

# FCC TEST REPORT

## For

**Product Name: PEN TABLET**

**Brand Name: Wacom**

**Model No.: CTH-690**

**Series Model: CTL-690**

**FCC ID: HV4CTH690**

**IC: 6888A-CTH690**

**Test Report Number:**

**C150506R02-RPW**

**Issued for**

**Wacom Co., Ltd.**

**2-510-1 Toyonodai, Kazo-shi, Saitama, 349-1148, Japan**

**Issued by**

**Compliance Certification Services Inc.**

**Kun shan Laboratory**

**No.10 Weiye Rd., Innovation park, Eco&Tec,  
Development Zone, Kunshan City, Jiangsu, China**

**TEL: 86-512-57355888**

**FAX: 86-512-57370818**



**Note:** This report shall not be reproduced except in full, without the written approval of Compliance Certification Services Inc. This document may be altered or revised by Compliance Certification Services Inc. personnel only, and shall be noted in the revision section of the document. The client should not use it to claim product endorsement by A2LA or any government agencies. The test results in the report only apply to the tested sample.

## TABLE OF CONTENTS

<b>1.</b>	<b>TEST RESULT CERTIFICATION .....</b>	<b>3</b>
<b>2.</b>	<b>EUT DESCRIPTION .....</b>	<b>4</b>
<b>3.</b>	<b>TEST METHODOLOGY.....</b>	<b>5</b>
3.1.	EUT CONFIGURATION .....	5
3.2.	EUT EXERCISE .....	5
3.3.	GENERAL TEST PROCEDURES .....	5
3.4.	DESCRIPTION OF TEST MODES .....	6
3.5.	ANTENNA DESCRIPTION.....	6
<b>4.</b>	<b>INSTRUMENT CALIBRATION .....</b>	<b>7</b>
4.1.	MEASURING INSTRUMENT CALIBRATION .....	7
<b>5.</b>	<b>FACILITIES AND ACCREDITATIONS .....</b>	<b>8</b>
5.1.	FACILITIES.....	8
5.2.	EQUIPMENT .....	8
5.3.	LABORATORY ACCREDITATIONS AND LISTING.....	8
5.4.	TABLE OF ACCREDITATIONS AND LISTINGS.....	9
<b>6.</b>	<b>SETUP OF EQUIPMENT UNDER TEST .....</b>	<b>10</b>
6.1.	SETUP CONFIGURATION OF EUT .....	10
6.2.	SUPPORT EQUIPMENT .....	10
<b>7.</b>	<b>FCC PART 15.209 REQUIREMENTS.....</b>	<b>11</b>
7.1.	AC POWER-LINE CONDUCTED EMISSIONS .....	11
7.2.	TEST OF RADIATED EMISSION.....	15
7.3.	99% BANDWIDTH MEASUREMENT .....	21

## 1. TEST RESULT CERTIFICATION

<b>Product Name:</b>	PEN TABLET
<b>Trade Name:</b>	Wacom
<b>Model Name.:</b>	CTH-690
<b>Series Model:</b>	CTL-690
<b>Applicant Discrepancy:</b>	Initial
<b>Date of Test:</b>	May 7, 2015 ~ May 21, 2015
<b>Applicant:</b>	<b>Wacom Co., Ltd.</b> 2-510-1 Toyonodai, Kazo-shi, Saitaima, 349-1148, Japan
<b>Manufacturer:</b>	<b>Wacom Co., Ltd.</b> 2-510-1 Toyonodai, Kazo-shi, Saitaima, 349-1148, Japan
<b>Application Type:</b>	Certification

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
47 CFR FCC Part 15.209	No non-compliance noted
Canada RSS-210 Issue 8	No non-compliance noted
Canada RSS-Gen Issue 4	No non-compliance noted

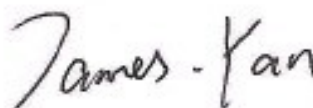
### We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.203, 15.207, 15.209 and RSS-210 Issue 8.

The test results of this report relate only to the tested sample EUT identified in this report.

**Approved by:**

**Tested by:**

Jeff.Fang  
RF Manager  
Compliance Certification Service Inc.

James.Yan  
Test Engineer  
Compliance Certification Service Inc.

**2. EUT DESCRIPTION**

<b>Product Name:</b>	PEN TABLET
<b>Brand Name:</b>	Wacom
<b>Model Name:</b>	CTH-690
<b>Series Model:</b>	CTL-690
<b>Model Discrepancy:</b>	CTH-690 with touch function CTL-690 without touch function
<b>Power Adapter Power Rating :</b>	INPUT DC: 5V /500mA
<b>Frequency Range:</b>	667KHz
<b>Modulation Technique:</b>	OOK(On-Off-Keying)
<b>Number of Channels:</b>	1 Channels
<b>Wireless Module Brand/Model:</b>	Wacom/INF-A068;Wacom/INF-A069
<b>Battery Brand/Model:</b>	Sanyo/1UF553450Z-WCM
<b>Pen Model:</b>	LP-190
<b>USB Cable Model:</b>	JPA-W-J026-00000

**Remark:**

- 1.The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
- 2.This submittal(s) (test report) is intended for **FCC ID: HV4CTH690** filing to comply with Section 15.203, 15.207 and 15.209 of the FCC Part 15, Subpart C Rules.
- 3.This submittal(s) (test report) is intended for **IC: 6888A-CTH690** filing to comply with Canada RSS-210 Issue 8 and Canada RSS-Gen Issue 4 Rules.
4. Sold without Wireless Module and Battery, Consumers should buy them additionally and have them installed.

### **3. TEST METHODOLOGY**

The tests documented in this report were performed in accordance with ANSI C63.4 2009 and FCC CFR 47 15.203, 15.207, 15.209, RSS-210 and RSS-Gen.

#### **3.1. EUT CONFIGURATION**

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

#### **3.2. EUT EXERCISE**

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.207 and 15.209 under the FCC Rules Part 15 Subpart C.

#### **3.3. GENERAL TEST PROCEDURES**

##### **Conducted Emissions**

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

##### **Radiated Emissions**

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4 2009.

**3.4.DESCRPTION OF TEST MODES**

The worst-case Modulation and Test Channel Frequencies Configuration are determined to be done.

The worst-case Modulation Configuration:

Modulation Mode	Field Strength (dBuV/m at 3m)
OOK(On-Off-Keying)	46.98

Test Channel Frequencies Configuration

Modulation Mode	Test Channel Frequencies (kHz)
OOK(On-Off-Keying)	667

**3.5.ANTENNA DESCRIPTION**

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	External antenna (dedicated antennas)

## 4. INSTRUMENT CALIBRATION

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

#### Equipment Used for Emissions Measurement

977 Chamber					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-11-12	2015-11-11
EMI Test Receiver	R&S	ESCI	101378	2015-1-22	2016-1-21
Pre-Amplifier	MINI	ZFL-1000VH2	d041703	2015-1-22	2016-1-21
Pre-Amplifier	Miteq	JS41-00101800-32-10P	1675713	2015-1-22	2016-1-21
Bilog Antenna	Sunol	JB1	A062604	2015-3-6	2016-3-5
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2015-3-7	2016-3-6
Turn Table	CT	CT123	4165	N.C.R	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R	N.C.R
Controller	CT	CT100	95637	N.C.R	N.C.R
Loop Antenna	SCHWARZBECK	HXYZ9170	9170-108	2015-1-15	2015-1-15
Test Software	EZ-EMC				

Conducted Emission					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI TEST RECEIVER	R&S	ESCI	100781	2015-3-16	2016-3-15
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	N.C.R	N.C.R
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	05012	2015-3-16	2016-3-15
Pulse LIMITER	R&S	ESH3-Z2	100524	2014-9-25	2015-9-24
Test Software	EZ-EMC				

**Remark:** The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

Expanded Uncertainty (95% CONFIDENCE INTERVAL): K=2

## **5. FACILITIES AND ACCREDITATIONS**

### **5.1.FACILITIES**

All measurement facilities used to collect the measurement data are located at CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 2009 and CISPR Publication 22.

### **5.2.EQUIPMENT**

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.



All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### **5.3.LABORATORY ACCREDITATIONS AND LISTING**

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC5743 for 10m chamber 10m, IC5743 for 10m chamber 3m.



**5.4. TABLE OF ACCREDITATIONS AND LISTINGS**

Country	Agency	Scope of Accreditation	Logo
USA	A2LA	47 CFR FCC Part 15/18 (using ANSI C63.4 :2009); VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002; EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003; EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22; CAN/CSA-CEI/IEC CISPR 22; EN 61000-3-2; EN 61000-3-3; EN550024; EN 61000-4-2; EN 61000-4-3; EN61000-4-4; EN 61000-4-5; EN 61000-4-6; IEC 61000-4-8; EN 61000-4-11; IEC61000-3-2; IEC61000-3-3; IEC 61000-4-2; IEC 61000-4-3; IEC 61000-4-4; IEC 61000-4-5; IEC 61000-4-6; IEC 61000-4-8; IEC 61000-4-11; EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17; 47 CFR FCC Part 15, 22, 24	
USA	FCC	3/10 meter Sites to perform FCC Part 15/18 measurements	 93105, 90471
Japan	VCCI	3/10 meter Sites and conducted test sites to perform radiated/conducted measurements	<b>VCCI</b> R-1600 C-1707 G-216

*\* No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

## 6. SETUP OF EQUIPMENT UNDER TEST

### 6.1.SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

### 6.2.SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook	Acer	ZQT	N/A	N/A

**Remark:**

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

**7. FCC PART 15.209 REQUIREMENTS**

**7.1.AC POWER-LINE CONDUCTED EMISSIONS**

**LIMIT**

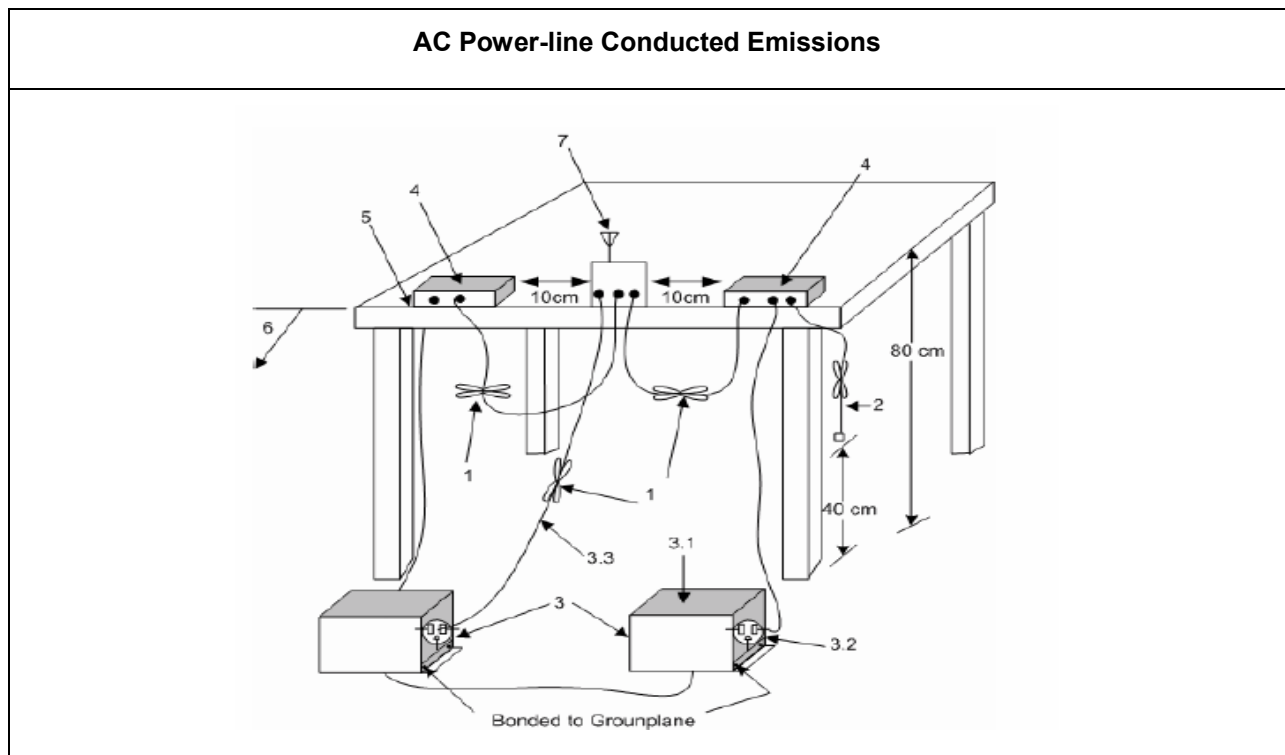
According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the 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). 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)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

\* Decreases with the logarithm of the frequency.

**Test Configuration**

See test photographs below for the actual connections between EUT and support equipment.



**TEST PROCEDURE**

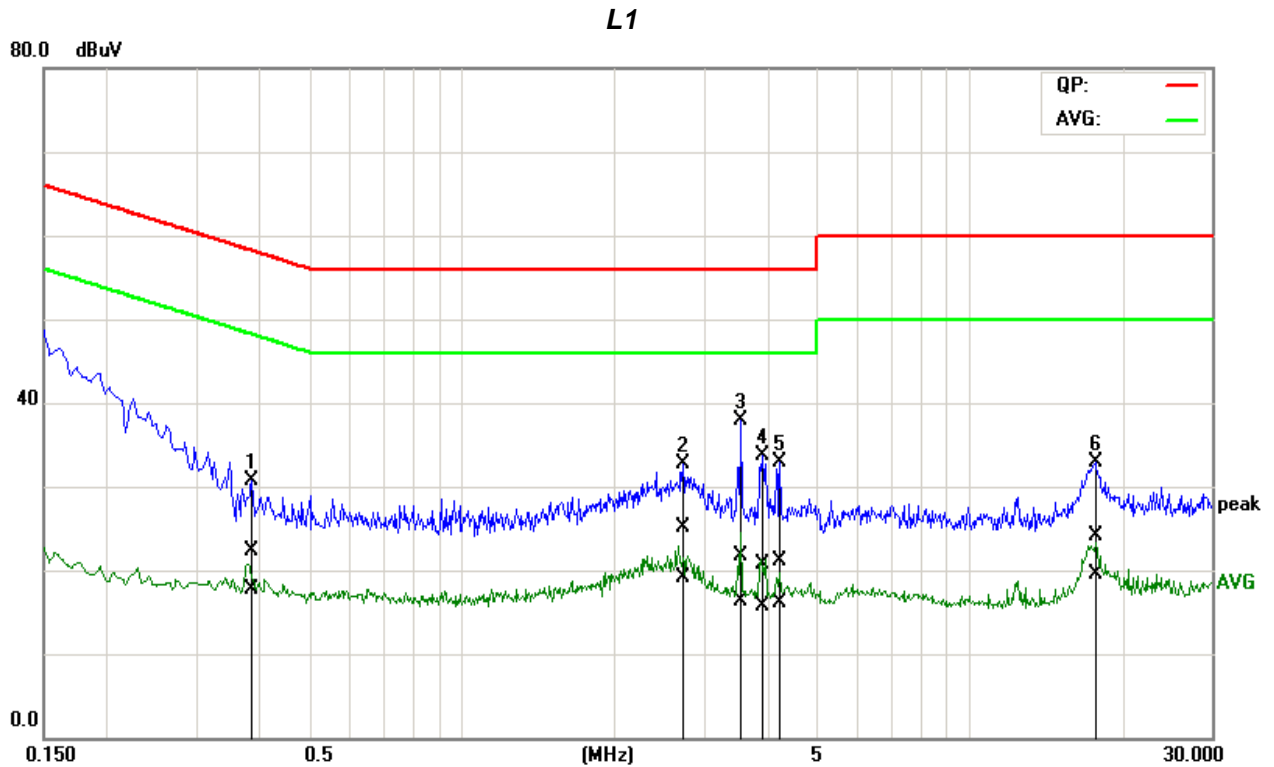
- 1.The EUT was placed on a table, which is 0.8m above ground plane.
- 2.Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3.Repeat above procedures until all frequency measured were complete.

**TEST RESULTS**

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

**TEST DATA**

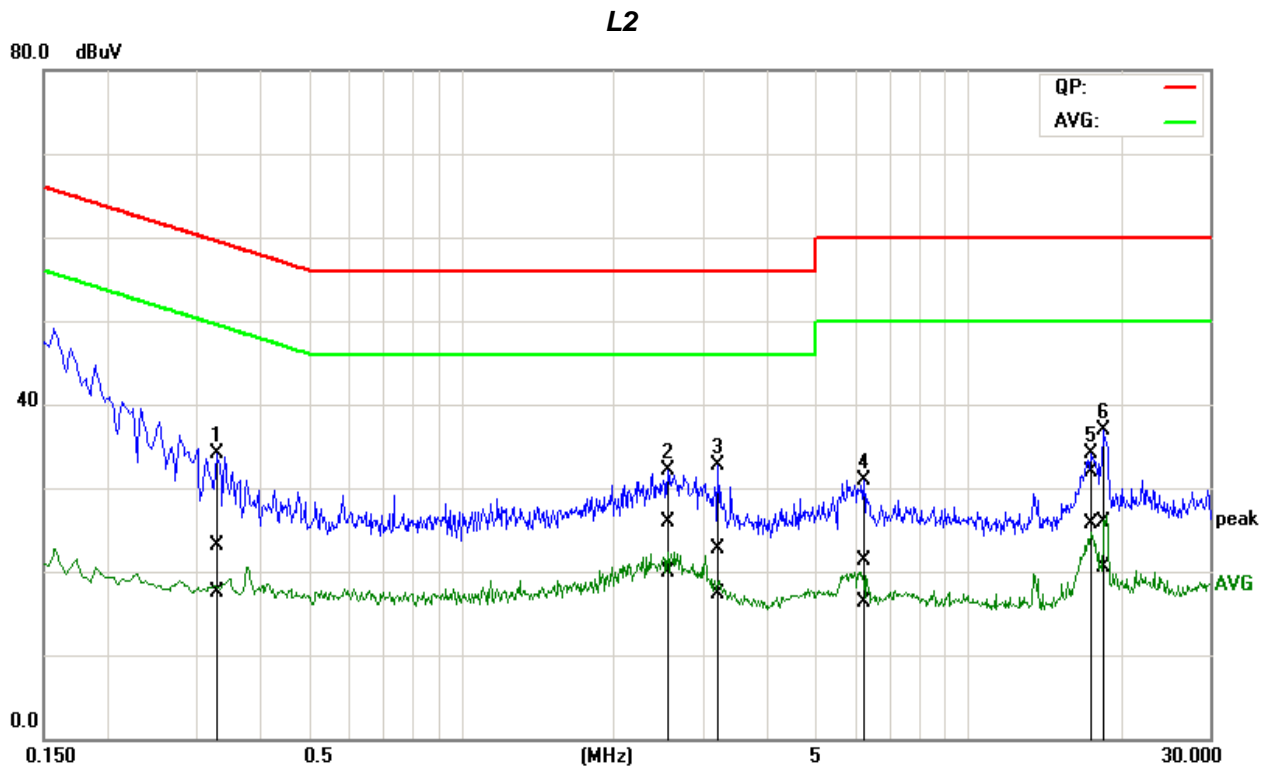
Job No.:	C150506R02	Date:	2015-5-12
Model:	CTH-690	Time:	14:32:29
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	James.Yan
Line:	L1	Test Voltage:	AC 120V/60Hz
Model:		Description:	



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.3843	2.65	-1.98	19.74	22.39	17.76	58.18	48.19	-35.79	-30.43	Pass
2*	2.7009	5.15	-0.84	20.02	25.17	19.18	56.00	46.00	-30.83	-26.82	Pass
3	3.5839	1.50	-3.76	20.13	21.63	16.37	56.00	46.00	-34.37	-29.63	Pass
4	3.8819	0.51	-4.37	20.16	20.67	15.79	56.00	46.00	-35.33	-30.21	Pass
5	4.1766	0.98	-4.07	20.20	21.18	16.13	56.00	46.00	-34.82	-29.87	Pass
6	17.6327	3.03	-1.53	20.99	24.02	19.46	60.00	50.00	-35.98	-30.54	Pass

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Job No.:	C150506R02	Date:	2015-5-12
Model:	CTH-690	Time:	14:36:59
Standard:	FCC Class B	Temp.(C)/Hum.(%):	22(C)/48%
Test item:	Conduction test	Test By:	James.Yan
Line:	L2	Test Voltage:	AC 120V/60Hz
Model:		Description:	



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.3254	3.31	-2.29	19.73	23.04	17.44	59.57	49.57	-36.53	-32.13	Pass
2	2.5636	5.85	-0.20	20.03	25.88	19.83	56.00	46.00	-30.12	-26.17	Pass
3	3.1767	2.66	-2.75	20.10	22.76	17.35	56.00	46.00	-33.24	-28.65	Pass
4	6.1920	0.82	-4.02	20.42	21.24	16.40	60.00	50.00	-38.76	-33.60	Pass
5*	17.4834	10.98	4.83	20.88	31.86	25.71	60.00	50.00	-28.14	-24.29	Pass
6	18.4078	5.02	-0.44	20.96	25.98	20.52	60.00	50.00	-34.02	-29.48	Pass

**Note:** 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

**7.2.TEST OF RADIATED EMISSION**

**LIMIT**

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

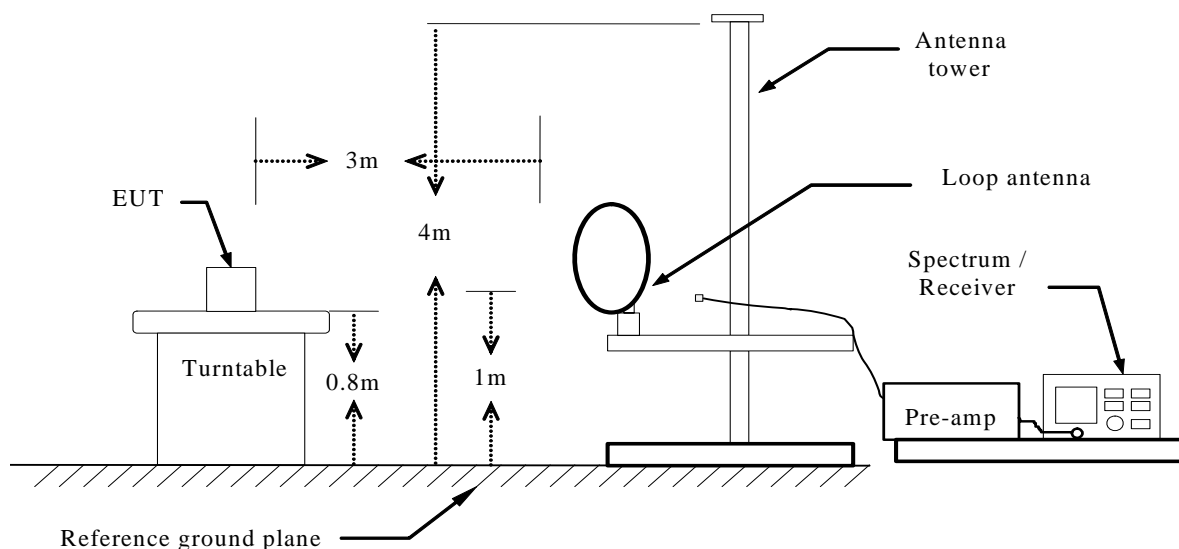
1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT 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

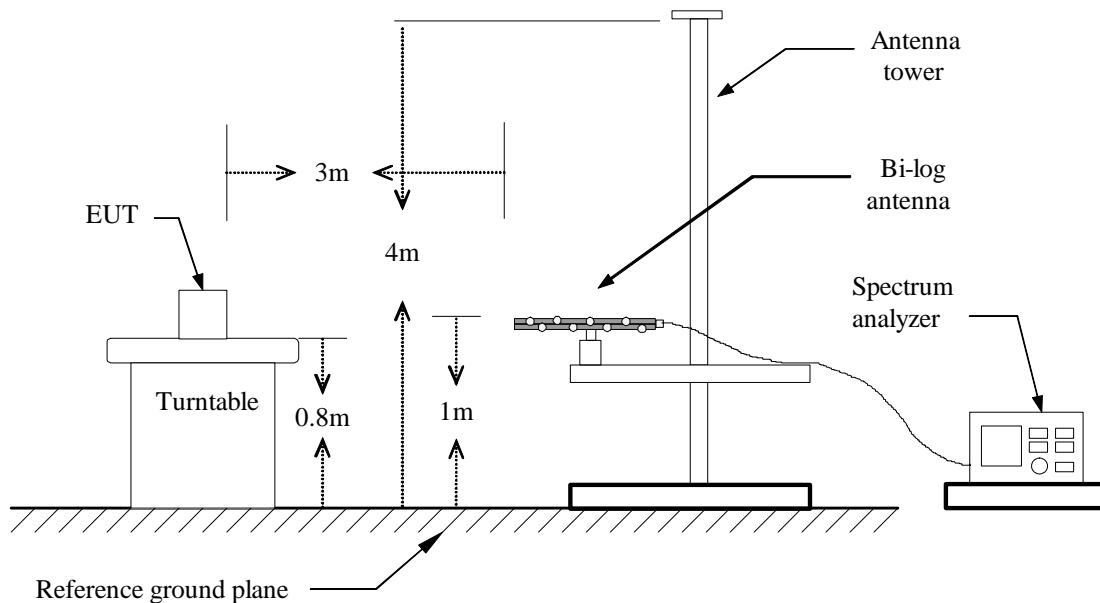
**Remark:** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

**Test Configuration**

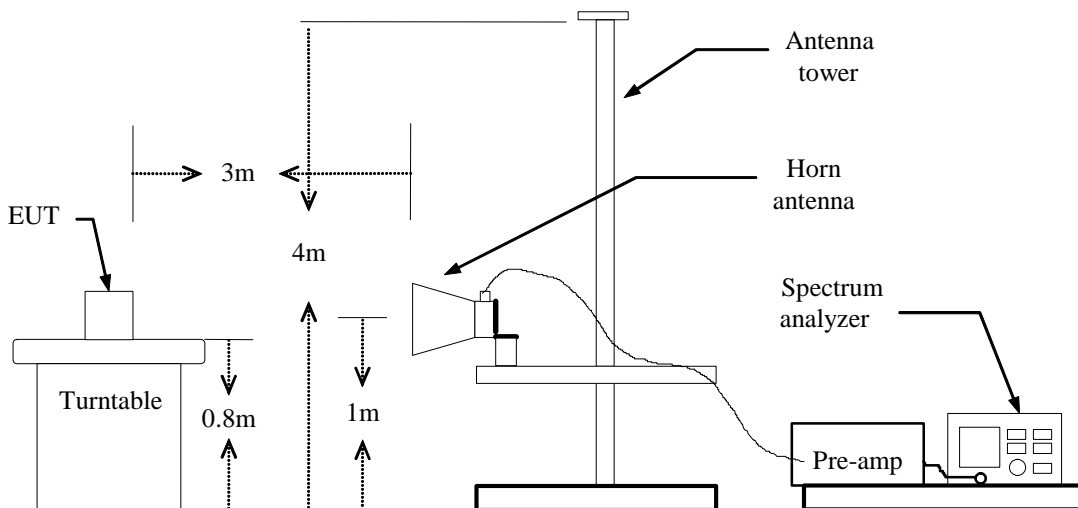
**Below 30MHz**



**Below 1 GHz**



**Above 1 GHz**



**TEST PROCEDURE**

1. The EUT was placed on a rotatable table top 0.8 meter above ground.



2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

**TEST RESULTS****Test Result and Data for 9kHz-30MHz****Operation Mode:** RF TX**Test Date:** 2015-5-18**Temperature:** 24°C**Tested by:** James.Yan**Humidity:** 48% RH**Polarity:** Ver. / Hor.

Frequency (MHz)	AntPol. H/V	Result at 3m (dBuV/m)	Result at 30m (dBuV/m)	Limit at 30m (dBuV/m)	Margin (dB)	Remark
0.667	H	46.98	6.98	31.12	-24.14	QP
1.505	H	34.86	-5.14	24.05	-29.19	QP
2.234	H	35.77	-4.23	29.50	-33.73	QP
2.589	H	34.16	-5.84	29.50	-35.34	QP
0.667	V	47.83	7.83	31.12	-23.29	QP
1.505	V	33.12	-6.88	24.05	-30.93	QP
2.234	V	35.37	-4.63	29.50	-34.13	QP
2.589	V	35.99	-4.01	29.50	-33.51	QP

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurements were corrected to 30m using  $40\log(3/30)=-40.0\text{dB}$

**Test Result and Data for 30MHz-1000MHz**

**Operation Mode:** RF TX

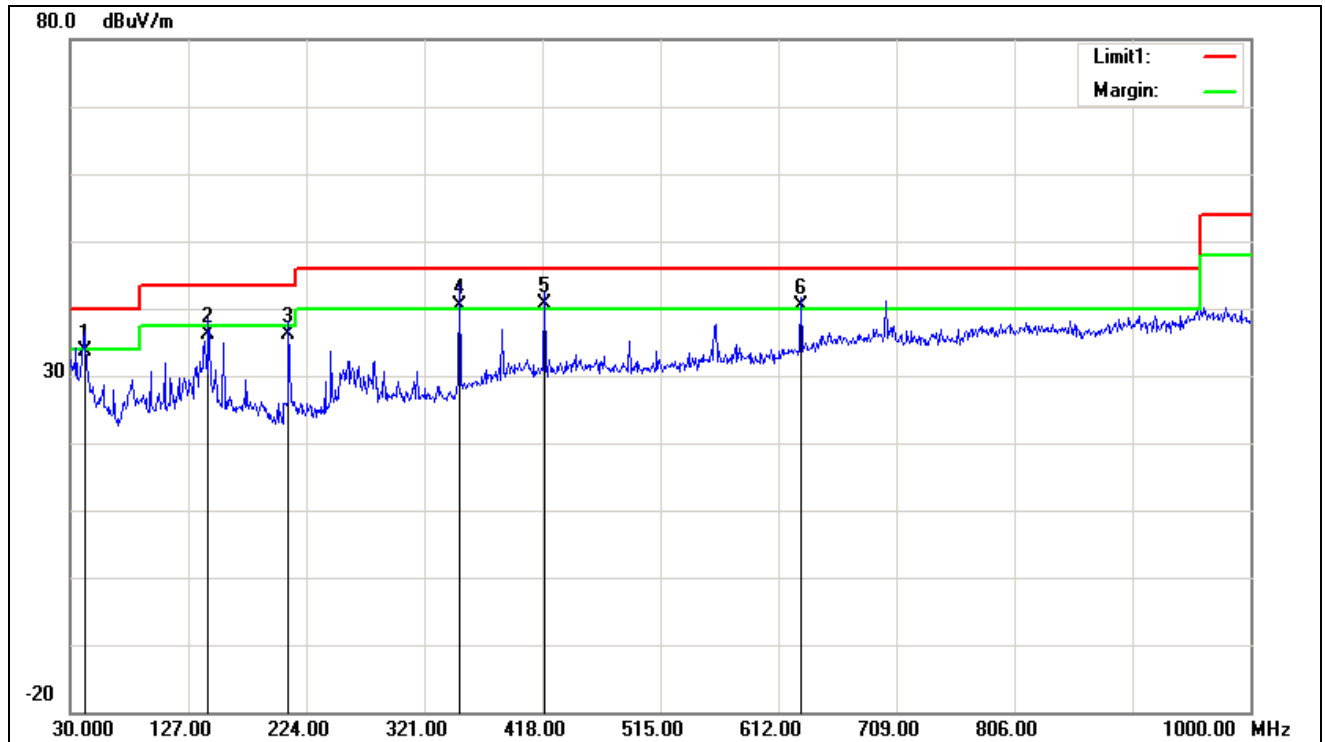
**Test Date:** 2015-5-18

**Temperature:** 24°C

**Tested by:** James.Yan

**Humidity:** 48% RH

**Polarity:** Ver.



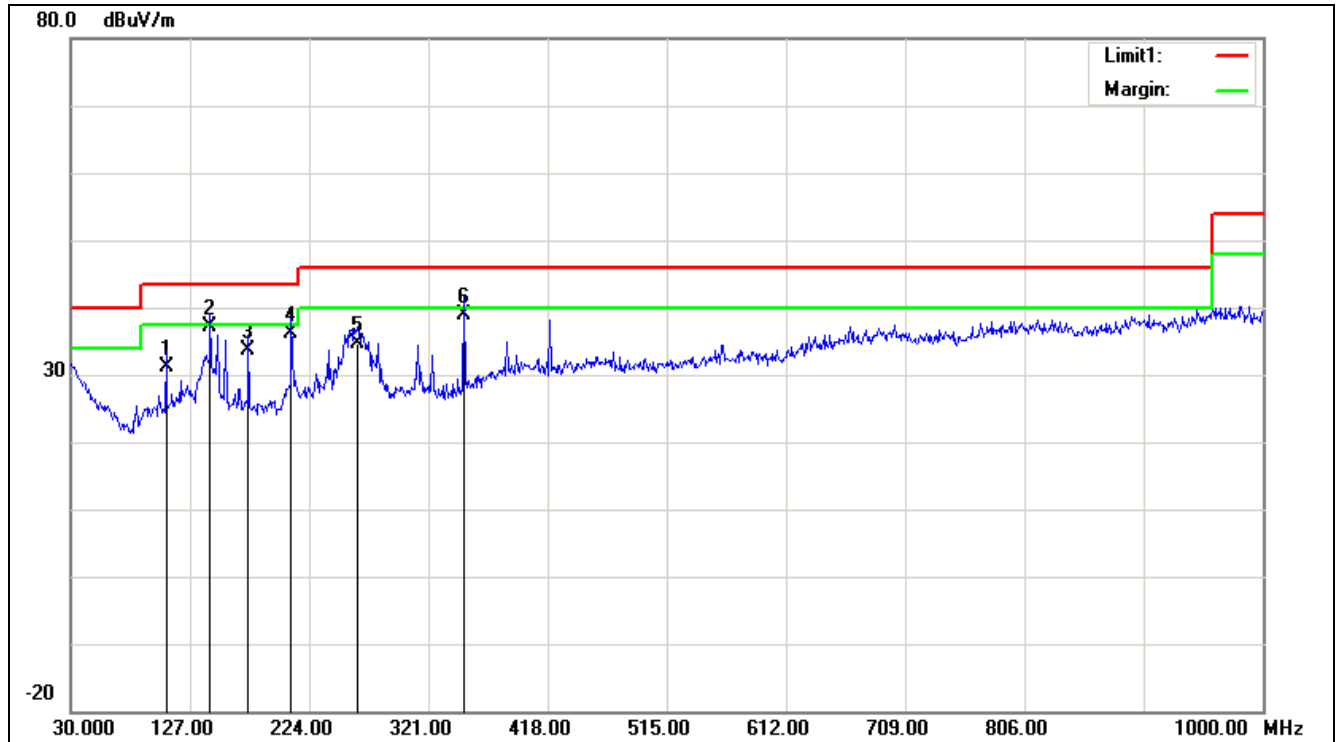
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	41.6400	17.65	15.88	33.53	40.00	-6.47	103	0	QP
2	143.4900	22.98	13.27	36.25	43.50	-7.25	100	312	QP
3	209.4500	24.62	11.63	36.25	43.50	-7.25	200	152	QP
4	350.1000	24.26	16.09	40.35	46.00	-5.65	100	47	QP
5	419.9400	21.77	18.76	40.53	46.00	-5.47	100	149	QP
6	630.4300	18.24	22.08	40.32	46.00	-5.68	200	228	QP

**Remark:**

1. Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MH).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).

**Operation Mode:** RF TX  
**Temperature:** 24°C  
**Humidity:** 48% RH

**Test Date:** 2015-5-18  
**Tested by:** James.Yan  
**Polarity:** Hor.



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	107.6000	18.84	12.41	31.25	43.50	-12.25	100	142	QP
2	143.4900	23.75	13.27	37.02	43.50	-6.48	100	154	QP
3	174.5300	21.11	12.42	33.53	43.50	-9.97	200	130	QP
4	209.4500	24.62	11.63	36.25	43.50	-7.25	200	92	QP
5	263.7700	21.44	13.08	34.52	46.00	-11.48	100	358	QP
6	350.1000	22.84	16.09	38.93	46.00	-7.07	100	55	QP

**Remark:**

1. Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MH).
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).

### **7.3.99% BANDWIDTH MEASUREMENT**

#### **TEST LIMIT**

None.

#### **TEST PROCEDURES**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99% bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized. The spectrum analyzer is set to:

-RBW=3kHz, VBW=10kHz, Span= 100kHz, Sweep= auto

The test mode of EUT is as follows.

-Normal Operation

#### **TYPICAL TEST SETUP**



#### **TEST RESULT AND DATA**

Frequency(kHz)	Occupied Bandwidth(kHz)
667kHz	34.295kHz



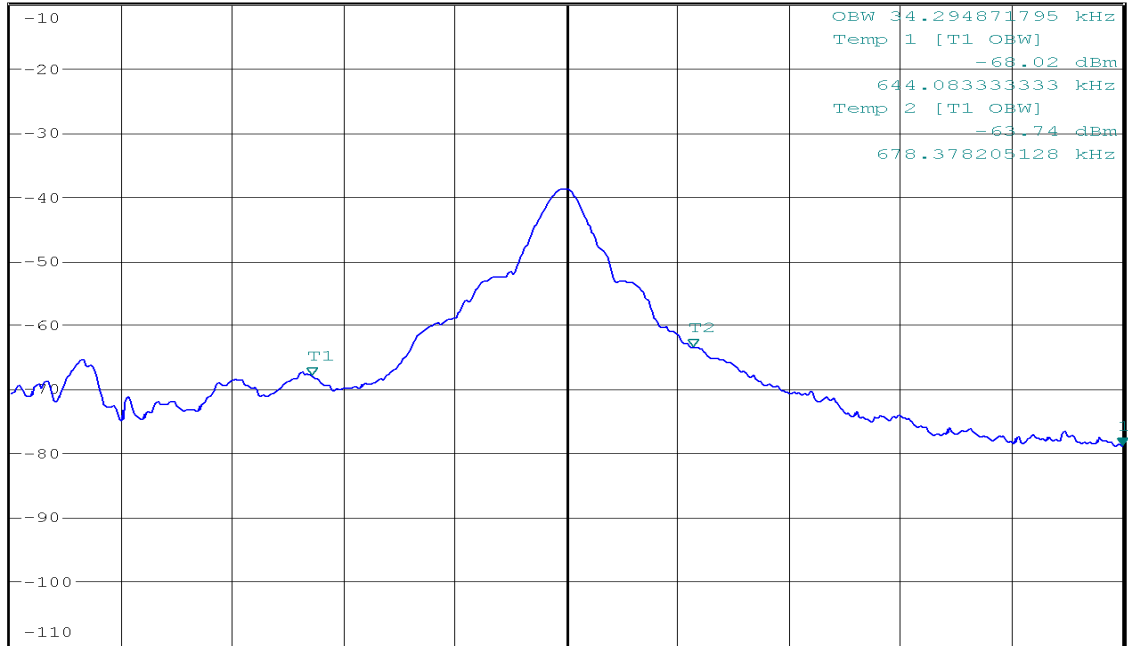
\* RBW 3 kHz  
 VBW 10 kHz  
 SWT 15 ms

Marker 1 [T1 ]  
 -78.91 dBm  
 717.000000000 kHz

Ref -10 dBm

Att 5 dB

1 PK  
 MAX-H



Center 667 kHz

10 kHz/

Span 100 kHz