



Testing Tomorrow's Technology

Application

For

**Title 47 USC Part 2, Subpart J, Paragraph 2.907, 2.1043 Equipment Authorization
of Certification for an Intentional Radiator per Part 15, Subpart C,
Paragraphs 15.207 , 15.209 and 15.249**

**Cort Business Services dba Tapdn
Model: TAPDN-PIR-0001
FCC ID: 2AT6B-0001**

**UST Project: 19-0320
Issue Date: September 4, 2019**

Total Pages in This Report: 29

**3505 Francis Circle Alpharetta, GA 30004
PH: 770-740-0717 Fax: 770-740-1508
www.ustech-lab.com**



I certify that I am authorized to sign for the Test Agency and that all of the statements in this report and in the Exhibits attached hereto are true and correct to the best of my knowledge and belief:

US TECH (Agent Responsible For Test):

By: Alan Ghasiani

Name: 

Title: Compliance Engineer – President

Date September 4, 2019



TESTING
NVLAP LAB CODE 200162-0

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Testing Tomorrow's Technology

MEASUREMENT TECHNICAL REPORT

COMPANY NAME: Cort Business Services dba Tapdn
15000 Conference Center Parkway, Suite 440
Chantilly, VA 20151

MODEL: TAPDN-PIR-0001

FCC ID: 2AT6B-0001

DATE: September 4, 2019

This report concerns (check one): Original grant
Class II change

Equipment type: Low Power 902-928 MHz ISM Radio Device

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes_____ No X

If yes, defer until: N/A
date

agrees to notify the Commission by N/A
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

US Tech
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
Fax Number: (770) 740-1508

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List of Attachments

- | | |
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| Agency Agreement | Internal Photographs |
| Application Forms | External Photographs |
| Letter of Confidentiality | Antenna Photographs |
| Equipment Label(s) | Theory of Operation |
| Block Diagram(s) | RF Exposure |
| Schematic(s) | Installation Manual |
| Test Configuration Photographs | |

1 General Information

1.1 Purpose of this Report

This report is prepared as a means of conveying test results and information concerning the suitability of this exact product for public distribution according to the FCC Rules and Regulations Part 15, Section 249.

1.2 Characterization of Test Sample

The sample used for testing was received by US Tech on August 6, 2019 in good operating condition.

1.3 Product Description

The Equipment Under Test (EUT) is the Cort Business Services, model TAPDN-PIR-0001. It is a passive infrared sensor that is used to detect motion within a short range of the device. This motion detection is then sent via LoRaWAN to a local gateway, which is then transmitted to the cloud. Multiple sensors are typically used in an environment and the data is aggregated together in the cloud to provide information via an application about how spaces are utilized within the environment. The devices also advertise a BLE beacon, allowing for a proximity connection to perform diagnostics and OTA updates.

Antenna: Chip antenna – see Table 4
Modulation: FHSS (902.3 – 914.9 MHz)

1.4 Configuration of Tested System

The Test Sample was tested per *ANSI C63.4:2014, Methods of Measurement of Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (2014)* for FCC subpart A Digital equipment Verification requirements. Also, *ANSI C63.10:2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices* was used as a test procedure guide.

A list of the EUT and Peripherals is found in Table 1 below. A block diagram of the tested system is shown in Figure 1. Test configuration photographs are provided in separate Appendices.

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1.5 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA 30004. This site has been fully described and registered with the FCC. Its designation number is US5301. Additionally this site has been fully described and submitted to Industry Canada (IC), and has been approved under file number 9900A-1.

1.6 Related Submittals

The Equipment Under Test (EUT) is subject to the following FCC authorizations:

- a) Certification under section 15.249 as a transmitter.
- b) Verification under 15.101 as a digital device and receiver.

The Verification requirement shares many common report elements with the Certification report. Therefore, though this report is mostly intended to provide data for the Certification process, the Verification authorization report for the EUT is included herein.

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1.7 Test Results

In our opinion, and as indicated by the test results documented following, when tested in the configuration as described in this report, the EUT meets the applicable requirements of FCC, including: FCC Parts 2.907, 15.101, 15.107, 15.109, 15.207, 15.209 and 15.249.

Table 1. EUT and Peripherals

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID	CABLES P/D
Cort Business Services (EUT)	TAPDN-PIR-0001	Engineering Sample	2AT6B-0001	N/A
Antenna See antenna details	--	--	--	--

U= Unshielded
S= Shielded
P= Power
D= Data

2 Tests and Measurements

2.1 Test Equipment

The table below lists test equipment used to evaluate this product. Model numbers, serial numbers and their calibration status are indicated.

Table 2. Test Instruments

TEST INSTRUMENT	MODEL NUMBER	MANUFACTURER	SERIAL NUMBER	CALIBRATION DUE DATE
SPECTRUM ANALYZER	E4407B	AGILENT	US41442935	8/17/2020
RF PREAMP 100 kHz to 1.3 GHz	8447D	HEWLETT-PACKARD	1937A02980	5/07/2020
PREAMP 1.0 GHz to 26.0 GHz	8449B	HEWLETT-PACKARD	3008A00480	4/08/2020
LOOP ANTENNA	SAA-200/562	A.H. SYSTEMS	142	1/22/2020
BICONICAL ANTENNA	3110B	EMCO	9306-1708	6/27/2021 2yr cal
LOG PERIODIC ANTENNA	3146	EMCO	9305-3600	2/01/2021 2yr cal
HORN ANTENNA	3115	EMCO	9107-3723	11/28/2020 2 yr.
HIGH PASS FILTER	VHF-1320 15542	Mini-Circuits, Inc.	3 0843	4/02/2020

Note: The calibration interval of the above test instruments are 12 months unless stated otherwise and all calibrations are traceable to NIST/USA.

2.2 Modifications to EUT Hardware

No physical modifications were made by US Tech in order to bring the EUT into compliance with FCC Part 15, Subpart C Intentional Radiator Limits for the transmitter portion of the EUT or the Subpart B Unintentional Radiator Limits (Receiver and Digital Device) Requirements.

2.3 Number of Measurements for Intentional Radiators (15.31(m))

Measurements of intentional radiators or receivers shall be performed and reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in Table 3 below.

Table 3. Number of Test Frequencies for Intentional Radiators

Frequency Range over which the device operates	Number of Frequencies	Location in the Range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near the top 1 near the bottom
Greater than 10 MHz	3	1 near top 1 near middle 1 near bottom

Because the EUT operates over a range of 12.6 MHz, 3 test frequencies were used: 902.3, 908.6, and 914.9 MHz.

2.4 Frequency Range of Radiated Measurements (Part 15.33)

2.4.1 Intentional Radiator

The spectrum shall be investigated for the intentional radiator from the lowest RF signal generated in the EUT, without going below 9 kHz to the 10th harmonic of the highest fundamental frequency generated or 40 GHz, whichever is the lowest.

2.4.2 Unintentional Radiator

For the digital device, an unintentional radiator, the frequency range shall be 30 MHz to 1000 MHz, or to 5 times the highest internal clock frequency.

2.5 Measurement Detector Function and Bandwidth (CFR 15.35)

The radiated and conducted emissions limits shown herein are based on the following:

2.5.1 Detector Function and Associated Bandwidth

On frequencies below 1000 MHz, the limits herein are based upon measurement equipment employing a CISPR Quasi-peak detector function and related measurement bandwidths (i.e. 9 kHz from 150 kHz to 30 MHz and 120 kHz from 30 MHz to 1000 MHz). Alternatively, measurements may be made with equipment employing a peak detector function as long as the same bandwidths specified for the Quasi-peak device are used.

2.5.2 Corresponding Peak and Average Requirements

Above 1000 MHz, radiated limits are based on measuring instrumentation employing an average detector function. When average radiated emissions are specified there is also a corresponding Peak requirement, as measured using a peak detector, of 20 dB greater than the average limit. For all measurements above 1000 MHz the Resolution Bandwidth shall be at least 1 MHz.

2.5.3 Pulsed Transmitter Averaging

When the radiated emissions limit is expressed as an average value, and the transmitter is pulsed, the measured field strength shall be determined by applying a Duty Cycle Correction Factor based upon dividing the total ON time during the first 100 ms period by 100 ms (or by the period if less than 100 ms). The duty cycle may be expressed logarithmically in dB.

NOTE: If the transmitter was programmed to transmit at >98% duty cycle, then, wherever applicable (where the detection mode was AVG) the duty cycle factor calculated will be applied.

2.6 EUT Antenna Requirements (CFR 15.203)

This equipment is not available to the general public and will only be installed by a professional installer working for an approved utility. The equipment therefore meets the intent of the above requirement. Only the antenna listed in Table 4 will be used with this module.

Table 4. Allowed Antenna(s)

REPORT REFERENCE	MANUFACTURER	TYPE OF ANTENNA	MODEL	GAIN dB _i	TYPE OF CONNECTOR
Antenna 1	Johanson Technology	Chip	0915AT43A0026	-1.0	SMD

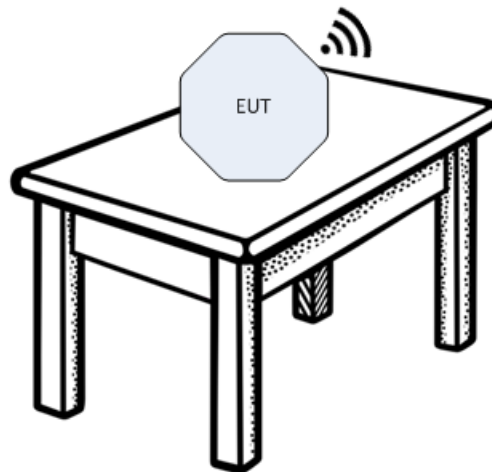


Figure 1. Block Diagram of Test Configuration

2.7 Restricted Bands of Operation (Part 15.205)

Only spurious emissions can fall in the frequency bands of CFR 15.205. The field strength of these spurious cannot exceed the limits of 15.209. Radiated harmonics and other spurious emissions are examined for this requirement. See paragraph 2.10 of the test report.

2.8 Transmitter Duty Cycle (CFR 15.35 (c))

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification.

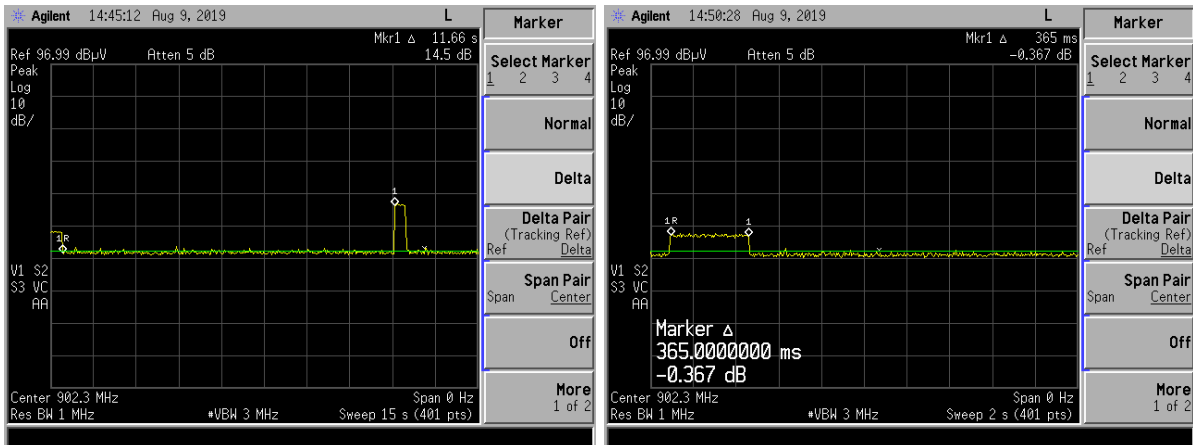


Figure 2. Duty Cycle plots

TX off= 11.66 seconds TX on = 0.365 seconds

Duty Cycle = $20 \text{ Log} (\text{TX on}/(\text{Tx on}+\text{TX off})) = 20 \text{ Log} (0.365/(11.66+0.365)) = -30.35$

In this case a duty cycle correction factor of -20 dB was used since the calculated value is less than -20 dB.

2.9 Intentional Radiator, Power Line Conducted Emissions (CFR 15.207)

The EUT is powered by two AA Lithium batteries; therefore, this test is not applicable.

2.10 Intentional Radiator, Radiated Emissions (CFR 15.209, 15.249(a)(c))

Radiated Spurious measurements: The EUT was placed into a continuous transmit mode of operation (>98% or max level possible duty cycle) and tested per ANSI C63.10:2013. The EUT was tested in the orientation of normal operation because the device is designed to operate in a fixed position.

Radiated measurements were conducted between the frequency range of 9 kHz (or lowest frequency used/generated by the device) up to the tenth harmonic of the device (not greater than 40 GHz). In the band below 125 kHz, a resolution bandwidth (RBW) of 200 Hz was used. In the band from 125 kHz to 30 MHz, a RBW of 9 kHz was used; emissions below 1 GHz were tested with a RBW of 100/120 kHz and emissions above 1 GHz were tested with a RBW of 1 MHz. All video bandwidth settings were at least three times the RBW value.

The EUT was investigated per CFR 15.209, General requirements for unwanted spurious emissions. The conducted spurious method as described below was used to investigate all other emissions emanating from the antenna port.

Conducted Spurious measurements: The EUT was put into a continuous-transmit mode of operation (>98% or max level possible duty cycle) and tested per ANSI C63.10-2013 for conducted out of band emissions emanating from the antenna port over the frequency range of 9 kHz or lowest operating clock frequency to ten times the highest operating clock frequency. A conducted scan was performed on the EUT to identify and record the spurious signals that were related to the transmitter.

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Table 5. Peak Radiated Fundamental & Harmonic Emissions

Test: FCC Part 15, Para 15.209, 15.249				Client: Cort Business Services dba Tapdn			
Project: 19-0320				Model: TAPDN-PIR-0001			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector Mode
Low Channel – PEAK							
902.30	75.66	-0.46	75.20	114.0	3.0m./VERT	38.8	PK
2706.00	65.35	-2.52	62.83	74.0	3.0m./HORZ	11.2	PK
5413.80	44.01	13.87	57.88	74.0	3.0m./VERT	16.1	PK
Mid Channel – PEAK							
908.60	74.19	-0.59	73.60	114.0	3.0m./HORZ	40.4	PK
2725.80	64.95	-2.64	62.31	74.0	3.0m./HORZ	11.7	PK
5451.60	44.16	10.86	55.02	74.0	3.0m./HORZ	19.0	PK
High Channel – PEAK							
914.90	73.49	-0.75	72.74	114.0	3.0m./HORZ	41.3	PK
2744.70	64.53	-2.71	61.82	74.0	3.0m./HORZ	12.2	PK
7319.20	41.88	17.88	59.76~	74.0	3.0m./VERT	14.2	PK

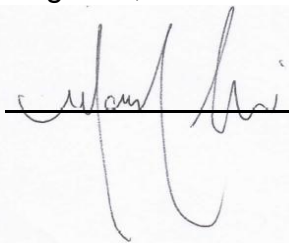
1. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
2. (~) Measurements taken at 1 meter were extrapolated to 3 meters using a factor of (-9.5 dB).
3. The EUT was placed in its normal operating position and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98% or max level possible. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 902.3 MHz:

Magnitude of Measured Frequency	75.66	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	-0.46	dB/m
Corrected Result	75.20	dBuV/m

Test Date: August 9, 2019

Tested By
 Signature:



Name: Mark Afroozi

Table 6. Average Radiated Fundamental & Harmonic Emissions

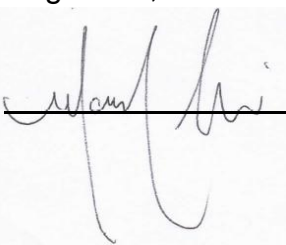
Test: FCC Part 15, Para 15.209, 15.249					Client: Cort Business Services dba Tapdn			
Project: 19-0320					Model: TAPDN-PIR-0001			
Frequency (MHz)	Test Data (dBuv)	Additional factor	AF+CA-AMP (dB/m)	Results (dBuV/m)	Limits (dBuV/m)	Antenna Distance/Polarization	Margin (dB)	Detector Mode
Low Channel – AVG								
902.30	75.66	--	-0.46	75.20	94.0	3.0m./HORZ	18.8	AVG*
2706.00	64.22	-20.0	-2.52	41.70 *	54.0	3.0m./HORZ	12.3	AVG
3609.20	32.60	--	2.81	35.41	54.0	3.0m./VERT	18.6	AVG
4511.50	37.02	--	6.64	43.66	54.0	3.0m./VERT	10.3	AVG
5413.80	32.15	--	14.02	46.17	54.0	3.0m./HORZ	7.8	AVG
Mid Channel – AVG								
908.60	74.19	--	-0.59	73.60	94.0	3.0m./HORZ	20.4	AVG*
2725.80	63.91	-20.0	-2.64	41.27*	54.0	3.0m./HORZ	12.7	AVG
3634.40	34.26	--	3.05	37.31	54.0	3.0m./HORZ	16.7	AVG
4543.00	36.59	--	7.26	43.85	54.0	3.0m./HORZ	10.2	AVG
5451.60	32.68	--	10.86	43.54	54.0	3.0m./HORZ	10.5	AVG
High Channel – AVG								
914.90	73.49	--	-0.75	72.74	94.0	3.0m./HORZ	21.3	AVG*
2744.70	63.77	-20.0	-2.71	41.06*	54.0	3.0m./HORZ	12.9	AVG
3659.60	32.48	--	3.24	35.72	54.0	3.0m./VERT	18.3	AVG
4574.50	34.80	--	7.21	42.01	54.0	3.0m./VERT	12.0	AVG
7319.20	26.87	-9.5	17.88	35.25~	54.0	1.0m./VERT	18.8	AVG

1. (*) Peak value meets AVG limit or Duty Cycle correction factor (-20 dB) applied.
2. No other signals detected within 20 dB of specification limit. Harmonics investigated up to the 10th harmonic
3. (~) Measurements taken at 1 meter were extrapolated to 3 meters using a factor of (-9.5 dB).
4. The EUT was placed in its normal operating position and the transmitter was in constant broadcast mode, with a duty cycle of greater than 98% or max level possible. The emissions were measured with the receive antenna in vertical and horizontal polarizations. The data listed in the above table was worst case.

Sample Calculation at 2706.00 MHz:

Magnitude of Measured Frequency	64.22	dBuV
+Additional factor	20.00	dB
+Antenna Factor + Cable Loss+ Amplifier Gain	-2.52	dB/m
Corrected Result	41.70	dBuV/m

Test Date: August 12, 2019

Tested By
 Signature:  Name: Mark Afroozi

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2.11 Band Edge Measurements – (CFR 15.249(d))

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation. In this case the emissions outside the band were compared to the radiated emissions limits of 15.209.

To capture the band edge, set the Spectrum Analyzer frequency span large enough (usually around 2 MHz) to capture the peak level of the emission operating on the channel closest to the band edge as well as any modulation products falling outside of the authorized band of operation. Radiated measurements are performed with RBW = 100 kHz. The VBW is set \geq RBW. See figure and calculations below for more detail.

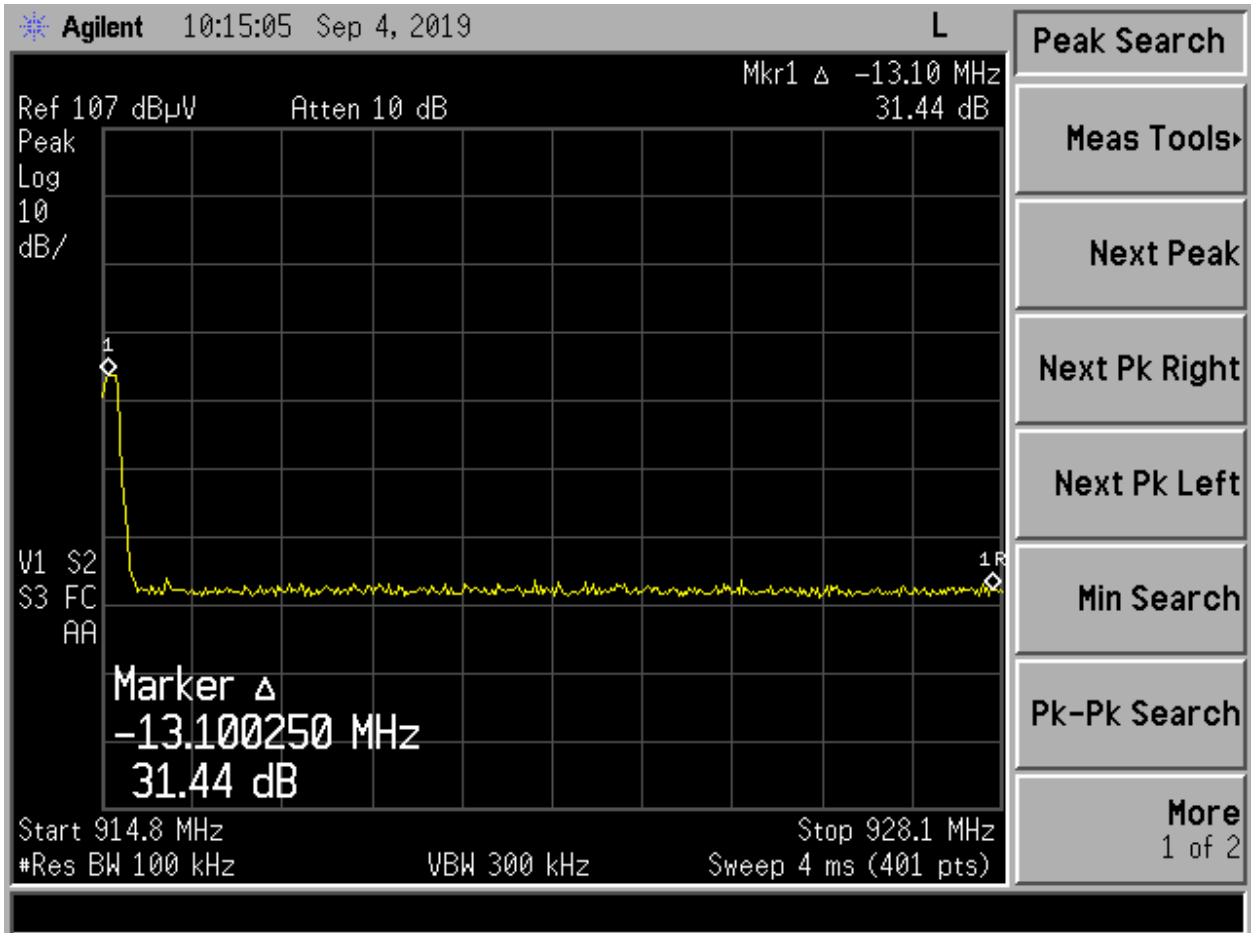


Figure 3. Band Edge Compliance, High Channel Delta

High Channel Corrected Measured Value	72.74 dBuV/m
Low Channel Band Edge Delta from Figure 3	-31.44 dB
Calculated Result (PEAK)	41.30 dBuV/m
Band Edge Limit (AVERAGE)	54.00 dBuV/m
Calculated Result (PEAK)	-41.30 dBuV/m
Band Edge Margin	12.70 dB

Note: Peak value meets AVG limit.

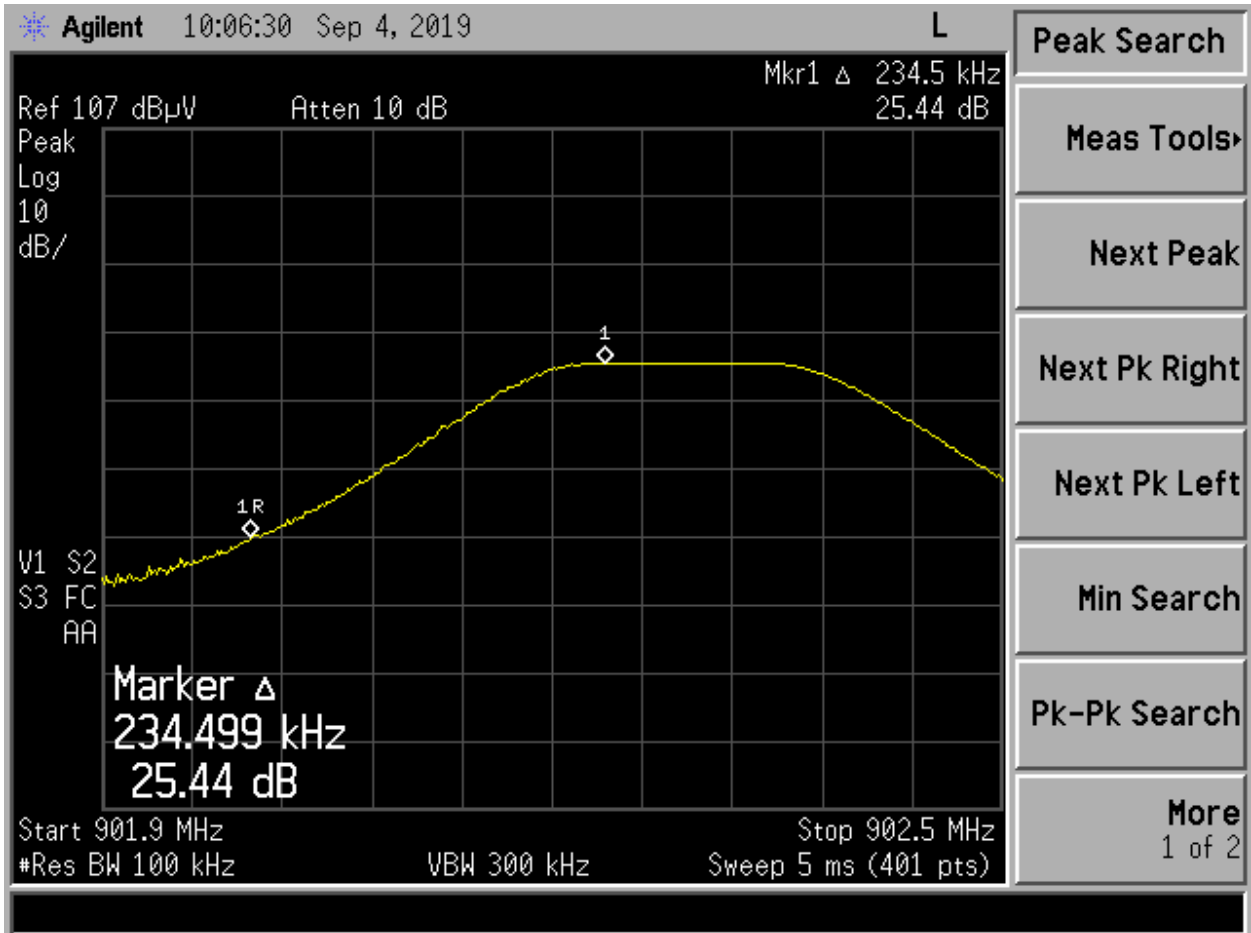


Figure 4. Band Edge Compliance, Low Channel Delta

Low Channel Corrected Measured Value	75.20 dBuV/m
Low Channel Band Edge Delta from Figure 4	-25.44 dB
Calculated Result (PEAK)	49.76 dBuV/m
Band Edge Limit (AVERAGE)	54.00 dBuV/m
Calculated Result (PEAK)	-49.76 dBuV/m
Band Edge Margin	4.24 dB

Note: Peak value meets AVG limit.

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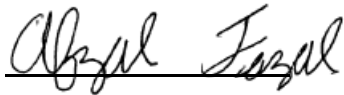
2.12 Occupied Bandwidth (CFR 2.1049)

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

Table 7. Occupied Bandwidth

Frequency (MHz)	99% Occupied Bandwidth (kHz)
902.3	128.4330
908.5	128.6503
914.9	128.5372

Test Date: September 3, 2019

Tested By
Signature:  Name: Afzal Fazal

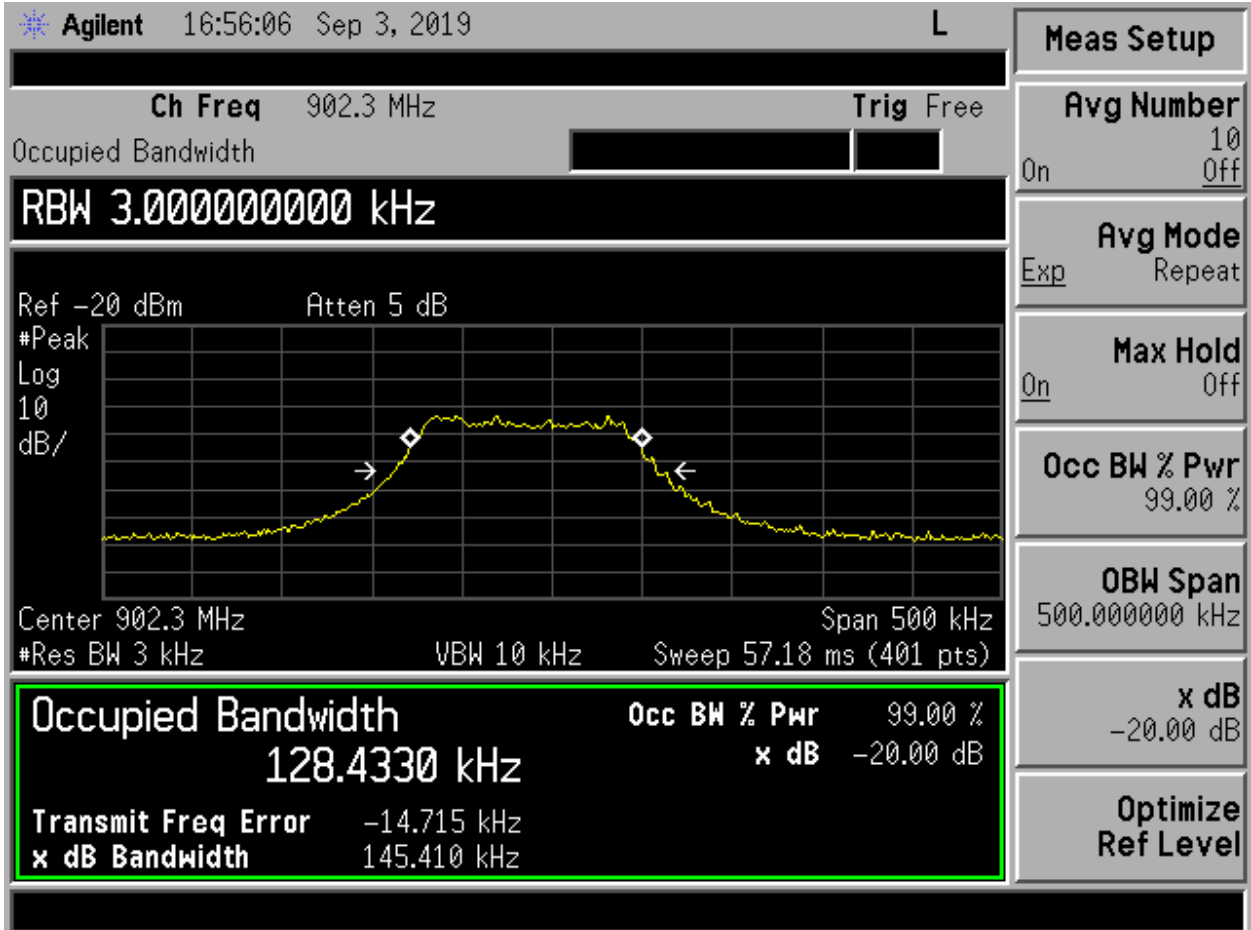


Figure 5. Occupied Bandwidth – Low Channel

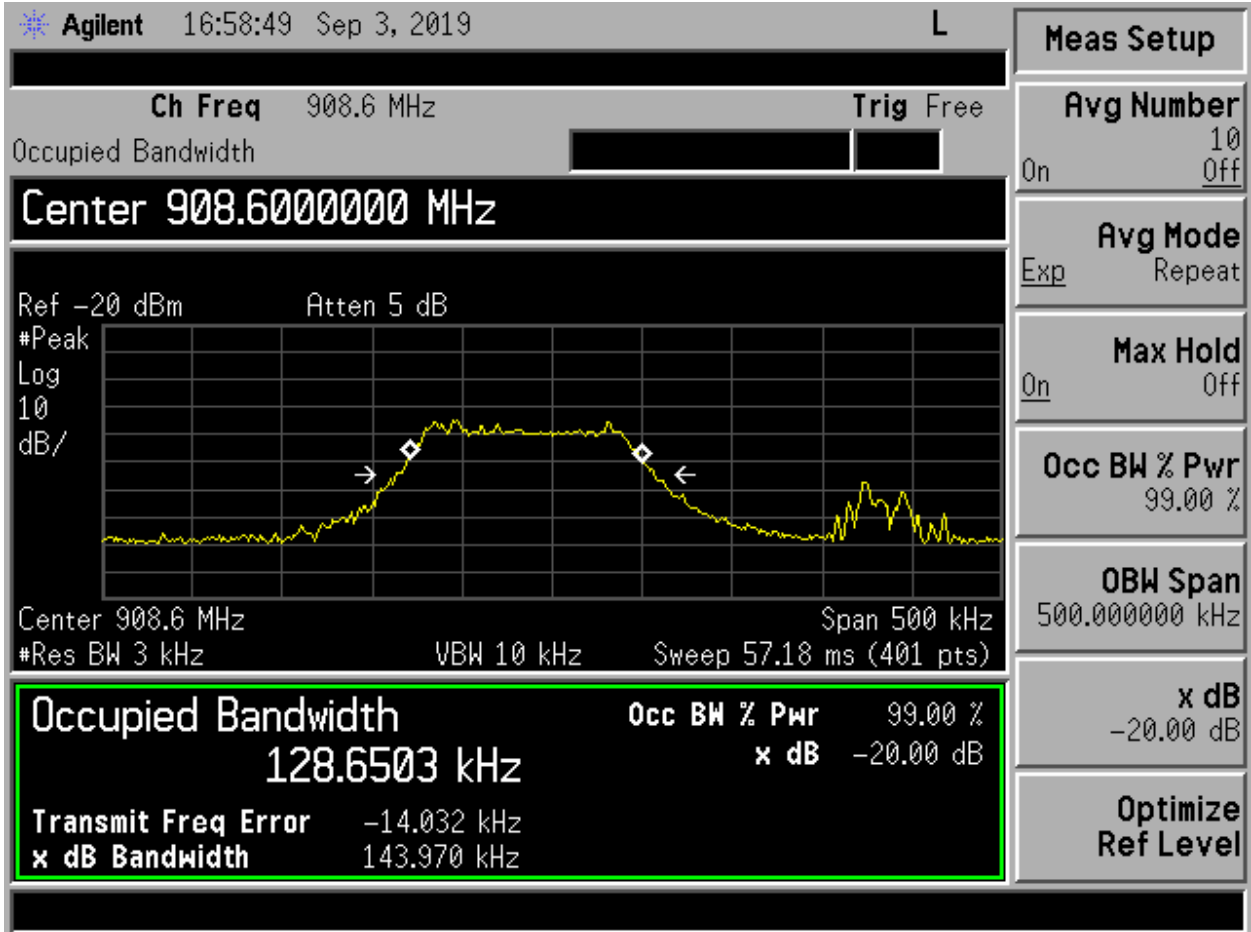


Figure 6. Occupied Bandwidth – Mid Channel

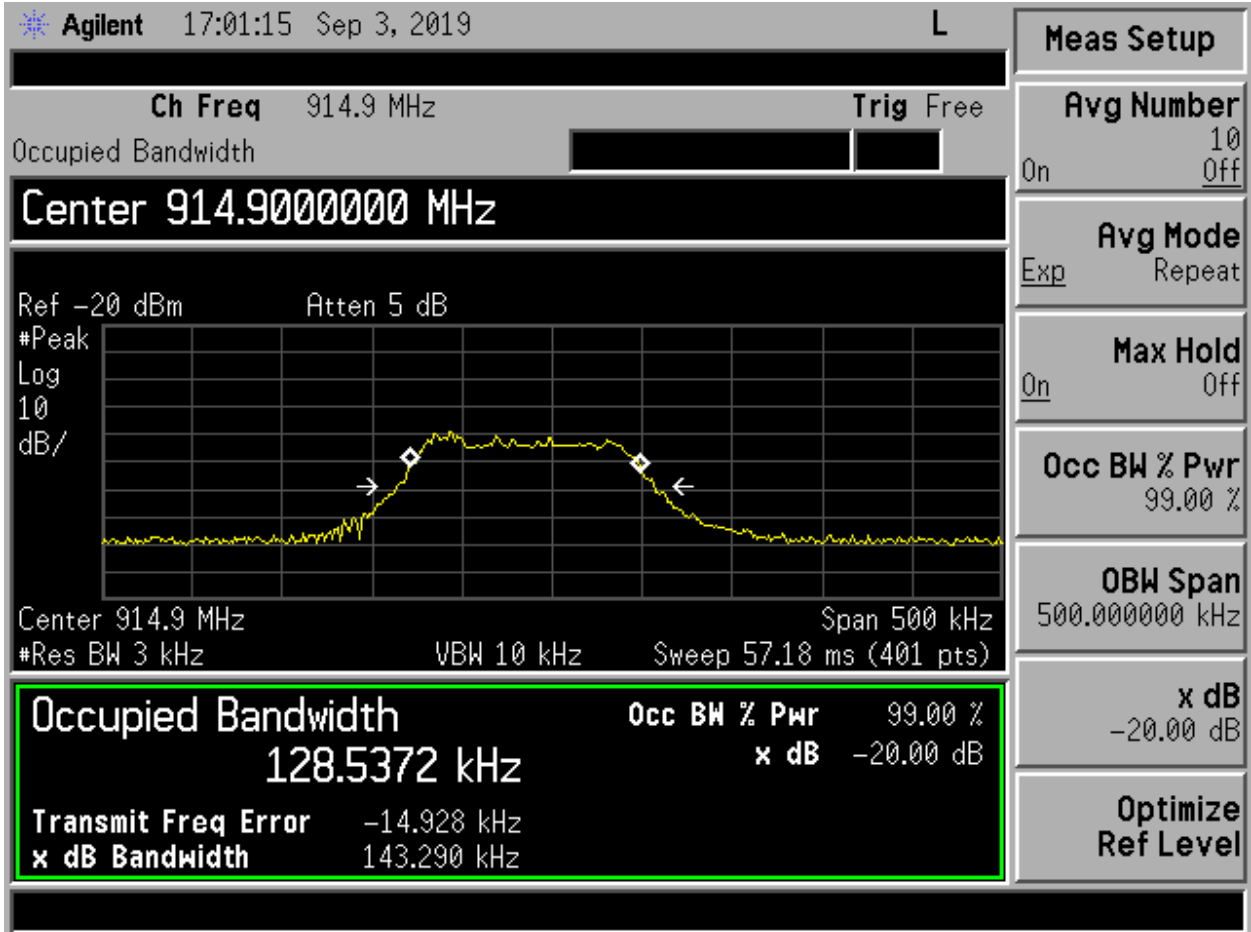


Figure 7. Occupied Bandwidth – High Channel

2.13 Unintentional and Intentional Radiator, Powerline Emissions (CFR 15.107/15.207)

The EUT is battery powered; therefore, this test was not applicable.

2.14 Unintentional and Intentional Radiator, Radiated Emissions (CFR 15.109, 15.209)

Radiated emissions disturbance measurements were performed with the transmitter turned OFF and the test was repeated with the intentional transmitter circuit ON. The worst case mode of operation is with the transmitter circuit ON. That test data is presented below to show compliance to both parts.

An instrument having both peak and quasi-peak detectors was used to perform the test over the frequency range of 30 MHz to five times the highest clock frequency. Measurements of the radiated emissions were made with the receiving antenna at a distance of 3 m from the boundary of the test unit.

The test antenna was varied from 1 m to 4 m in height while watching the analyzer's display for the maximum magnitude of the signal at the test frequency. The antenna polarization (horizontal and vertical) and test sample azimuth were varied during the measurements to find the maximum field strength readings to record.

The worst-case radiated emission in the range of 9 kHz to 10 GHz was 12.5 dB below the limit at 30.43 MHz. This signal is found in Table 9. All other radiated emissions were greater than 20 dB below the applicable limit.

US Tech Test Report
 FCC ID:
 Test Report Number:
 Issue date:
 Customer:
 Model:

FCC Part 15.209/249
 2AT6B-0001
 19-0320
 September 4, 2019
 Cort Business Services dba Tapdn
 TAPDN-PIR-0001

**Table 8. Intentional Radiator, Spurious Radiated Emissions (CFR 15.209),
 9 kHz to 30 MHz**

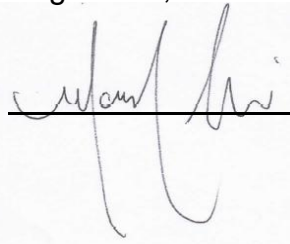
9 kHz to 30 MHz							
Test: Radiated Emissions				Client: Cort Business Services dba Tapdn			
Project: 19-0320				Model: TAPDN-PIR-0001			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	QP Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or QP
All emissions seen were more than 20 dB below the applicable limit.							

Tested from 9 kHz to 30 MHz

SAMPLE CALCULATION: N/A

Test Date: August 20, 2019

Tested By
 Signature:



Name: Mark Afroozi

US Tech Test Report
 FCC ID:
 Test Report Number:
 Issue date:
 Customer:
 Model:

FCC Part 15.209/249
 2AT6B-0001
 19-0320
 September 4, 2019
 Cort Business Services dba Tapdn
 TAPDN-PIR-0001

Table 9. Unintentional and Intentional Radiator, Spurious Radiated Emissions (CFR 15.109, 15.209) 30 MHz to 1000 MHz

30 MHz to 1000 MHz with Class B Limits							
Test: Radiated Emissions				Client: Cort Business Services dba Tapdn			
Project: 19-0320				Model: TAPDN-PIR-0001			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	QP Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or QP
30.43	39.30	-11.81	27.49	40.0	3m./VERT	12.5	PK
All emissions seen were more than 20 dB below the applicable limit.							

Tested from 30 MHz to 1 GHz

Sample Calculation at 30.43 MHz:

Magnitude of Measured Frequency	39.30	dBuV
+Antenna Factor + Cable Loss+ Amplifier Gain	-11.81	dB/m
Corrected Result	27.49	dBuV/m

Test Date: August 12, 2019

Tested By
 Signature:  Name: Mark Afroozi

US Tech Test Report
 FCC ID:
 Test Report Number:
 Issue date:
 Customer:
 Model:

FCC Part 15.209/249
 2AT6B-0001
 19-0320
 September 4, 2019
 Cort Business Services dba Tapdn
 TAPDN-PIR-0001

Table 10. Unintentional and Intentional Radiator, Spurious Radiated Emissions (CFR 15.109, 15.209) 1 GHz to 10 GHz

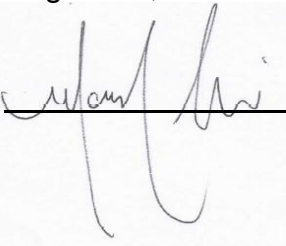
1 GHz to 10 GHz with Class B Limits							
Test: Radiated Emissions				Client: Cort Business Services dba Tapdn			
Project: 19-0320				Model: TAPDN-PIR-0001			
Frequency (MHz)	Test Data (dBuv)	AF+CA-AMP (dB/m)	Results (dBuV/m)	AVG Limits (dBuV/m)	Antenna Distance/ Polarization	Margin (dB)	Detector PK, or AVG
All emissions seen were more than 20 dB below the applicable limit.							

*Measurements taken above 6 GHz are performed at a distance of 1m (vs. 3m). This correction includes an additional factor of -9.5 dB to account for this change.

SAMPLE CALCULATION at N/A

Test Date: August 13, 2019

Tested By
 Signature:



Name: Mark Afroozi

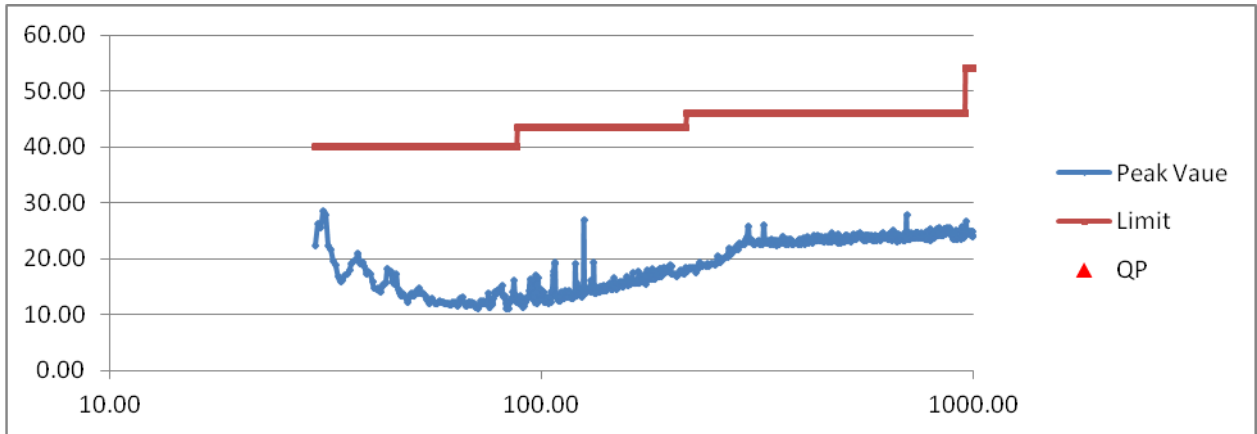


Figure 8. Radiated Emissions 30 MHz - 1000 MHz, Horizontal

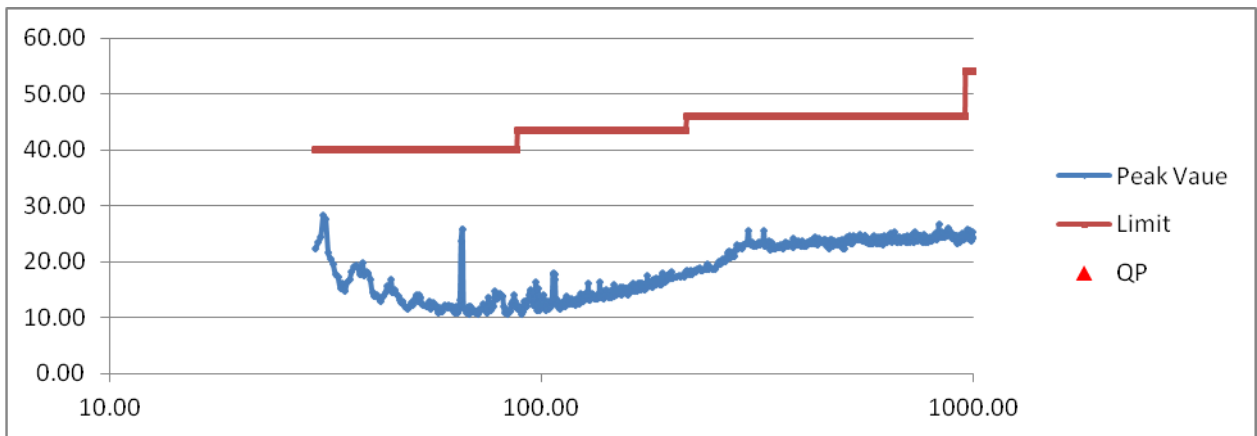


Figure 9. Radiated Emissions 30 MHz - 1000 MHz, Vertical

2.15 Measurement Uncertainty

The measurement uncertainties given were calculated using the method detailed in CISPR 16-4-2. A coverage factor of $k=2$ was used to give a level of confidence of approximately 95%.

2.15.1 Conducted Emissions Measurement Uncertainty

Measurement Uncertainty (within a 95% confidence level) for this test is ± 2.78 dB.

This test was not performed. The EUT is battery operated.

2.15.2 Radiated Emissions Measurement Uncertainty

For a measurement distance of 3 m the measurement uncertainty (with a 95% confidence level) for this test using a Biconical Antenna (30 MHz to 200 MHz) is ± 5.39 dB. This value includes all elements of measurement.

The measurement uncertainty (with a 95% confidence level) for this test using a Log Periodic Antenna (200 MHz to 1000 MHz) is ± 5.18 dB.

The measurement uncertainty (with a 95% confidence level) for this test using a Horn Antenna is ± 5.21 dB.

The data listed in this test report does have sufficient margin to negate the effects of uncertainty. Therefore, the EUT unconditionally meets this requirement.

END REPORT