

# **Test Report**

Report No.:	MTi240313022-04E1
Date of issue:	2024-04-11
Applicant:	Shenzhen USV Technology Co., Ltd
Product:	3-IN-1 Wireless Charger
Model(s):	Q6, T6, C6
FCC ID:	2AY5D-Q6

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

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Test Result Certification			
Applicant:	Shenzhen USV Technology Co., Ltd		
Address:4th to the south, building B20, Hengfeng Industrial City, Hangchen, E District, Shenzhen City, Guangdong Province, 518100 China			
Manufacturer:	Shenzhen USV Technology Co., Ltd		
Address:	4th to the south, building B20, Hengfeng Industrial City, Hangchen, Bao'an District, Shenzhen City, Guangdong Province, 518100 China		
Factory:	Shenzhen USV Technology Co., Ltd		
Address:4th to the south, building B20, Hengfeng Industrial City, Hangchen, Bao District, Shenzhen City, Guangdong Province, 518100 China			
Product description			
Product name:	3-IN-1 Wireless Charger		
Trade mark:	N/A		
Model name:	Q6		
Series Model(s):	T6, C6		
Standards:	47 CFR Part 15C		
Test Method:	ANSI C63.10-2013		
Date of Test			
Date of test:	2024-04-07 to 2024-04-10		
Test result:	Pass		

Test Engineer	est Engineer : Maleah Davy			
		(Maleah Deng)		
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 Wireless Charger
Model name:	Q6
Series Model(s):	T6, C6
Model difference:	All the models are the same circuit and module, except the model name and appearance color.
Electrical rating:	Input: DC 9V 2A, 5V 3A; Wireless Output: Phone: 5W, 7.5W, 10W; Earphone: 3W; Watch: 2.5W
Accessories:	Cable: USB-A to USB-C cable 120cm
Hardware version:	V1.1
Software version:	V1.1
Test sample(s) number:	MTi240313022-04S1001
RF specification	
Operating frequency range:	Transmitter1 (Phone): 115-205KHz Transmitter2 (Earphone): 115-205KHz Transmitter3 (Watch): 326.5KHz
Modulation type:	ASK
Antenna(s) type:	Coil Antenna

#### 1.2 Description of test modes

No.	Emission test modes	
Mode1	Wireless output(5W)+Earphone(3W)+Watch(2.5W)	
Mode2	Wireless output(7.5W)+Earphone(3W)+Watch(2.5W)	
Mode3	Wireless output(10W)+Earphone(3W)+Watch(2.5W)	
Mode4	Wireless output(5W)+Earphone(3W)	
Mode5	Wireless output(7.5W)+Earphone(3W)	
Mode6	Wireless output(10W)+Earphone(3W)	
Mode7	Wireless output(5W)+Watch(2.5W)	
Mode8	Wireless output(7.5W)+Watch(2.5W)	
Mode9	Wireless output(10W)+Watch(2.5W)	
Mode10	Earphone(3W)+Watch(2.5W)	
Mode11	Wireless output(5W)	
Mode12	Wireless output(7.5W)	
Mode13	Wireless output(10W)	
Mode14	Watch(2.5W)	
Mode15	Earphone(3W)	
Mode16	stand by	



#### **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

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support equipment list					
Description	Model	Serial No.	Manufacturer		
Airpods	airpods 3	/	Apple		
HUAWEI QUICK CHARGE(65W)	HW-200200ZP1	JN67LSN7N03451	HUAWEI		
wireless charging load	YBZ1.1	1	YBZ		
iwatch	iwatch S7	M0JVGQG1VP	Apple		
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	Standard	Requirement	Result
1	Antenna requirement	47 CFR Part 15C	47 CFR Part 15.203	Pass
2	Conducted Emission at AC power line	47 CFR Part 15C	47 CFR Part 15.207(a)	Pass
3	20dB Occupied Bandwidth	47 CFR Part 15C	47 CFR Part 15.215(c)	Pass
4	Emissions in frequency bands (below 30MHz)	47 CFR Part 15C	47 CFR Part 15.209	Pass
5	Emissions in frequency bands (30MHz - 1GHz)	47 CFR Part 15C	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	2023-04-26	2024-04-25	
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2023-05-05	2024-05-04	
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2023-06-03	2024-06-02	
		20dB Oc	ccupied Bandwid	lth			
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2023-04-26	2024-04-25	
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2023-04-25	2024-04-24	
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2023-04-25	2024-04-24	
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2023-04-25	2024-04-24	
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2023-04-26	2024-04-25	
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2023-04-26	2024-04-25	
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2023-05-05	2024-05-04	
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2023-04-25	2024-04-24	
9	DC Power Supply	Agilent	E3632A	MY40027695	2023-05-05	2024-05-04	
		Emissions in frequ	lency bands (be	low 30MHz)			
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2023-04-26	2024-04-25	
2	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2023-06-11	2025-06-10	
3	Amplifier	Hewlett-Packard	8447F	3113A06184	2023-04-25	2024-04-24	
		Emissions in frequ	ency bands (30N	/Hz - 1GHz)	•		
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2023-04-26	2024-04-25	
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10	
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2023-06-11	2025-06-10	
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2023-04-25	2024-04-24	
5	Multi-device Controller	TuoPu	TPMDC	1	2023-05-04	2024-05-03	



## 5 Evaluation Results (Evaluation)

#### 5.1 Antenna requirement

#### 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)

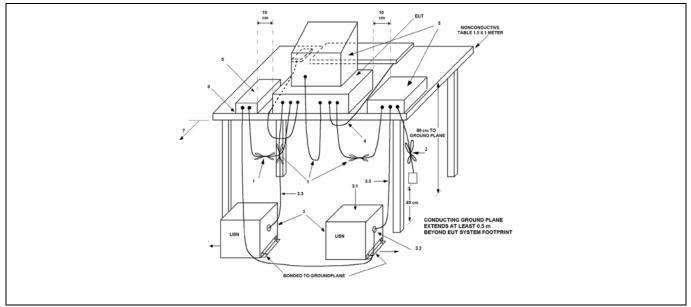
#### 6.1 Conducted Emission at AC power line

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 $\mu$ H/50 ohms line impedance stabilization network (LISN).					
Test Limit:	Frequency of emission (MHz)	Conducted limit (dBµV)				
		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:

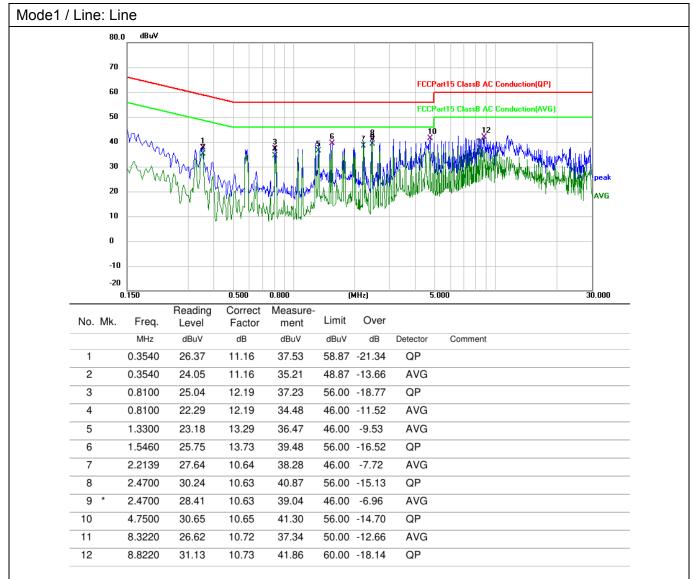
Operating Environment:						
Temperature:	emperature: 23.6 °C			56 %	Atmospheric Pressure:	101 kPa
Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode Mode10, Mode11, Mode12, Mode13, Mode14, Mode15, Mode16						
Einal test mode.				re-test mode w ded in the repo	ere tested, only the data rt	of the worst mode

#### 6.1.2 Test Setup Diagram:

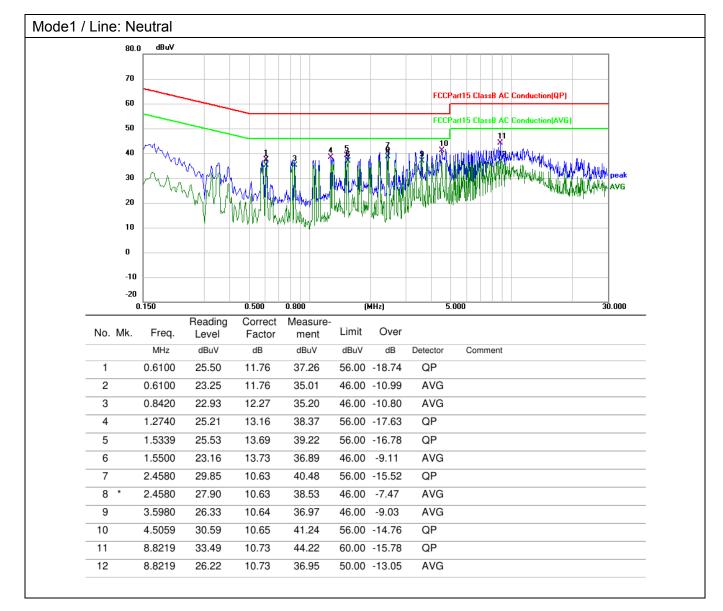




#### 6.1.3 Test Data:









#### 6.2 20dB Occupied Bandwidth

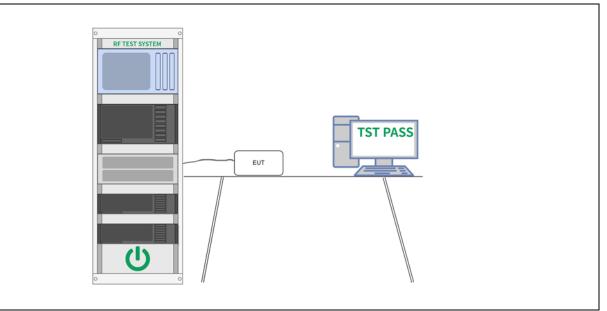
Test Requirement:	47 CFR Part 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of 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:	<ul> <li>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.</li> <li>b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.</li> <li>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.</li> <li>d) Steps a) through c) might require iteration to adjust within the specified tolerances.</li> <li>e) The dynamic range of the instrument at the selected RBW shall be more than 10 a B 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.</li> <li>f) Set detection mode to peak and trace mode to max hold.</li> <li>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).</li> <li>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.</li> <li>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 and allow the new trace to stabilize.</li> <li>Otherwise, the trace from step g) shall be used for step j).</li> <li>j) Place two markers. Alternatively, set a marker at the lowest frequency of the envelope</li></ul>



### 6.2.1 E.U.T. Operation:

Operating Environment:						
Temperature:	24.8 °C		Humidity:	59 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15, Mode16					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mode (Mode13, Mode14, Mode15) is recorded in the report					of the worst mode	

#### 6.2.2 Test Setup Diagram:





#### 6.2.3 Test Data:

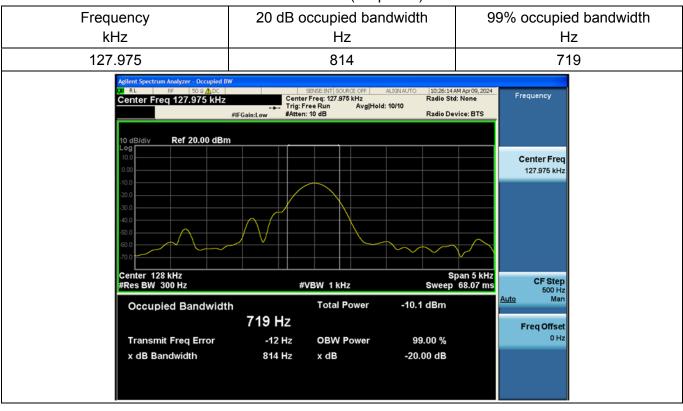
**Note:** Because the measured signal is CW-like, adjusting the RBW per C63.10 would not be practical since measurement bandwidth will always follow the RBW. The RBW is set to 300 Hz to perform the occupied bandwidth test.

Frequency	20 dB c	Transmitters1(Phone) 20 dB occupied bandwidth 99			9% occupied bandwidt	
kHz		Hz			Hz	
136.310		809			688	
Aglent Spectrum Analyzer - Occupi M RL RF SO 0 AD Center Freq 136.310 ki	C S Hz Cente #IFGain:Low #Atter	ense:PUSE] Ir Freq: 136.310 kHz Free Run Avg Hol In: 10 dB	Radio Std		Frequency	
10 dB/div Ref 30.00 d Log 200 100					Center Freq 136.310 kHz	
-10.0 -20.0 -30.0						
-40.0 -50.0 -60.0						
Center 136.3 kHz #Res BW 300 Hz	#	VBW 1 kHz		pan 5 kHz 68.07 ms	CF Step 500 Hz	
Occupied Bandwi	idth 688 Hz	Total Power	-4.24 dBm		Auto Man Freq Offset	
Transmit Freq Error x dB Bandwidth	0 Hz 809 Hz	OBW Power x dB	99.00 % -20.00 dB		0 Hz	



**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.

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#### Transmitters2(Earphone)



**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.

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Frequency kHz	20 dB occupied bandwidth Hz	99% occupied bandwidth Hz
326.305	Center Freq: 326.305 kHz Radi	3:07 AM Apr 11, 2024 • Std: None • Device: BTS
10 dB/div Ref -10.00 dBm -20.0 -30.0 -40.0		Center Freq 326.305 kHz
-50 0 -60 0 -70 0 -70 0 -70 0 -70 0 -70 0		
-100 Center 326.3 kHz #Res BW 300 Hz		Span 5 kHz sep 68.07 ms Auto Man
Occupied Bandwidth	Total Power -23.8 dBr 778 Hz -30 Hz OBW Power 99.00 9	n Freq Offset
x dB Bandwidth	794 Hz x dB -20.00 d	в

#### Transmitters3(Watch)



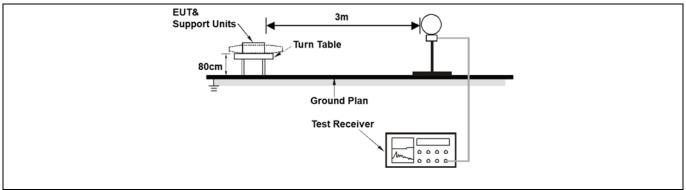
#### 6.3 Emissions in frequency bands (below 30MHz)

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	paragraph (g), fundamental e	emissions from				
		rating under this section shall					
	frequency bands 54-72	MHz, 76-88 MHz, 174-216 Mł	Hz or 470-806 MHz.				
	However, operation within these frequency bands is permitted under other						
	sections of this part, e.g., §§ 15.231 and 15.241.						
	In the emission table above, the tighter limit applies at the band edges.						
	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.						
	As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength						
	limits in paragraphs (a)and (b)of this section are based on average limits.						
		strength of any emission shal					
	maximum permitted average limits specified above by more than 20 dB under						
	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 Method:	ANSI C63.10-2013 sect	ion 6.4					
Procedure:	ANSI C63.10-2013 sect	ion 6.4					

#### 6.3.1 E.U.T. Operation:

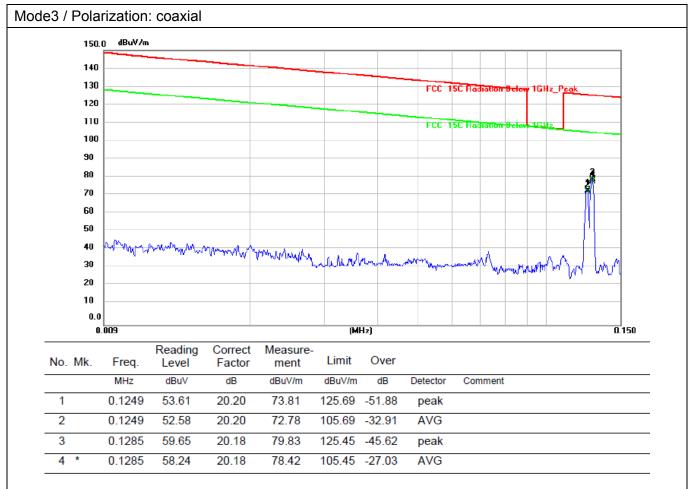
Operating Environment:						
Temperature: 22.5 °C	Humidity: 43 %	Atmospheric Pressure:	101 kPa			
Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15, Mode16						
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mod (Mode3) is recorded in the report						

#### 6.3.2 Test Setup Diagram:

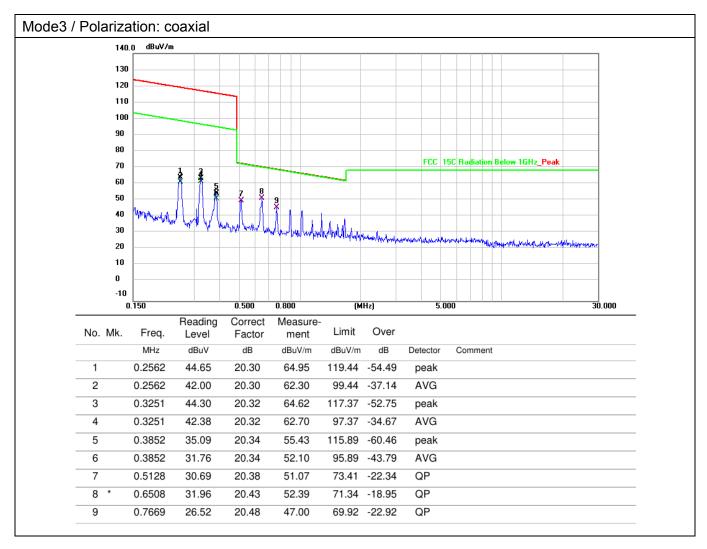




#### 6.3.3 Test Data:









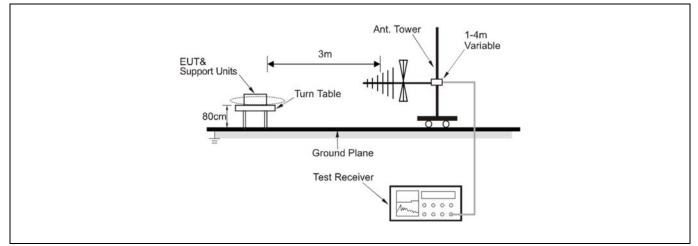
#### 6.4 Emissions in frequency bands (30MHz - 1GHz)

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:	<ul> <li>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–9 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. As shown in § 15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a)and (b)of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB und 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.</li> </ul>				
Procedure:	ANSI C63.10-2013 section	n 6.5			

#### 6.4.1 E.U.T. Operation:

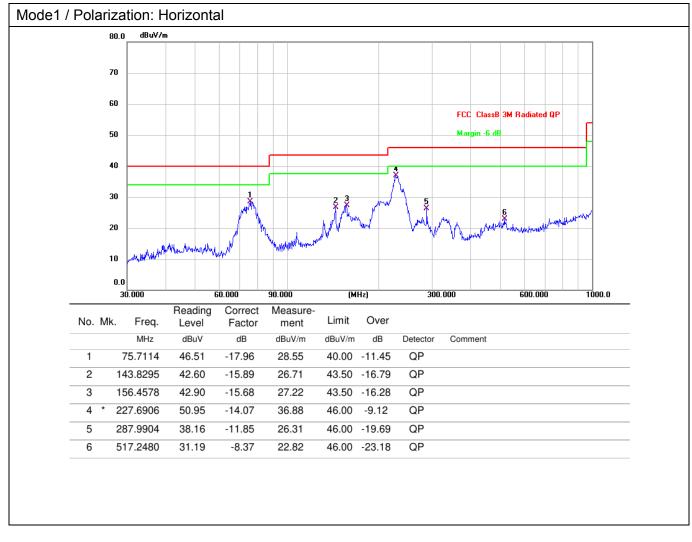
Operating Environment:						
Temperature:	22.5 °C		Humidity:	43 %	Atmospheric Pressure:	101 kPa
Pre test mode:	Pre test mode: Mode1, Mode2, Mode3, Mode4, Mode5, Mode6, Mode7, Mode8, Mode9, Mode10, Mode11, Mode12, Mode13, Mode14, Mode15, Mode16					
Final test mode: All of the listed pre-test mode were tested, only the data of the worst mo (Mode1) is recorded in the report					of the worst mode	

#### 6.4.2 Test Setup Diagram:

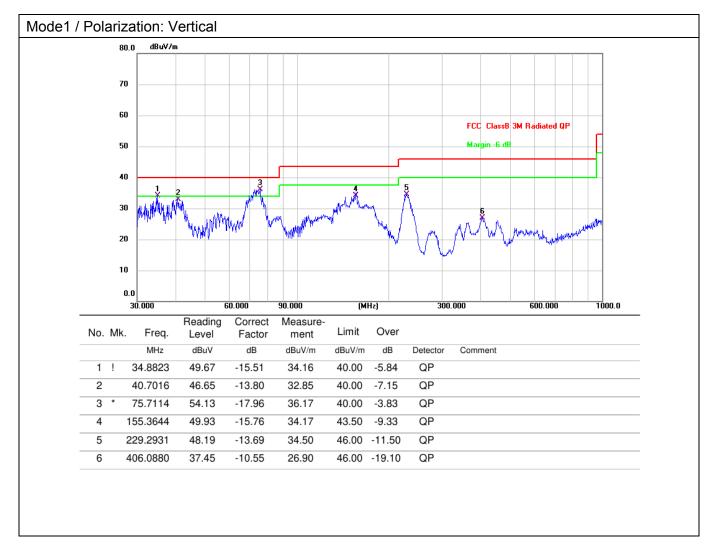




#### 6.4.3 Test Data:









## Photographs of the test setup

Refer to Appendix - Test Setup Photos



## Photographs of the EUT

Refer to Appendix - EUT Photos

----End of Report----