitude" using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument. i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer marker to be optimal to be down that ce to stabilize. Otherwise, the trace from step g) shall be used for step j). j) Place two markers. Alternatively, set a marker at the lowest frequency d



6.2.1 E.U.T. Operation:

Operating Environment:						
Temperature:	28.6 °C		Humidity:	59.7 %	Atmospheric Pressure:	99 kPa
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report						

6.2.2 Test Setup Diagram:





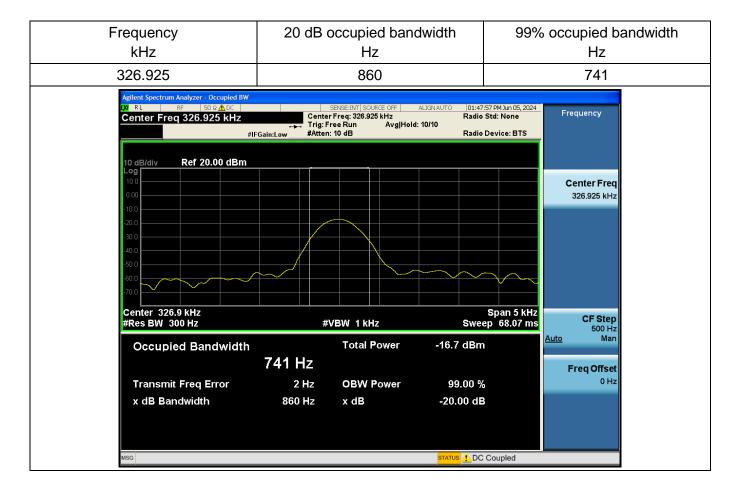
6.2.3 Test Data:

Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 300 Hz to perform the occupied bandwidth test.

Frequency kHz	20 dB (occupied ban Hz	dwidth	99%	occupied ba Hz	andwidth
135.655		823			702	
Agilent Spectrum Analyzer - Occupied BW X RL RF SO QADC Center Freq 135.655 kHz #IF	Center Trig:F	SENSE:INT SOURCE OFF r Freq: 135.655 kHz ree Run Avg Hold : 10 dB	Radio : 10/10	:10 PMJun 05, 2024 Std: None Device: BTS	Frequency	
10 dB/div Ref 10.00 dBm					Center Freq 135.655 kHz	
-20.0 -30.0 -40.0 -60.0 -60.0 -70.0 -80.0						
Center 135.7 kHz #Res BW 300 Hz	#	VBW 1 kHz	Swee	Span 5 kHz ep 68.07 ms	CF Step 500 Hz	
Occupied Bandwidth	702 Hz	Total Power	-3.39 dBm		<u>Auto</u> Man Freq Offset	
Transmit Freq Error x dB Bandwidth	-12 Hz 823 Hz	OBW Power x dB	99.00 % -20.00 dB		0 Hz	
MSG			STATUS LDC	Coupled		



Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 300 Hz to perform the occupied bandwidth test.





Note: Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 300 Hz to perform the occupied bandwidth test.





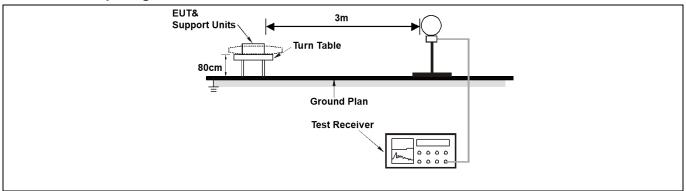
6.3 Emissions in frequency bands (below 30MHz)

Test Requirement:	47 CFR Part 15.209					
Test Limit:	Frequency (MHz)	Field strength	Measuremen			
		(microvolts/meter)	t distance			
			(meters)			
	0.009-0.490	2400/F(kHz)	300			
	0.490-1.705	24000/F(kHz)	30			
	1.705-30.0	30	30			
	30-88	100 **	3			
	88-216	150 **	3			
	216-960	200 **	3			
	Above 960	500	3			
	** Except as provided in	n paragraph (g), fundamenta	l emissions from			
		erating under this section sha		ne		
		MHz, 76-88 MHz, 174-216				
		nin these frequency bands is	permitted under othe	ər		
		g., §§ 15.231 and 15.241.				
		pove, the tighter limit applies				
		wn in the above table are ba				
		asi-peak detector except for				
	-	above 1000 MHz. Radiated				
		on measurements employing				
		, for frequencies above 1000				
		and (b)of this section are bas		•		
		strength of any emission sh				
		erage limits specified above				
	any condition of modulation. For point-to-point operation under paragraph					
	(b)of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.					
Test Mathed:	ANSI C63.10-2013 sec		utn.			
Test Method:		-				
Procedure:	ANSI C63.10-2013 sec	tion 6.4				

6.3.1 E.U.T. Operation:

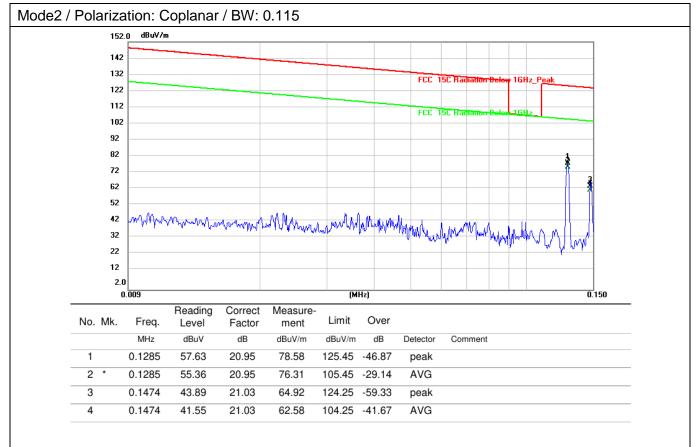
Operating Environment:						
Temperature: 22.5 °C	Humidity: 43 % Atmospheric Pressure: 101 kPa					
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report						

6.3.2 Test Setup Diagram:

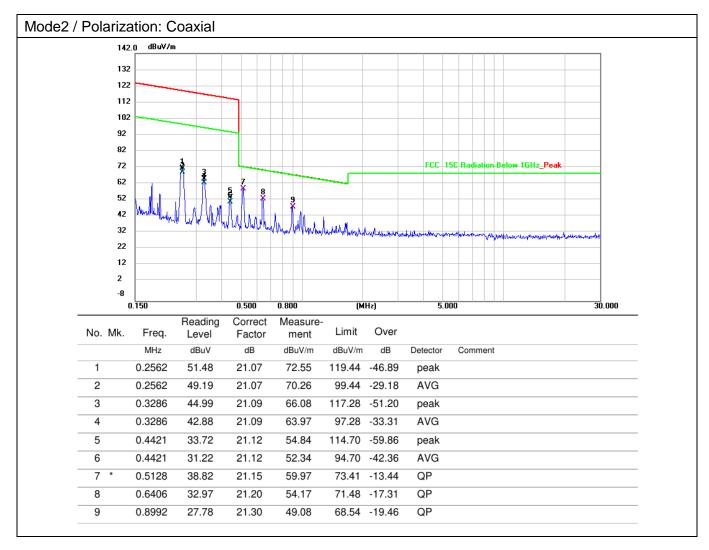




6.3.3 Test Data:









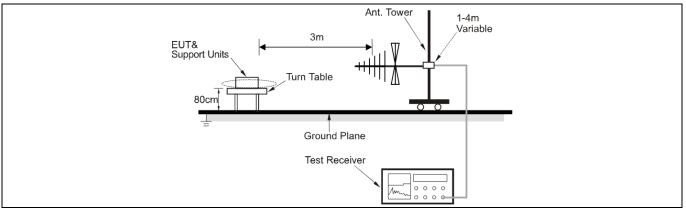
6.4 Emissions in frequency bands (30MHz - 1GHz)

Test Requirement:	47 CFR Part 15.209			
Test Limit:	Frequency (MHz)	Field strength	Measuremen	
		(microvolts/meter)	t distance	
			(meters)	-
	0.009-0.490	2400/F(kHz)	300	-
	0.490-1.705	24000/F(kHz)	30	
	1.705-30.0	30	30	
	30-88	100 **	3	
	88-216	150 **	3	
	216-960	200 **	3	
	Above 960	500	3]
Test Method:	intentional radiators ope frequency bands 54-72 f However, operation with sections of this part, e.g. In the emission table above The emission limits show employing a CISPR qua kHz, 110–490 kHz and a three bands are based of As shown in § 15.35(b), limits in paragraphs (a)a However, the peak field maximum permitted ave any condition of modulat (b)of this section, the peak	ove, the tighter limit applies at the vn in the above table are based si-peak detector except for the above 1000 MHz. Radiated emis on measurements employing an for frequencies above 1000 MH nd (b)of this section are based strength of any emission shall r rage limits specified above by n tion. For point-to-point operation ak field strength shall not exceet ers along the antenna azimuth.	ot be located in t or 470-806 MHz mitted under othe he band edges. I on measuremen frequency bands ssion limits in the average detecto tz, the field streng on average limits not exceed the nore than 20 dB in n under paragrap	z. er 9–90 ese or. gth s. under
Procedure:	ANSI C63.10-2013 secti			

6.4.1 E.U.T. Operation:

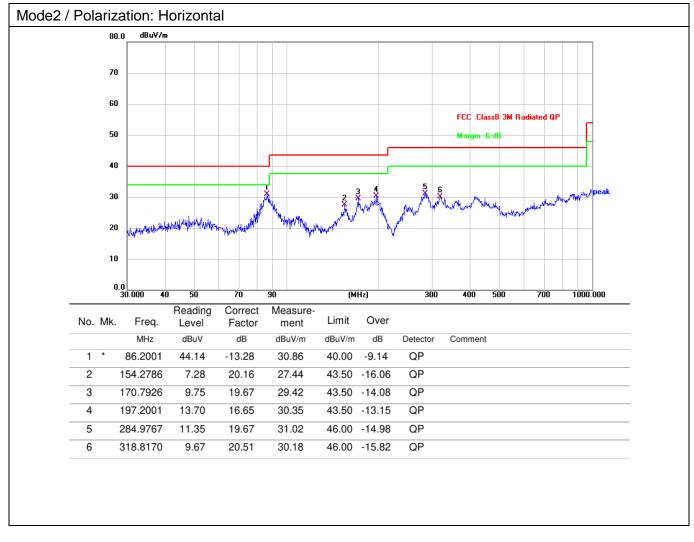
Operating Environment:						
Temperature:	22.5 °C	Humidity:	43 %	Atmospheric Pressure:	101 kPa	
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mode (Mode2) is recorded in the report					of the worst mode	

6.4.2 Test Setup Diagram:

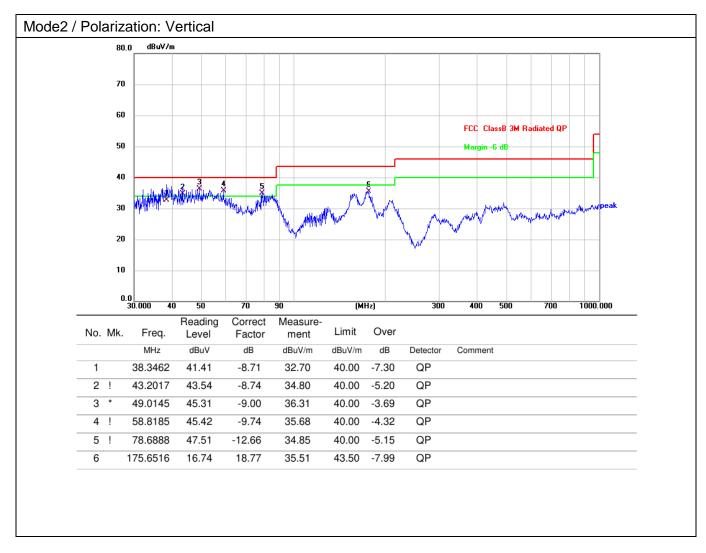




6.4.3 Test Data:









Photographs of the test setup

Refer to Appendix - Test Setup Photos



Photographs of the EUT

Refer to Appendix - EUT Photos

----End of Report----