



FCC PART 15C

TEST REPORT

For

Shenzhen Xinguodu Technology Co., Ltd.

17B JinSong Mansion, Terra Industrial & Trade Park Chegongmiao, Futian District,
Shenzhen, China.

FCC ID: XDQ-N5

Report Type: Original Report	Product Name: POS Terminal
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Report Number: RDG170606018B	
Report Date: 2017-07-02	
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **Shenzhen Xinguodu Technology Co., Ltd.**'s product, model number: **N5 (FCC ID: XDQ-N5)** (the "EUT") in this report was a **POS Terminal**, which was measured approximately: 19 cm (L) x 8.9 cm (W) x 6.7 cm (H), rated input voltage: DC 3.7V from Polymer-Li-ion battery or DC 5V from adapter.

Adapter information:

MODEL: ADS-12CG-06 05010EPCU

INPUT: 100-240V~50-60Hz Max.0.3A

OUTPUT: DC 5V 2.0A

**All measurement and test data in this report was gathered from final production sample, serial number: 170606018 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-06-06, and EUT conformed to test requirement.*

Objective

This Type approval report is prepared on behalf of **Shenzhen Xinguodu Technology Co., Ltd.** in accordance with Part 2, Subpart J, and Part 15, Subparts A and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules, sec 15.203, 15.205, 15.207, 15.209 and 15.225.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: XDQ-N5.

FCC Part 15C DTS submissions with FCC ID: XDQ-N5.

FCC Part 15C DSS submissions with FCC ID: XDQ-N5.

Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices".

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Chengdu). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The Bay Area Compliance Laboratories Corp. Chengdu's measurement Uncertainties (calculated for a k=2 Coverage Factor corresponding to approximately 95% Coverage) were as follows:

-For all of the AC Line Conducted Emissions Tests reported herein: ± 3.17 dB.

-For of all of the Direct Antenna Conducted Emissions Tests reported herein: ± 0.56 dB.

-For of all of the direct Radiated Emissions Tests reported herein are:

30 MHz to 200 MHz: ± 4.7 dB;

200 MHz to 1 GHz: ± 6.0 dB;

1 GHz to 6 GHz: ± 5.13 dB; and,

6 GHz to 40 GHz: ± 5.47 dB.

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207	AC Line Conducted Emission	Compliance
§15.225 §15.209 §15.205	Radiated Emission Test	Compliance
§15.225(e)	Frequency Stability	Compliance
§15.215(c)	20 dB Emission Bandwidth	Compliance

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a test mode.

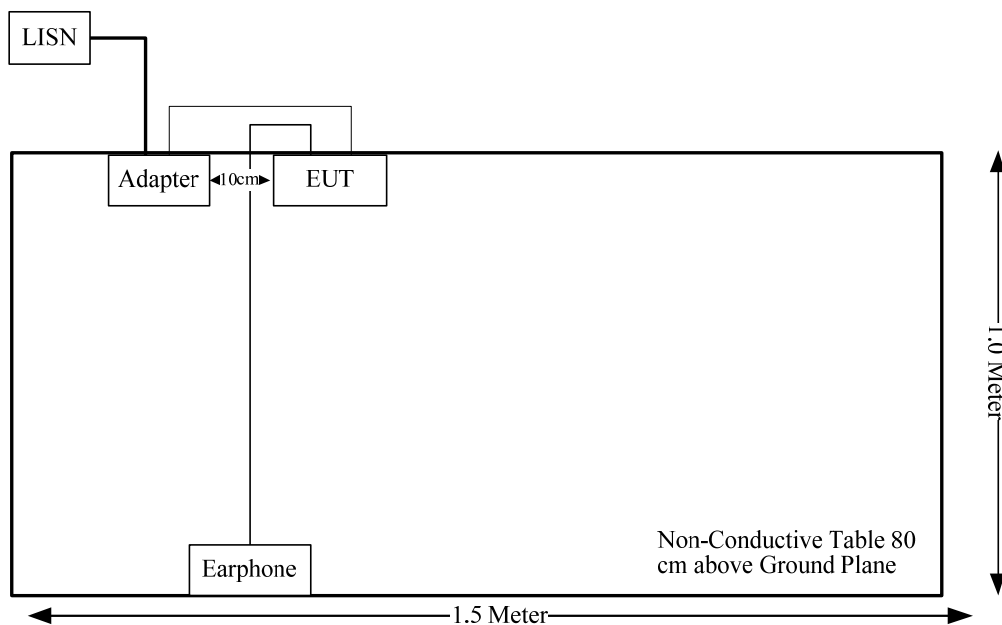
EUT Exercise Software

No software was performed under test.

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	Yes	No	1.0	Adapter	EUT
Earphone Cable	Yes	No	1.2	EUT	Earphone

Block Diagram of Test Setup



FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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.

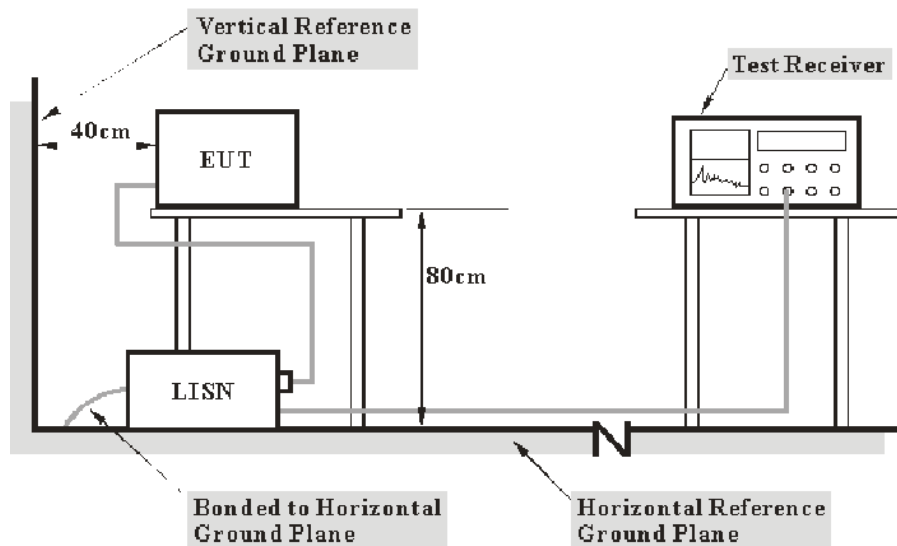
Antenna Connected Construction

The EUT has one integral antenna arrangement, which was permanently attached and fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 – AC LINE CONDUCTED EMISSION

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

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.

The adapter was connected to the main lisn with an AC 120V/60Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	100018	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	DE14781	2016-10-31	2017-10-30
Unknown	Conducted Cable	Unknown	NO.5	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

*** Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B "Implementation of traceability policy in accredited laboratories".

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

According FCC publication number 174176, for a device with a permanent antenna operating at or below 30 MHz, the measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF : voltage division factor of AMN or ISN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

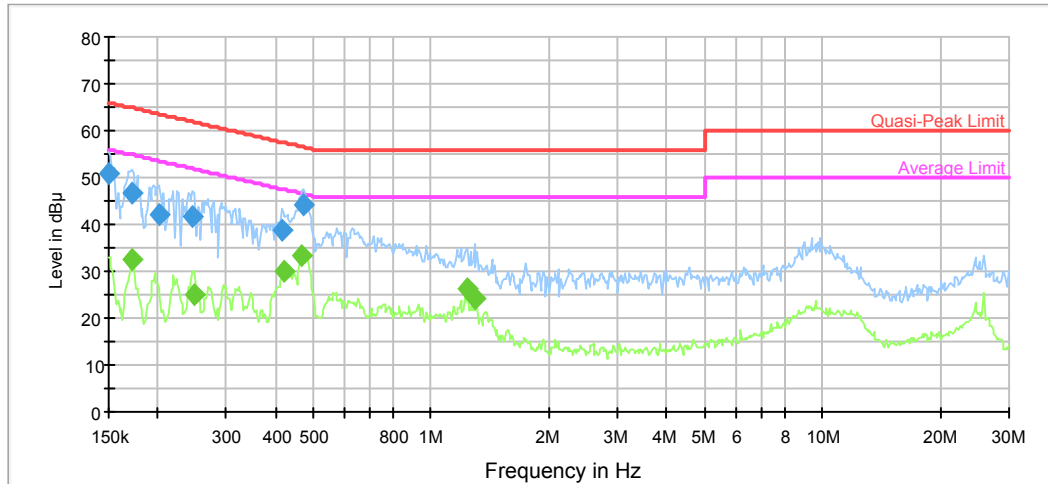
Environmental Conditions

Temperature:	27.4 °C
Relative Humidity:	57.3 %
ATM Pressure:	100.1 kPa

The testing was performed by Kevin Hu on 2017-06-17.

Test Mode: Transmitting

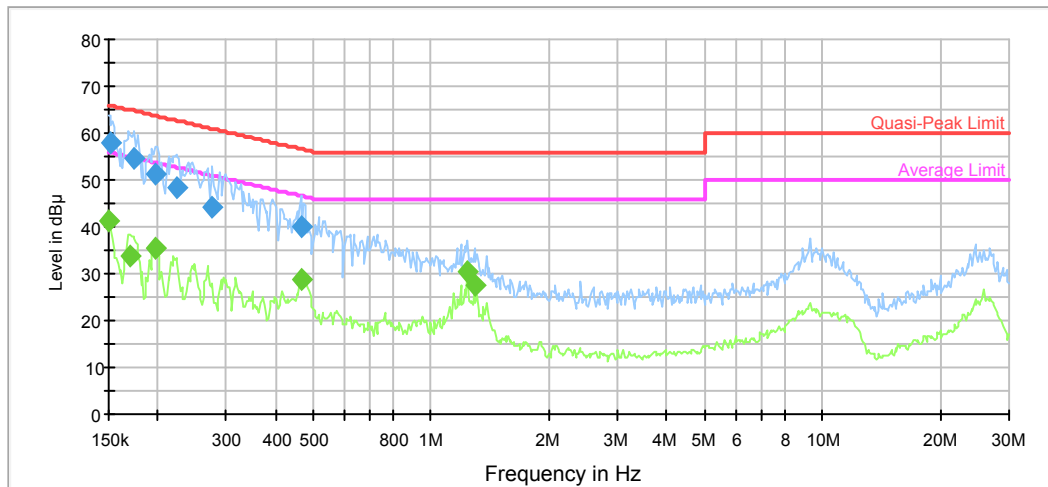
AC 120V, 60 Hz, Line:



Frequency (MHz)	Quasi Peak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.150000	50.7	9.000	L1	19.7	15.3	66.0	Compliance
0.171759	46.9	9.000	L1	19.7	18.0	64.9	Compliance
0.201433	42.3	9.000	L1	19.7	21.3	63.6	Compliance
0.245835	41.8	9.000	L1	19.7	20.1	61.9	Compliance
0.415949	38.6	9.000	L1	19.8	18.9	57.5	Compliance
0.472507	44.1	9.000	L1	19.7	12.4	56.5	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.171759	32.6	9.000	L1	19.7	22.3	54.9	Compliance
0.247802	24.9	9.000	L1	19.7	26.9	51.8	Compliance
0.419276	29.9	9.000	L1	19.8	17.6	47.5	Compliance
0.468757	33.3	9.000	L1	19.7	13.2	46.5	Compliance
1.239175	26.3	9.000	L1	19.7	19.7	46.0	Compliance
1.289541	24.0	9.000	L1	19.7	22.0	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	58.0	9.000	N	19.7	7.9	65.9	Compliance
0.174519	54.5	9.000	N	19.7	10.2	64.7	Compliance
0.198249	51.3	9.000	N	19.6	12.4	63.7	Compliance
0.223418	48.5	9.000	N	19.6	14.2	62.7	Compliance
0.277046	44.2	9.000	N	19.6	16.7	60.9	Compliance
0.465037	40.0	9.000	N	19.6	16.6	56.6	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	41.2	9.000	N	19.7	14.8	56.0	Compliance
0.170396	33.8	9.000	N	19.7	21.2	54.9	Compliance
0.198249	35.2	9.000	N	19.6	18.4	53.7	Compliance
0.465037	28.6	9.000	N	19.6	18.0	46.6	Compliance
1.239175	30.3	9.000	N	19.6	15.7	46.0	Compliance
1.289541	27.3	9.000	N	19.6	18.7	46.0	Compliance

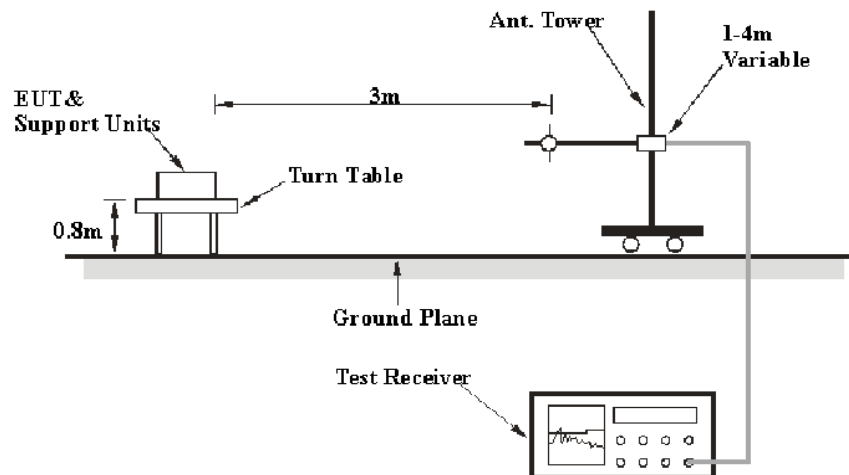
FCC§15.225, §15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

As per FCC Part 15.225

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

EUT Setup



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Detector
9 kHz – 150 kHz	200 Hz	1 kHz	QP
150 kHz – 30 MHz	9 kHz	30 kHz	QP
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A121808	2016-04-10	2019-04-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09
The Electro-Mechanics Company	Passive Loop Antenna	6512	9706-1224	2014-11-30	2017-11-29

* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209&15.225.

Test Data

Environmental Conditions

Temperature:	25.6 °C
Relative Humidity:	49 %
ATM Pressure:	99.5 kPa

* The testing was performed by Kevin Hu on 2017-06-27.

Test mode: Transmitting

1) Fundamental (9 kHz~30 MHz):

Frequency (MHz)	Receiver		Rx Antenna Factor dB(1/m)	Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)						
13.56	58.7	QP	32.08	0.35	21.44	69.69	124.00	54.31
8.93	32.0	QP	32.62	0.28	21.42	43.48	69.54	26.06
27.14	29.6	QP	30.47	0.44	21.45	39.06	69.54	30.48
13.553	32.7	QP	32.08	0.35	21.44	43.69	90.50	46.81
13.567	32.3	QP	32.08	0.35	21.44	43.29	90.50	47.21
13.41	27.7	QP	32.07	0.35	21.43	38.69	80.50	41.81
13.71	28.3	QP	32.09	0.35	21.44	39.30	80.50	41.20

2) Spurious Emissions (30 MHz ~1 GHz):

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor dB(1/m)					
46.49	39.38	QP	H	10.56	0.37	28.51	21.80	40.00	18.20
135.73	46.35	QP	H	13.63	0.66	28.14	32.50	43.50	11.00
165.8	46.40	QP	H	12.04	0.95	27.99	31.40	43.50	12.10
191.02	46.67	QP	H	12.06	0.87	27.80	31.80	43.50	11.70
268.62	40.11	QP	H	13.58	1.29	27.48	27.50	46.00	18.50
361.74	32.94	QP	H	15.70	1.49	27.93	22.20	46.00	23.80
44.55	50.95	QP	V	11.82	0.34	28.51	34.60	40.00	5.40
62.98	53.50	QP	V	7.47	0.54	28.41	33.10	40.00	6.90
148.34	45.00	QP	V	12.84	0.74	28.08	30.50	43.50	13.00
106.63	36.41	QP	V	12.61	0.59	28.21	21.40	43.50	22.10
306.45	30.11	QP	V	14.26	1.09	27.56	17.90	46.00	28.10
361.74	30.34	QP	V	15.70	1.49	27.93	19.60	46.00	26.40

FCC§15.225(e) - FREQUENCY STABILITY

Applicable Standard

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power.

The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to the end point of the battery. The output frequency was recorded for each voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
BACL	High Temperature Test Chamber	BTH-150	30024	2016-12-02	2017-12-01
The Electro-Mechanics Company	Passive Loop Antenna	6512	9706-1224	2014-11-30	2017-11-29
FLUKE	Multimeter	1587	27870099	2016-12-30	2017-12-29
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09

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Test Data

Environmental Conditions

Temperature:	24.1 °C
Relative Humidity:	50 %
ATM Pressure:	98.6 kPa

* The testing was performed by Kevin Hu on 2017-06-29.

Test Mode: Transmitting

Test Result: Pass

f_o = 13.56 MHz				
Temperature	Voltage	Measured frequency	Frequency Error	Limit
°C	V_{DC}	MHz	Hz	Hz
-30	3.7	13.559000	-1000	±1356
-20		13.560100	100	±1356
-10		13.559200	-800	±1356
0		13.559800	-200	±1356
10		13.559700	-300	±1356
20		13.560400	400	±1356
30		13.560600	600	±1356
40		13.559500	-500	±1356
50		13.559600	-400	±1356
25	3.5	13.559200	-800	±1356
25	4.2	13.559700	-300	±1356

FCC §15.215(c) – 20 dB EMISSION BANDWIDTH

Applicable Standard

Per FCC §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. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of band operation.

Test Procedure

Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
The Electro-Mechanics Company	Passive Loop Antenna	6512	9706-1224	2014-11-30	2017-11-29
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09

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Test Data

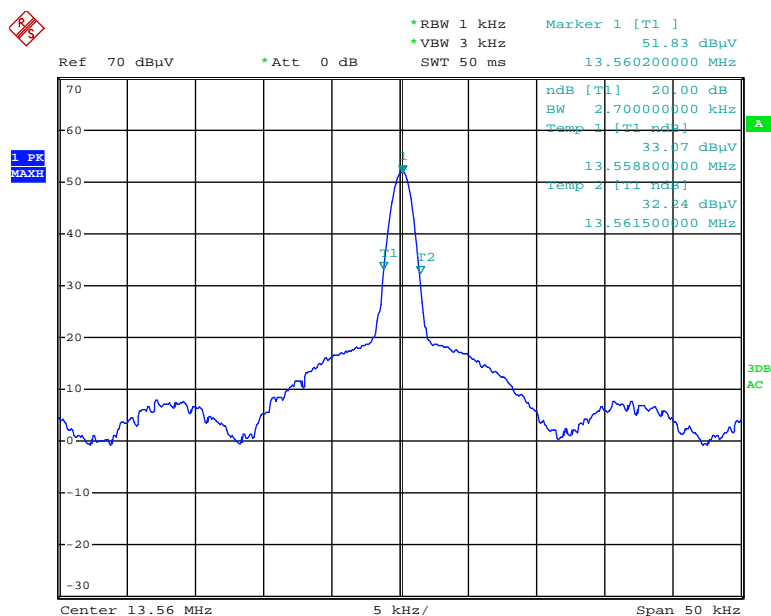
Environmental Conditions

Temperature:	25.6 °C
Relative Humidity:	49 %
ATM Pressure:	99.5 kPa

* The testing was performed by Kevin Hu on 2017-06-27.

Test Mode: Transmitting

20 dB Emission Bandwidth



Date: 27.JUN.2017 00:29:02

*****END OF REPORT*****