

# FCC Part 15C Measurement and Test Report

## For

## **JACS Solutions, LLC**

8808 Centre Park Drive, Suite 305, Columbia, MD21045, USA

FCC ID:2AGCD-JACS800V

FCC Rule(s): FCC Part 15.247

Product Description: <u>Tablets</u>

Tested Model: TT800V

**Report No.:** <u>STR16018131I-6</u>

**Tested Date:** <u>2016-03-10 to 2016-03-25</u>

**Issued Date:** <u>2016-03-25</u>

Tested By: <u>Iven Guo / Engineer</u>

Reviewed By: Silin Chen / EMC Manager

Approved & Authorized By: <u>Jandy so / PSQ Manager</u>

**Prepared By:** 

Shenzhen SEM.Test Technology Co., Ltd.

1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,

Bao'an District, Shenzhen, P.R.C. (518101)

Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.



# TABLE OF CONTENTS

1. GENERAL INFORMATION	3
1.2 TEST STANDARDS	4
1.3 TEST METHODOLOGY	4
1.4 TEST FACILITY	
1.5 EUT SETUP AND TEST MODE	
1.6 Measurement Uncertainty	
2. SUMMARY OF TEST RESULTS	
3. RF EXPOSURE	
3.1 STANDARD APPLICABLE	
3.2 TEST RESULT	
4. ANTENNA REQUIREMENT	
4.1 Standard Applicable	
4.2 Evaluation Information	9
5. POWER SPECTRAL DENSITY	10
5.1 Standard Applicable	
5.2 Test Procedure	
5.3 ENVIRONMENTAL CONDITIONS	
5.4 SUMMARY OF TEST RESULTS/PLOTS	
6. 6DB BANDWIDTH	
6.1 STANDARD APPLICABLE	
6.2 Test Procedure	
6.3 ENVIRONMENTAL CONDITIONS	
7. RF OUTPUT POWER	
7.1 Standard Applicable	
7.3 ENVIRONMENTAL CONDITIONS	
7.4 SUMMARY OF TEST RESULTS/PLOTS	
8. FIELD STRENGTH OF SPURIOUS EMISSIONS	
8.1 STANDARD APPLICABLE	
8.2 Test Procedure	
8.3 CORRECTED AMPLITUDE & MARGIN CALCULATION	
8.4 Environmental Conditions	
8.5 SUMMARY OF TEST RESULTS/PLOTS	19
9. OUT OF BAND EMISSIONS	26
9.1 STANDARD APPLICABLE	26
9.2 TEST PROCEDURE	
9.3 ENVIRONMENTAL CONDITIONS	
9.4 SUMMARY OF TEST RESULTS/PLOTS	
10. CONDUCTED EMISSIONS	
10.1 Test Procedure	
10.2 BASIC TEST SETUP BLOCK DIAGRAM	
10.3 ENVIRONMENTAL CONDITIONS	
10.4 TEST RECEIVER SETUP	
10.6 CONDUCTED EMISSIONS TEST DATA	



## 1. GENERAL INFORMATION

**Client Information** 

Applicant: JACS Solutions, LLC

Address of applicant: 8808 Centre Park Drive, Suite 305, Columbia,

MD21045, USA

Manufacturer: Xiamen Candour Co., Ltd

Address of manufacturer: 19F C&D International Building 1669 Huandao East

Road, Xiamen, Fujian, China

General Description of EUT	
Product Name:	Tablets
Trade Name:	JACS SOLUTIONS
Model No.:	TT800V
Adding Model(s):	/
Hardware Version:	BS-M81FPG-V1.0
Software Version:	TT800VF1204USV01
IMEI:	354019060171495
Rated Voltage:	Battery: DC 3.7V(6200mAh)
N. T. I. I. C.	

Note: The test data is gathered from a production sample, provided by the manufacturer. All test data carry on SIM1 which is the worst case.

Technical Characteristics of EUT			
Bluetooth Version:	V4.0(BLE)		
Frequency Range:	2402-2480MHz		
RF Output Power:	-0.658dBm (Conducted)		
Data Rate:	1Mbps		
Modulation:	GFSK		
Quantity of Channels:	40		
Channel Separation:	2MHz		
Antenna Type:	Integral Antenna		
Antenna Gain:	1.11dBi		
Lowest Internal frequency of EUT:	32.768kHz		



#### 1.2 Test Standards

The following report is prepared on behalf of the JACS Solutions, LLC in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

#### 1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices, and ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 558074 D01 v03r05 for digital transmission systems shall be performed also.

#### 1.4 Test Facility

#### FCC - Registration No.: 934118

Shenzhen SEM. Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

#### Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM. Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

#### CNAS Registration No.: L4062

Shenzhen SEM. Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2<sup>nd</sup> Road, Bao'an District, Shenzhen, P.R.C (518101).

REPORT NO.: STR16018131I-6 PAGE 4 OF 33 FCC PART 15.247



## 1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List			
Test Mode	Description	Remark	
TM1	GFSK(BLE)	2402MHz, 2440MHz, 2480MHz	

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Car charging Cable	4.0	Shielded	Without Core
Adapter #1 Cable	1.0	Shielded	Without Core
Adapter #2 Cable	1.0	Shielded	Without Core

Special Cable List and Details					
Cable Description Length (m) Shielded/Unshielded With / Without Ferrite					
Earphone Cable	1.2	Unshielded	Without Core		

Auxiliary Equipment List and Details				
Description Manufacturer Model Serial Number				
Notebook	Lenovo	E10	LR-63C8R	

## 1.6 Measurement Uncertainty

Measurement uncertainty				
Parameter	Conditions	Uncertainty		
RF Output Power	Conducted	±0.42dB		
Occupied Bandwidth	Conducted	±1.5%		
Power Spectral Density	Conducted	±1.8dB		
Conducted Spurious Emission	Conducted	±2.17dB		
Conducted Emissions	Conducted	±2.88dB		
Transmitter Spurious Emissions	Radiated	±5.1dB		

REPORT NO.: STR16018131I-6 PAGE 5 OF 33 FCC PART 15.247



# 1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	<b>Due Date</b>
SEMT-1072	Spectrum Analyzer	Agilent	E4407B	MY41440400	2015-06-17	2016-06-16
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2015-06-17	2016-06-16
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2015-06-17	2016-06-16
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2015-06-17	2016-06-16
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2015-06-17	2016-06-16
SEMT-1011	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2015-06-17	2016-06-16
SEMT-1042	Horn Antenna	ETS	3117	00086197	2015-06-17	2016-06-16
SEMT-1121	Horn Antenna	ETS	3116B	00088203	2015-06-17	2016-06-16
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2015-06-17	2016-06-16
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2015-06-17	2016-06-16
SEMT-1003	L.I.S.N	Schwarz beck	NSLK8126	8126-224	2015-06-17	2016-06-16
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2015-06-17	2016-06-16



# 2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 2.1093	RF Exposure	Compliant
§ 15.203; § 15.247(b)(4)(i)	Antenna Requirement	Compliant
§15.205	Restricted Band of Operation	Compliant
§ 15.207(a)	Conducted Emission	Compliant
§ 15.247(e)	Power Spectral Density	Compliant
§ 15.247(a)(2)	6 dB Bandwidth	Compliant
§ 15.247(b)(3)	RF Output Power	Compliant
§ 15.209(a)	Radiated Emission	Compliant
§ 15.247(d)	Band Edge (Out of Band Emissions)	Compliant

N/A: not applicable



# 3. RF Exposure

## 3.1 Standard Applicable

According to § 1.1307 and § 2.1093, the portable transmitter must comply the RF exposure requirements.

#### 3.2 Test Result

This product complied with the requirement of the RF exposure, please see the RF Exposure Report.

REPORT NO.: STR16018131I-6 PAGE 8 OF 33 FCC PART 15.247



# 4. Antenna Requirement

## **4.1 Standard Applicable**

According to FCC 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.

#### **4.2 Evaluation Information**

This product has an integral antenna, fulfill the requirement of this section.

REPORT NO.: STR16018131I-6 PAGE 9 OF 33 FCC PART 15.247



## 5. Power Spectral Density

## **5.1 Standard Applicable**

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### **5.2 Test Procedure**

According to the KDB 558074 D01 v03r05, the test method of power spectral density as below:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq$  3  $\times$  RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

#### **5.3 Environmental Conditions**

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

#### 5.4 Summary of Test Results/Plots

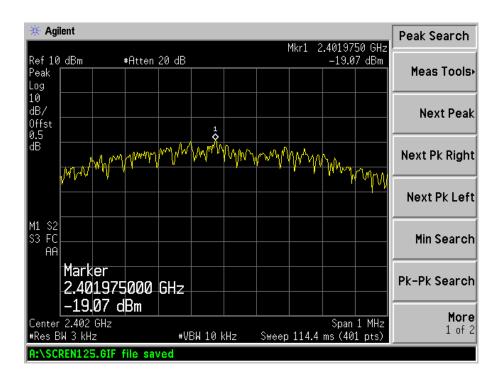
Test Mode	Test Channel MHz	Power Spectral Density dBm/3kHz	Limit dBm/3kHz
	2402	-19.07	8
GFSK(BLE)	2440	-18.06	8
	2480	-15.05	8

Please refer to the following test plots:

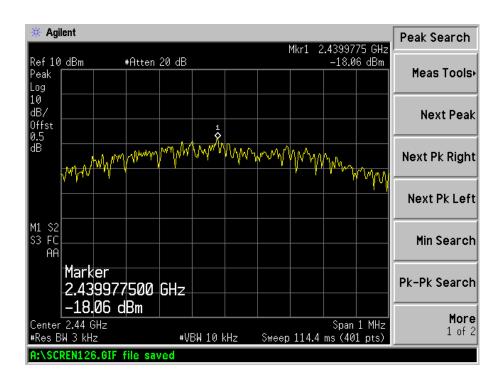
REPORT NO.: STR16018131I-6 PAGE 10 OF 33 FCC PART 15.247



#### Low Channel

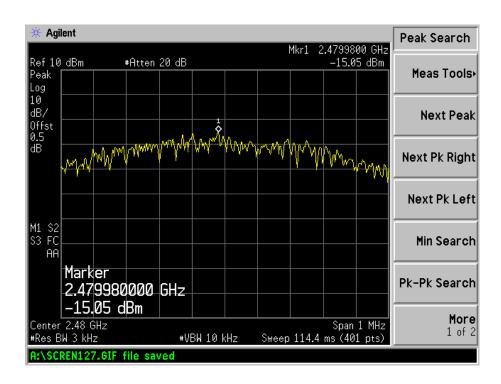


#### Middle Channel





## High Channel





#### 6. 6dB Bandwidth

## **6.1 Standard Applicable**

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

#### **6.2 Test Procedure**

- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW)  $\geq$  3  $\times$  RBW.
- c) Detector = Peak.
- d) Trace mode =  $\max$  hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### **6.3 Environmental Conditions**

Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

## 6.4 Summary of Test Results/Plots

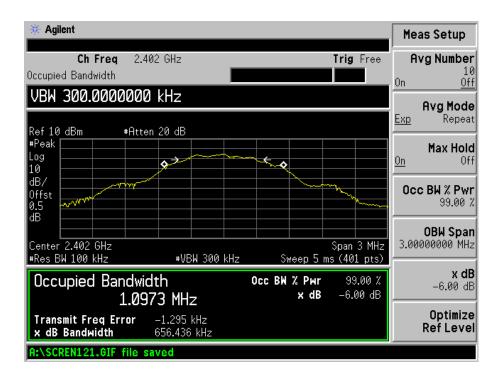
Test Mode	Test Channel MHz	6 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz
	WIIIZ	KIIZ	KIIZ	KIIZ
	2402	656.436	1097.3	≥500
GFSK(BLE)	2440	662.362	1097.2	≥500
	2480	659.848	1097.8	≥500

Please refer to the following test plots:

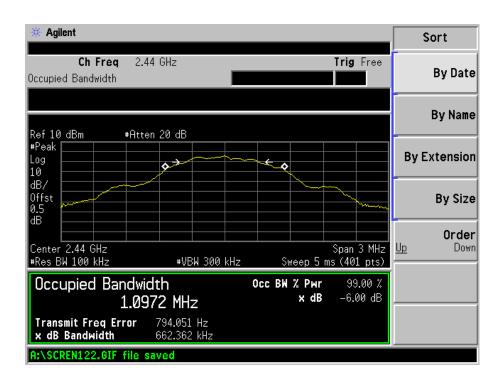
REPORT NO.: STR16018131I-6 PAGE 13 OF 33 FCC PART 15.247



# For BLE Low Channel:

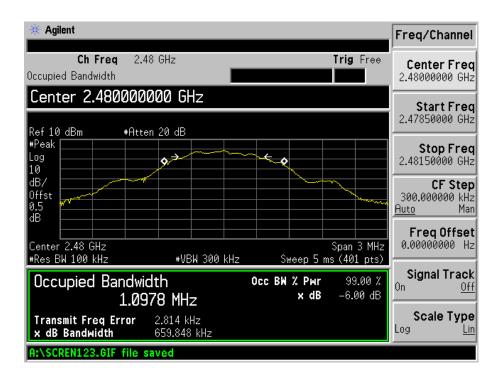


## Middle Channel:





#### High Channel:





## 7. RF Output Power

## 7.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

#### 7.2 Test Procedure

According to section KDB-558074 D01 v03r05 section 9.1.1, this procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

- a) Set the RBW  $\geq$  DTS bandwidth.
- b) Set VBW  $\geq$  3  $\times$  RBW.
- c) Set span  $\geq 3 \times RBW$
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode =  $\max$  hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

#### 7.3 Environmental Conditions

Temperature:	26° C
Relative Humidity:	57%
ATM Pressure:	1011 mbar

## 7.4 Summary of Test Results/Plots

Test Mode	Frequency	Reading	<b>Output Power</b>	Limit
Test Mode	MHz	dBm	mW	mW
	2402	-4.407	0.36	1000
GFSK(BLE)	2440	-3.451	0.45	1000
	2480	-0.658	0.86	1000

Note: the antenna gain of 1.11dBi less than 6dBi maximum permission antenna gain value based on 1 watt peak output power limit.

REPORT NO.: STR16018131I-6 PAGE 16 OF 33 FCC PART 15.247



## 8. Field Strength of Spurious Emissions

#### 8.1 Standard Applicable

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

#### **8.2 Test Procedure**

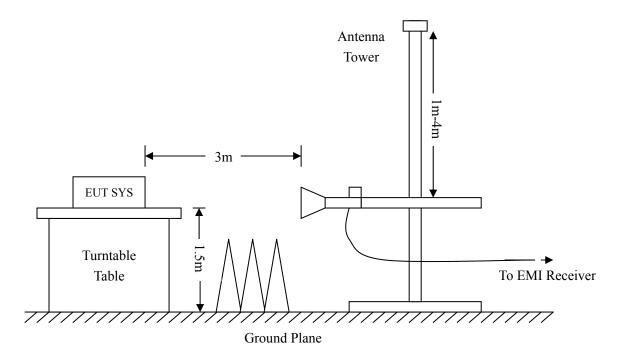
The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.



REPORT NO.: STR16018131I-6 PAGE 17 OF 33 FCC PART 15.247





Frequency:9kHz-30MHz	Frequency:30MHz-1GHz	Frequency : Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW = 30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

## 8.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of  $-6dB\mu V$  means the emission is  $6dB\mu V$  below the maximum limit. The equation for margin calculation is as follows:

## **8.4 Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

REPORT NO.: STR16018131I-6 PAGE 18 OF 33 FCC PART 15.247



## **8.5 Summary of Test Results/Plots**

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst cases:

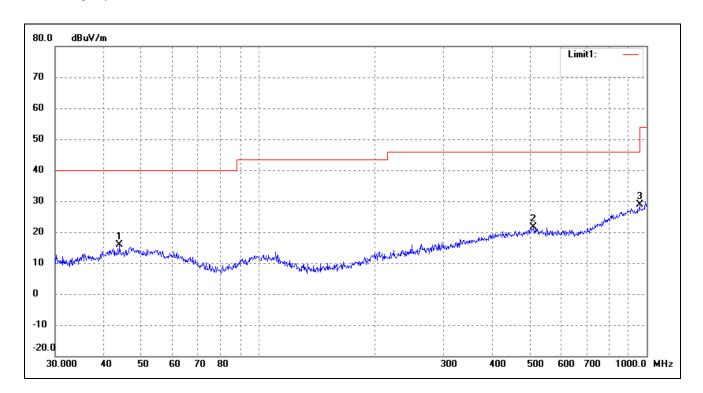
Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

#### **Plot of Radiated Emissions Test Data**

EUT: Tablets
Tested Model: TT800V

Operating Condition: Transmitting-Low channel (2402MHz)

Comment: Battery DC3.7V
Test Specification: Horizontal

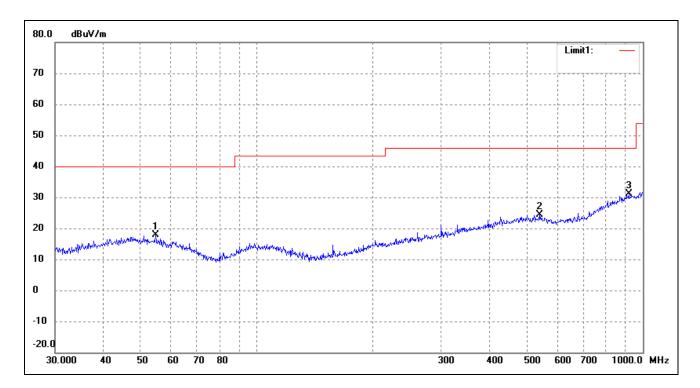


	No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
		(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
Ī	1	43.9658	23.55	-7.68	15.87	40.00	-24.13	121	100	peak
Ī	2	511.8352	22.86	-1.19	21.67	46.00	-24.33	161	200	peak
	3	958.7943	22.75	6.06	28.81	46.00	-17.19	182	200	peak

REPORT NO.: STR16018131I-6 PAGE 19 OF 33 FCC PART 15.247



Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	54.6429	25.68	-7.91	17.77	40.00	-22.23	113	100	peak
2	541.3725	24.40	-0.07	24.33	46.00	-21.67	164	200	peak
3	919.2866	25.49	5.59	31.08	46.00	-14.92	204	200	peak

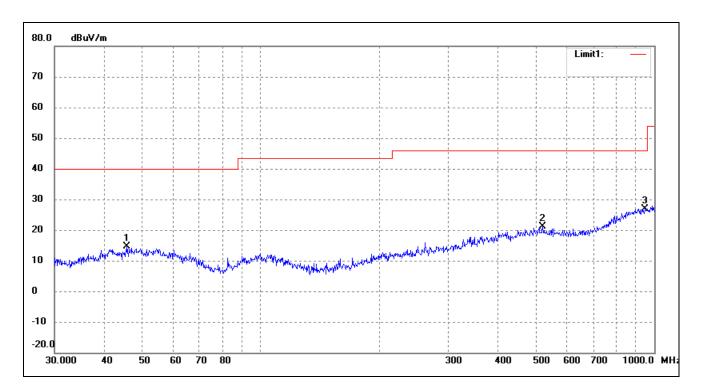


## **Plot of Radiated Emissions Test Data**

EUT: Tablets
Tested Model: TT800V

Operating Condition: Transmitting-Low channel (2440MHz)

Comment: Battery DC3.7V
Test Specification: Horizontal

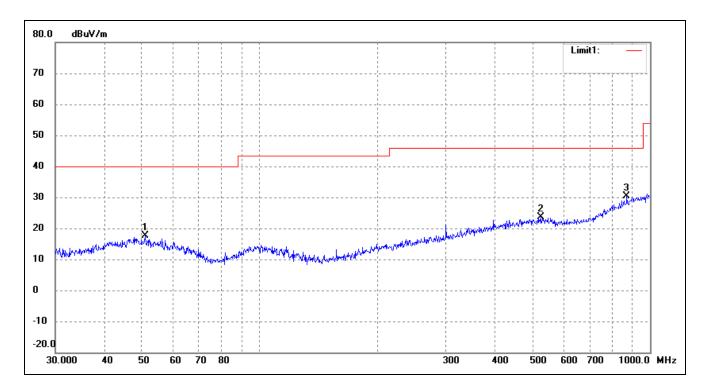


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	45.8553	22.04	-7.47	14.57	40.00	-25.43	264	200	peak
2	520.8882	22.48	-1.23	21.25	46.00	-24.75	113	300	peak
3	948.7610	21.06	5.92	26.98	46.00	-19.02	287	200	peak

REPORT NO.: STR16018131I-6 PAGE 21 OF 33 FCC PART 15.247



Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	50.9420	25.22	-7.54	17.68	40.00	-22.32	360	200	peak
2	524.5541	24.15	-0.51	23.64	46.00	-22.36	0	100	peak
3	872.1832	25.56	4.83	30.39	46.00	-15.61	360	200	peak

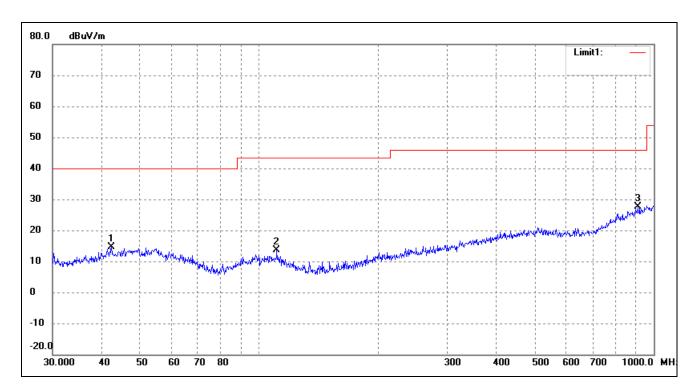


## **Plot of Radiated Emissions Test Data**

EUT: Tablets
Tested Model: TT800V

Operating Condition: Transmitting-Low channel (2480MHz)

Comment: Battery DC3.7V
Test Specification: Horizontal

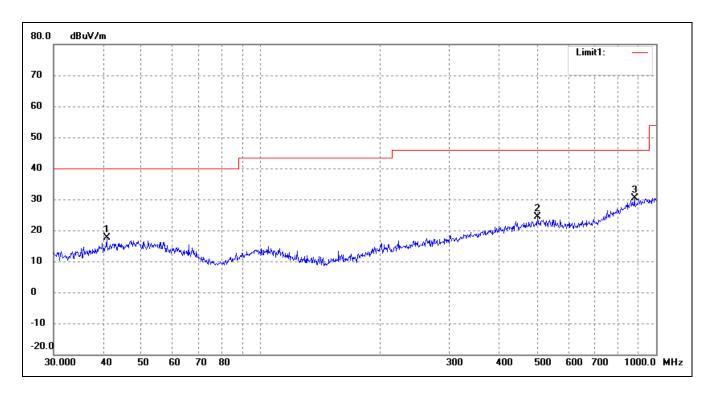


No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	42.3022	22.64	-8.00	14.64	40.00	-25.36	360	200	peak
2	110.9571	23.39	-9.76	13.63	43.50	-29.87	360	100	peak
3	912.8620	22.16	5.53	27.69	46.00	-18.31	0	200	peak

REPORT NO.: STR16018131I-6 PAGE 23 OF 33 FCC PART 15.247



Test Specification: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( ° )	(cm)	
1	40.8446	25.79	-8.27	17.52	40.00	-22.48	240	200	peak
2	501.1790	25.44	-1.10	24.34	46.00	-21.66	187	200	peak
3	881.4067	25.48	5.01	30.49	46.00	-15.51	220	200	peak



## Spurious Emissions Above 1GHz

Transmitting: BLE mode:

Frequency	Reading	Correct	Result	Limit	Margin	Polar	Detector		
(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	H/V			
	Low Channel-2402MHz								
4804	61.43	-3.59	57.84	74	-16.16	Н	PK		
4804	50.23	-3.59	46.64	54	-7.36	Н	AV		
7206	59.26	-0.52	58.74	74	-15.26	Н	PK		
7206	44.25	-0.52	43.73	54	-10.27	Н	AV		
4804	59.16	-3.59	55.57	74	-18.43	V	PK		
4804	48.13	-3.59	44.54	54	-9.46	V	AV		
7206	60.11	-0.52	59.59	74	-14.41	V	PK		
7206	44.15	-0.52	43.63	54	-10.37	V	AV		
			Middle Chan	nel-2440MHz					
4880	58.25	-3.49	54.76	74	-19.24	Н	PK		
4880	47.15	-3.49	43.66	54	-10.34	Н	AV		
7320	58.26	-0.47	57.79	74	-16.21	Н	PK		
7320	43.15	-0.47	42.68	54	-11.32	Н	AV		
4880	60.25	-3.49	56.76	74	-17.24	V	PK		
4880	49.14	-3.49	45.65	54	-8.35	V	AV		
7320	60.13	-0.47	59.66	74	-14.34	V	PK		
7320	45.16	-0.47	44.69	54	-9.31	V	AV		
			High Chann	el-2480MHz					
4960	64.28	-3.41	60.87	74	-13.13	Н	PK		
4960	49.56	-3.41	46.15	54	-7.85	Н	AV		
7440	53.46	-0.42	53.04	74	-20.96	Н	PK		
7440	44.17	-0.42	43.75	54	-10.25	Н	AV		
4960	57.69	-3.41	54.28	74	-19.72	V	PK		
4960	44.53	-3.41	41.12	54	-12.88	V	AV		
7440	59.12	-0.42	58.70	74	-15.30	V	PK		
7440	43.95	-0.42	43.53	54	-10.47	V	AV		

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



## 9. Out of Band Emissions

## 9.1 Standard Applicable

According to §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

#### 9.2 Test Procedure

According to the KDB 558074 D01 v03r05, the band-edge radiated test method as follows:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205. Note that the method of measurement KDB publication number: 913591 may be used for the radiated bandedge measurements.

According to the KDB 558074 D01 v03r05, the conducted spurious emissions test method as follows:

- 1. Set start frequency to DTS channel edge frequency.
- 2. Set stop frequency so as to encompass the spectrum to be examined.
- 3. Set RBW = 100 kHz.
- 4. Set VBW  $\geq$  300 kHz.
- 5. Detector = peak.
- 6. Trace Mode =  $\max$  hold.
- 7. Sweep = auto couple.
- 8. Allow the trace to stabilize (this may take some time, depending on the extent of the span).
- 9. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in section 8.1. Report the three highest emissions relative to the limit.



## 9.3 Environmental Conditions

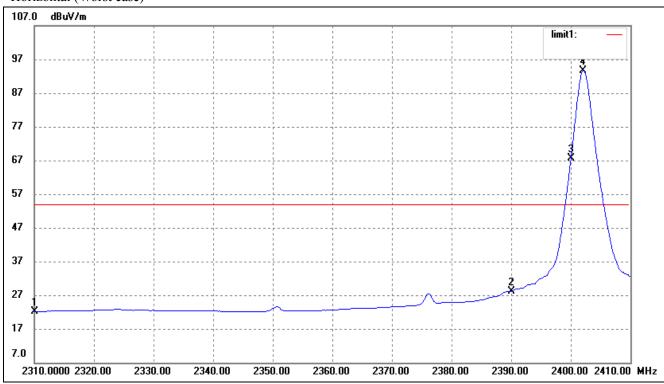
Temperature:	23°C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

## 9.4 Summary of Test Results/Plots

Bandedge (Radiated)

Lowest Bandedge-BLE

Horizontal (Worst case)

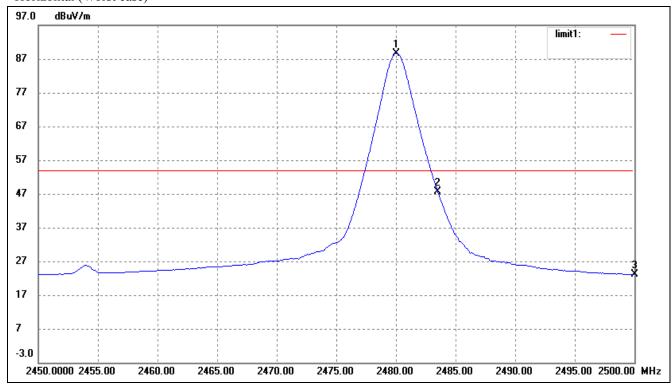


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2310.000	33.87	-11.72	22.15	54.00	-31.85	Average Detector
	2310.000	46.14	-11.72	34.42	74.00	-39.58	Peak Detector
2	2390.000	39.87	-11.75	28.12	54.00	-25.88	Average Detector
	2390.000	51.84	-11.75	40.09	74.00	-33.91	Peak Detector

REPORT NO.: STR16018131I-6 PAGE 27 OF 33 FCC PART 15.247



## Highest Bandedge-BLE Horizontal (Worst case)

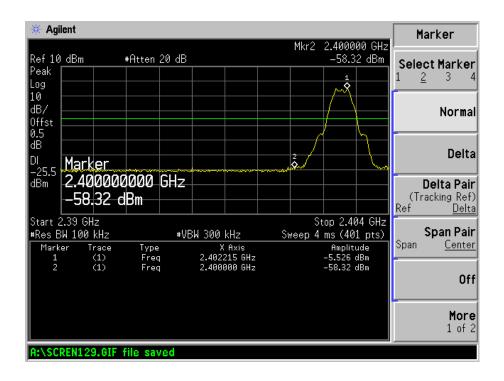


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	2480.000	100.46	-11.77	88.69	/	/	Average Detector
	2480.000	100.65	-11.77	88.88	/	/	Peak Detector
2	2483.500	Delta = 42.64 dBc		46.05	54.00	-7.95	Average Detector
	2483.500			46.24	74.00	-27.76	Peak Detector
3	2500.000	34.83	-11.78	23.05	54.00	-30.95	Average Detector
	2500.000	48.03	-11.78	36.25	74.00	-37.75	Peak Detector

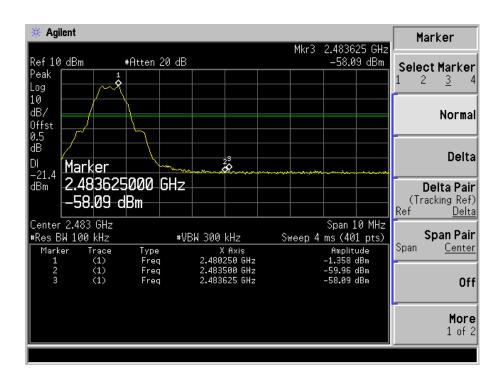
REPORT NO.: STR16018131I-6 PAGE 28 OF 33 FCC PART 15.247



Bandedge (Conducted) Lowest



#### Highest





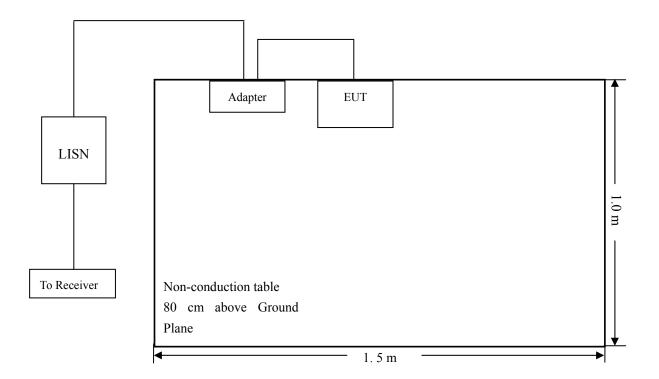
## 10. Conducted Emissions

#### **10.1 Test Procedure**

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

## 10.2 Basic Test Setup Block Diagram



#### **10.3 Environmental Conditions**

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

REPORT NO.: STR16018131I-6 PAGE 30 OF 33 FCC PART 15.247



## **10.4 Test Receiver Setup**

During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency	150 kHz
Stop Frequency	30 MHz
Sweep Speed	Auto
IF Bandwidth	10 kHz
Quasi-Peak Adapter Bandwidth	9 kHz
Quasi-Peak Adapter Mode	Normal

## 10.5 Summary of Test Results/Plots

According to the data in section 10.6, the EUT <u>complied with the FCC Part 15.207</u> Conducted margin for this device, with the *worst* margin reading of:

-11.16 dB at 2.5380 MHz in the Line, Peak detector, 0.15-30MHz

#### 10.6 Conducted Emissions Test Data

REPORT NO.: STR16018131I-6 PAGE 31 OF 33 FCC PART 15.247

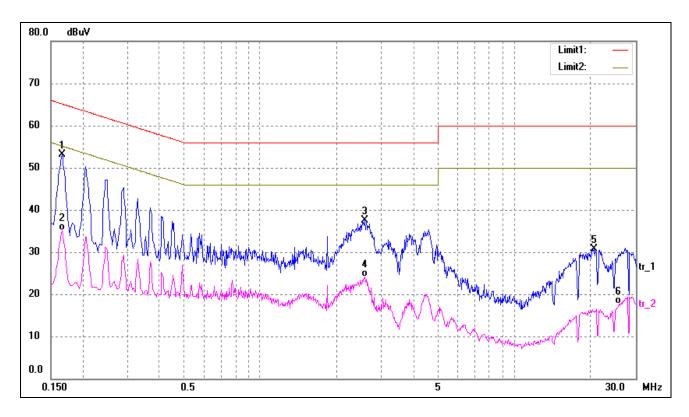


## **Plot of Conducted Emissions Test Data**

EUT: Tablets
Tested Model: TT800V
Operating Condition: TM1

Comment: AC 120V/60Hz; Adapter DC 5V

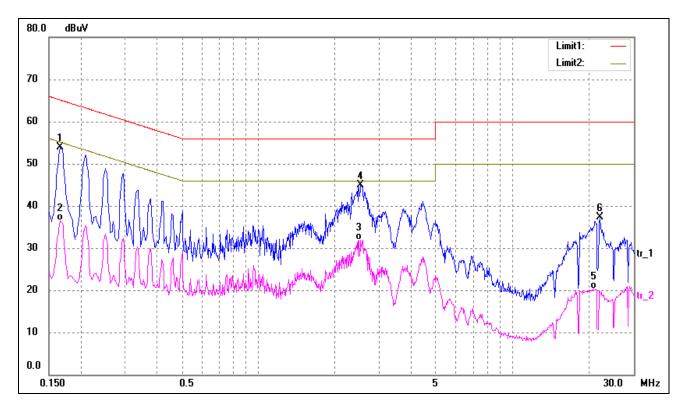
Test Specification: Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1*	0.1660	43.70	9.50	53.20	65.16	-11.96	peak
2	0.1660	25.58	9.50	35.08	55.16	-20.08	AVG
3	2.5940	27.57	10.00	37.57	56.00	-18.43	peak
4	2.5940	14.09	10.00	24.09	46.00	-21.91	AVG
5	20.5060	18.76	12.00	30.76	60.00	-29.24	peak
6	25.8260	4.75	13.00	17.75	50.00	-32.25	AVG



Test Specification: Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1660	44.47	9.50	53.97	65.16	-11.19	peak
2	0.1660	27.02	9.50	36.52	55.16	-18.64	AVG
3	2.4980	21.94	10.00	31.94	46.00	-14.06	AVG
4*	2.5380	34.84	10.00	44.84	56.00	-11.16	peak
5	20.8660	8.40	12.00	20.40	50.00	-29.60	AVG
6	22.0820	25.20	12.03	37.23	60.00	-22.77	peak

## \*\*\*\*\* END OF REPORT \*\*\*\*\*