



FCC PART 95

MEASUREMENT AND TEST REPORT

For

Dakota Alert

32556 E. Main St., PO Box 130, Elk Point, South Dakota United States

FCC ID: QK8M5-121BS

Report Type: Original Report	Product Type: MURS BASE STATION
Test Engineer: <u>Candy Li</u>	
Report Number: <u>RSZ151218008-00B</u>	
Report Date: <u>2016-07-04</u>	
Reviewed By: <u>Alvin Huang</u>	
Test Laboratory: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

Note: This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	4
DESCRIPTION OF TEST CONFIGURATION	4
EQUIPMENT MODIFICATIONS	4
SUPPORT EQUIPMENT LIST AND DETAILS	4
EXTERNAL I/O CABLE.....	4
BLOCK DIAGRAM OF TEST SETUP	5
SUMMARY OF TEST RESULTS	6
FCC §2.1046, §95.639(h) - RF OUTPUT POWER	9
APPLICABLE STANDARD	9
TEST PROCEDURE	9
TEST EQUIPMENT LIST AND DETAILS.....	9
TEST DATA	9
FCC §2.1049 & §95.633(f) & §95.635(e)- AUTHOURIZED BANDWIDTH AND EMISSION MASK	11
APPLICABLE STANDARD	11
TEST PROCEDURE	12
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST DATA	12
FCC §2.1051 & §95.635(e) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....	18
APPLICABLE STANDARD	18
TEST PROCEDURE	18
TEST EQUIPMENT LIST AND DETAILS.....	18
TEST DATA	18
FCC §2.1053 & §95.635(e) - RADIATED SPURIOUS EMISSION.....	21
APPLICABLE STANDARD	21
TEST PROCEDURE	21
TEST EQUIPMENT LIST AND DETAILS.....	21
TEST DATA	22
FCC §2.1055 (d), §95.632(c) - FREQUENCY STABILITY	24
APPLICABLE STANDARD	24
TEST PROCEDURE	24
TEST EQUIPMENT LIST AND DETAILS.....	24
TEST DATA	25

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Dakota Alert*'s product, model number: *5-121BS (FCC ID: QK8M5-121BS)* or the "EUT" in this report was a *MURS BASE STATION*, which was measured approximately: 16.5 cm (L) x 16.0 cm (W) x 5.0 cm (H), rated input voltage: DC 5.0 V from Adapter.

Adapter Information:

Model: ZDD050200US

Input: AC 100-240V, 50/60Hz, 0.5A

Output: DC 5.0V, 2000mA

** All measurement and test data in this report was gathered from production sample serial number: 1507430. (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2015-12-18.*

Objective

This report is prepared on behalf of *Dakota Alert* in accordance with Part 2 and Part 95, Subpart J & Subpart E of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

FCC Part 15B CSR submissions with FCC ID: QK8M5-121BS.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with Part 95 Subpart J and Subpart E of the Federal Communication Commissions rules with TIA-603-D, Land Mobile FM or PM-Communications Equipment-Measurement and Performance Standards.

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 October 31, 2013. 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.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Note:

Transmitter channel frequencies are 151.820 MHz, 151.880 MHz, 151.940 MHz, 154.570 MHz and 154.600 MHz.

Equipment Modifications

No modification was made to the EUT tested.

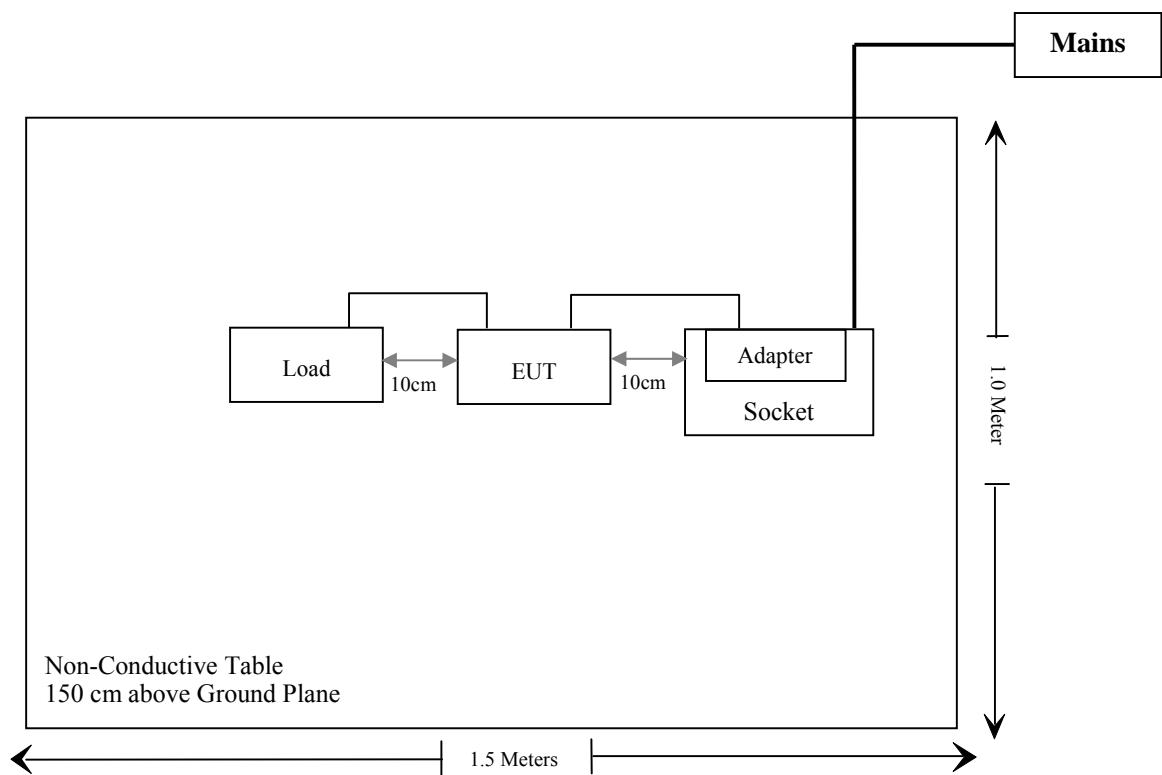
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	50 ohm Load	N/A	N/A

External I/O Cable

Cable Description	Length (m)	From / Port	To
Un-shielding Un-detachable AC Power Cable	1.8	Socket	Mains
Un-shielding Un-detachable DC Power Cable	1.4	EUT	Adapter
Shielding Detachable RF Cable	0.8	Load	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§1.1307, §1.1310, §2.1091	Maximum Permissible exposure (MPE)	Compliance
§2.1046, §95.639(h)	RF Output Power	Compliance
§2.1049, §95.633(f), §95.635(e)	Authorized Bandwidth & Emission Mask	Compliance
§2.1051, §95.635(e)	Spurious Emission at Antenna Terminal	Compliance
§2.1053, §95.635(e)	Spurious Radiated Emissions	Compliance
§2.1055(d), §95.632(c)	Frequency Stability	Compliance

FCC §1.1307 §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1307 (b)(1), 1.1310(e) and 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For worst case:

The Maximum tune-up output power: 33dBm (1995.26mW), for PTT device the duty factor is 50%

The time-averaged output power is: $1995.26 \times 0.5 = 997.63$ mW

Frequency (MHz)	Target power (mW)	Antenna Gain		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)			
151.82	997.63	0	1	20	0.2	0.2
151.88	997.63	0	1	20	0.2	0.2
151.94	997.63	0	1	20	0.2	0.2
154.57	997.63	0	1	20	0.2	0.2
154.60	997.63	0	1	20	0.2	0.2

The Maximum Antenna Gain is 0 dBi

Note: To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §2.1046, §95.639(h) - RF OUTPUT POWER

Applicable Standard

Per FCC §95.639 (h) No MURS unit, under any condition of modulation, shall exceed 2 Watts transmitter power output.

Test Procedure

Conducted RF Output Power:

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Spectrum Analyzer Setting:

R B/W Video B/W
100 kHz 300 kHz

Test Equipment List and Details

Manufacturer	Description	Model NO.	Serial NO.	Calibration Date	Calibration Due Date
HP	RF Communication Test Set	HP8920A	3438A05201	2015-06-14	2016-06-13
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-04-14	2016-04-14
Ducommun technologies	RF Cable	RG-214	3	2015-05-06	2016-05-06
JFW	30dB Attenuator	50FH-030-100 RF	170006716507	2015-06-12	2016-06-12

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	100.0 kPa

The testing was performed by Candy Li on 2015-12-28.

Test Mode: Transmitting

Frequency (MHz)	Power Level	Output Power (dBm)	Output Power (W)	Limit (W)	Result
151.82	H	32.95	1.97	2	Pass
	L	29.62	0.92	2	Pass
151.88	H	32.93	1.96	2	Pass
	L	29.60	0.91	2	Pass
151.94	H	32.86	1.93	2	Pass
	L	29.62	0.92	2	Pass
154.57	H	32.68	1.85	2	Pass
	L	29.30	0.85	2	Pass
154.60	H	32.73	1.87	2	Pass
	L	29.39	0.87	2	Pass

Note:

The Rated High power is 2W.

The Rated Low power is 1W.

FCC §2.1049 & §95.633(f) & §95.635(e)- AUTHOURIZED BANDWIDTH AND EMISSION MASK**Applicable Standard**

According to §95.633(f), the authorized bandwidth for any emission type transmitted by a MURS transmitter is specified as follows:

- (1) Emissions on frequencies 151.820 MHz, 151.880 MHz, and 151.940 MHz are limited to 11.25 kHz.
- (2) Emissions on frequencies 154.570 and 154.600 MHz are limited to 20.0 kHz.
- (3) Provided, however, that all A3E emissions are limited to 8 kHz.

According to §95.635(e), for transmitters designed to operate in the MURS, transmitters shall comply with the following:

Frequency	Mask with audio low pass filter	Mask without audio low pass filter
151.820 MHz, 151.880 MHz and 151.940 MHz	(1)	(1)
154.570 MHz and 154.600 MHz	(2)	(3)

- (1) Emission Mask 1—For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:
 - (i) On any frequency from the center of the authorized bandwidth f_o to 5.625 kHz removed from f_o : Zero dB.
 - (ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: at least $7.27(f_d - 2.88)$ dB.
 - (iii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: at least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation.
- (2) Emission Mask 2—For transmitters designed to operate with a 25 kHz channel bandwidth that are equipped with an audio low-pass filter, the power of any emission must be below the unmodulated carrier power (P) as follows:
 - (i) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: at least 25 dB.
 - (ii) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: at least 35 dB.
 - (iii) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: at least $43 + 10 \log (P)$ dB.

(3) Emission Mask 3—For transmitters designed to operate with a 25 kHz channel bandwidth that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P) as follows:

- (i) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5 kHz, but not more than 10 kHz: at least $83 \log (f_d / 5)$ dB.
- (ii) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 10 kHz, but not more than 250 percent of the authorized bandwidth: at least $29 \log (f_d^2 / 11)$ dB or 50 dB, whichever is the lesser attenuation.
- (iii) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: at least $43 + 10 \log (P)$ dB.

Test Procedure

TIA-603-D, section 2.2.11

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communication Test Set	HP8920A	3438A05201	2015-06-14	2016-06-13
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-04-14	2016-04-14
Ducommun technologies	RF Cable	RG-214	3	2015-05-06	2016-05-06
JFW	30dB Attenuator	50FH-030-100 RF	170006716507	2015-06-12	2016-06-12

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

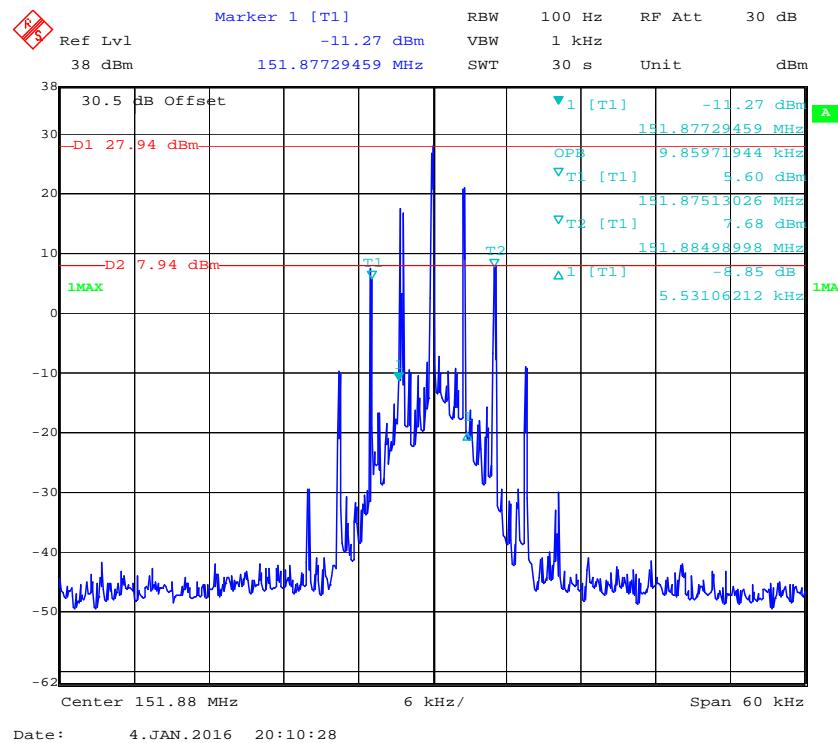
The testing was performed by Candy Li on 2016-01-04.

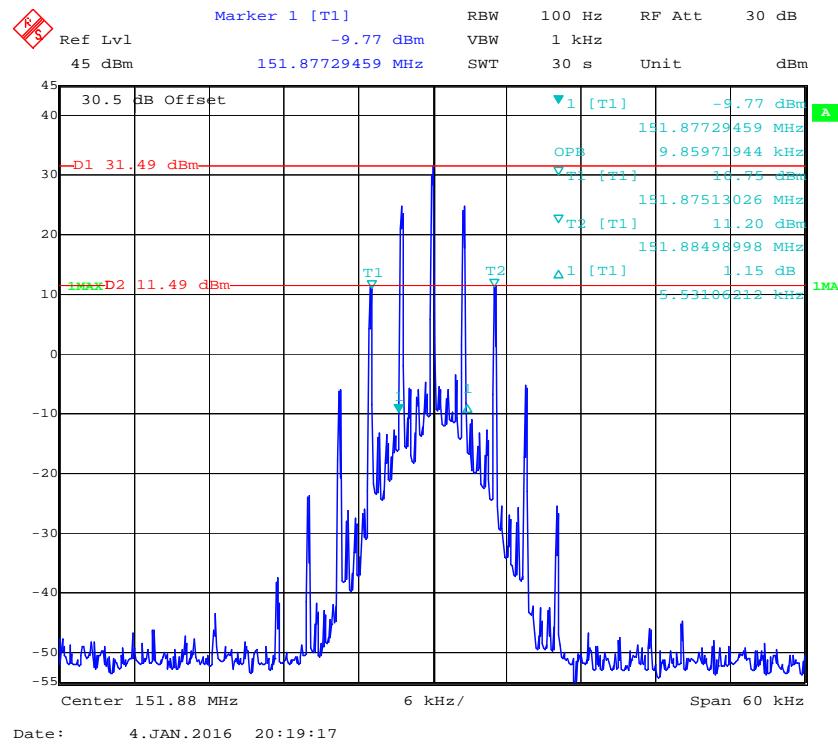
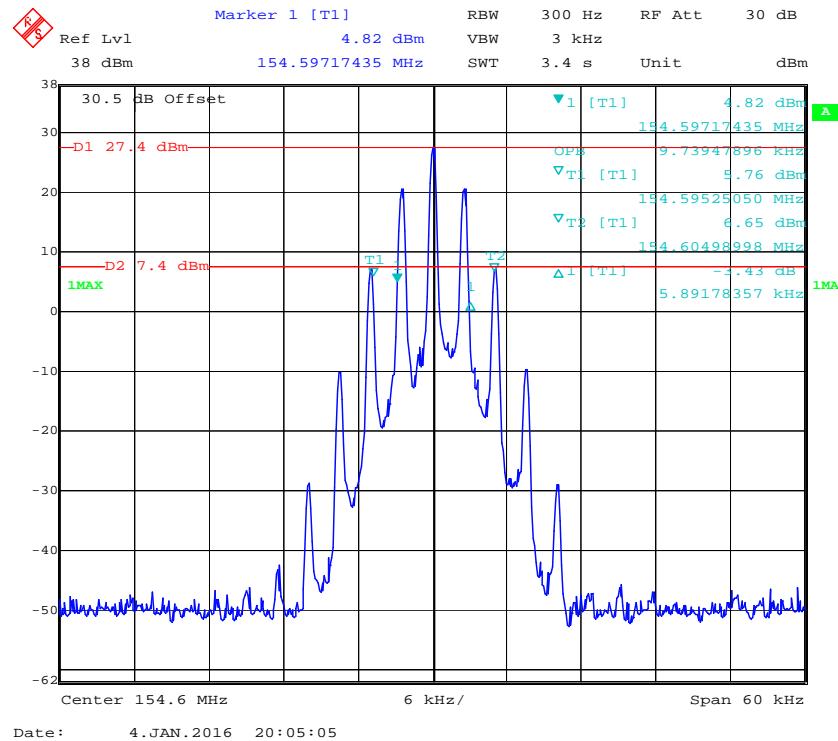
Test Mode: Transmitting

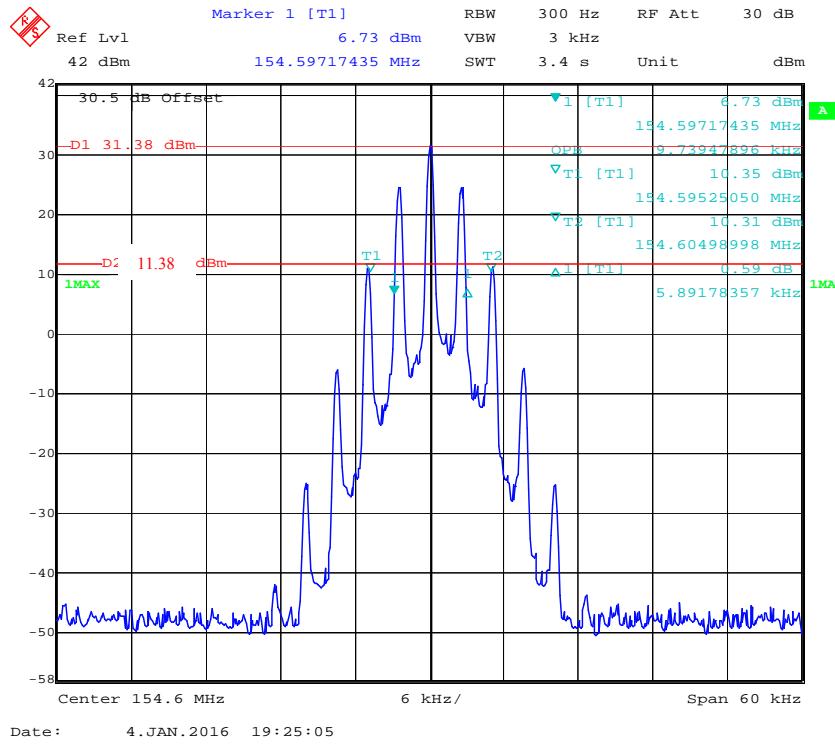
Frequency (MHz)	Power Level	20dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Limit (kHz)	Result
151.88	H	5.53	9.86	11.25	Pass
	L	5.53	9.86	11.25	Pass
154.60	H	5.89	9.74	20.00	Pass
	L	5.89	9.74	20.00	Pass

99% Occupied Bandwidth & 20 dB Emissions Bandwidth:

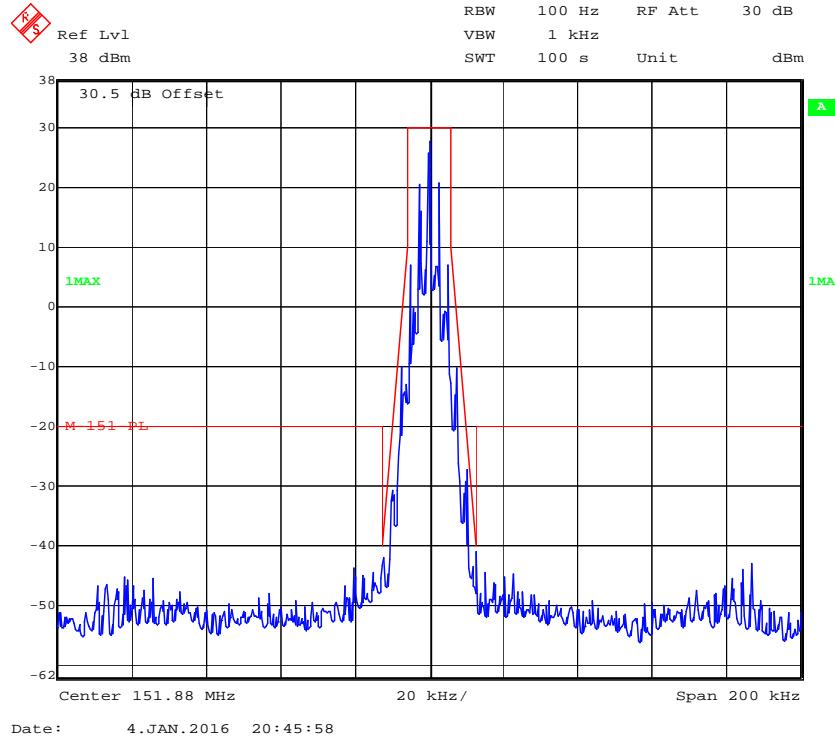
151.88 MHz (Low Power Level)

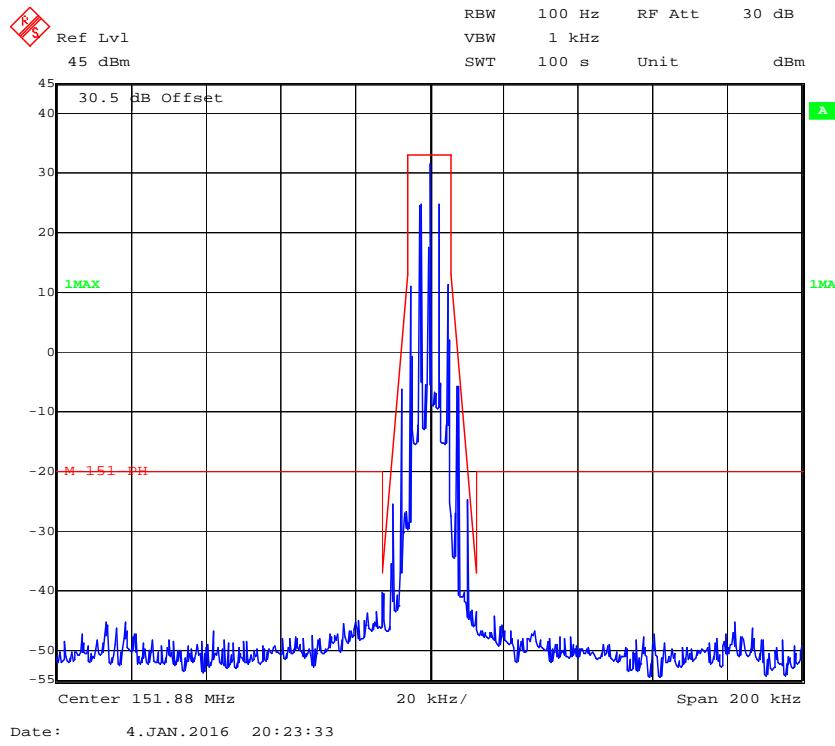
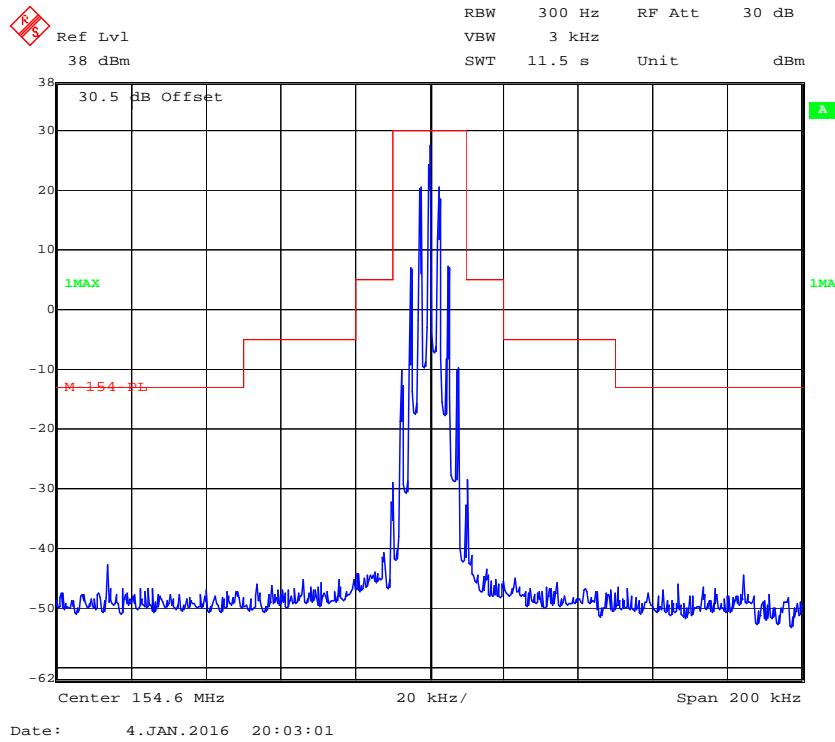


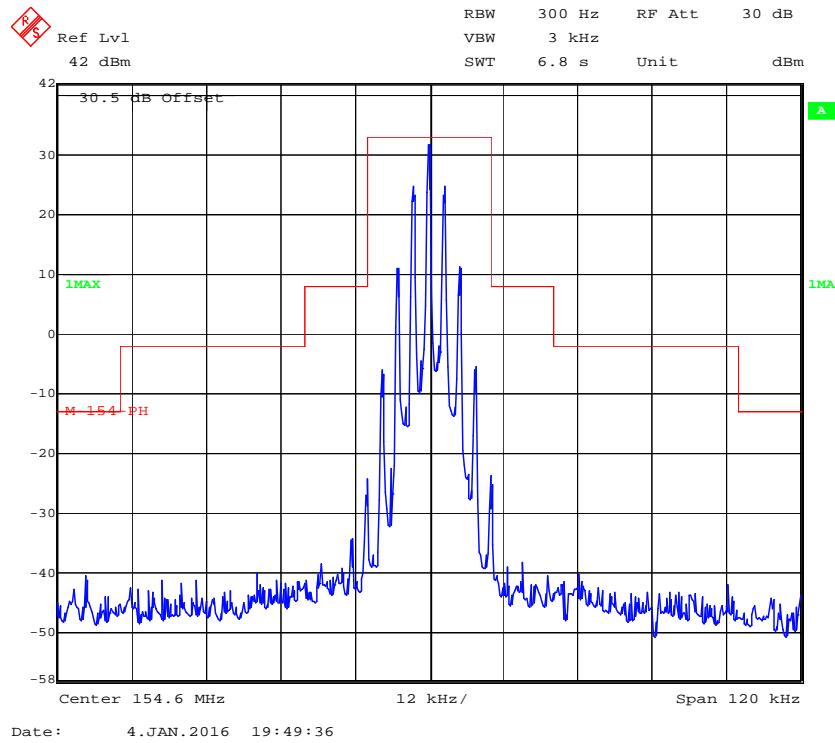
151.88 MHz (High Power Level)**154.60 MHz (Low Power Level)**

154.60 MHz (High Power Level)

Emission Mask:

151.88 MHz (Low Power Level)

151.88 MHz (High Power Level)**154.60 MHz (Low Power Level)**

154.60 MHz (High Power Level)

Date: 4.JAN.2016 19:49:36

FCC §2.1051 & §95.635(e) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

According to §95.635(e), for transmitters designed to operate in the MURS, transmitters shall comply with the following:

Spurious emissions in dB = $10 \log_{10} (\text{TXpwr in Watts}/0.001)$ - the absolute level
For 151.820 MHz, 151.880 MHz and 151.940 MHz:

Spurious attenuation limit in dB = $50 + 10 \log_{10} (\text{power out in Watts})$

For 154.570 MHz and 154.600 MHz:

Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$

Test Procedure

The RF output of the EUT was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for below 1GHz, and 1MHz for above 1GHz. sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2016-04-14	2017-04-14
Ducommun technologies	RF Cable	RG-214	3	2016-05-06	2017-05-06
JFW	30dB Attenuator	50FH-030-100 RF	170006716507	2016-06-12	2017-06-12

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

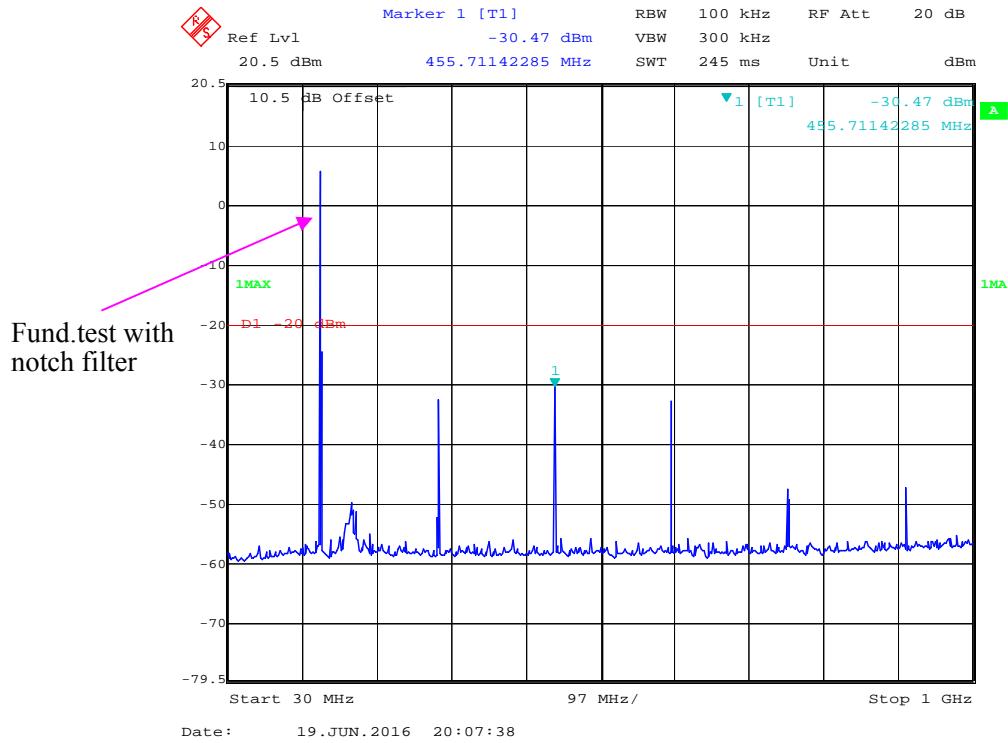
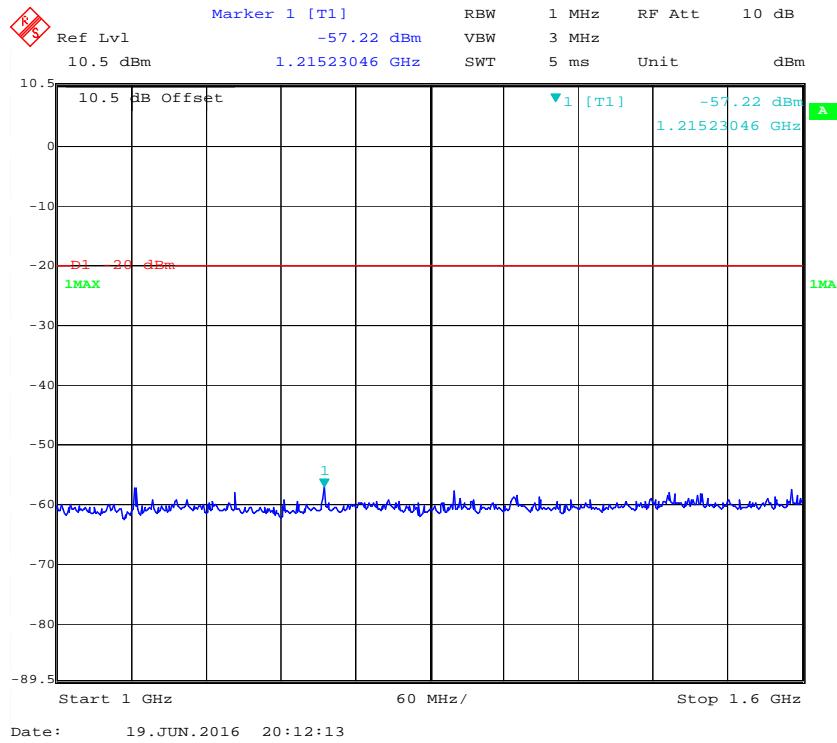
Environmental Conditions

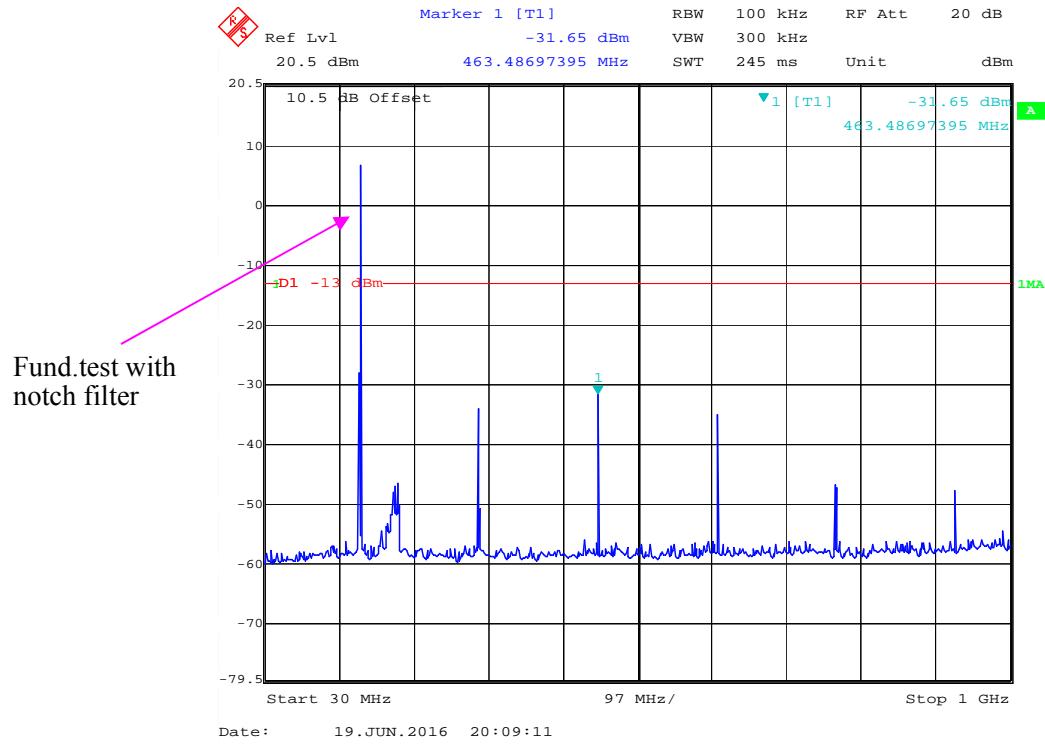
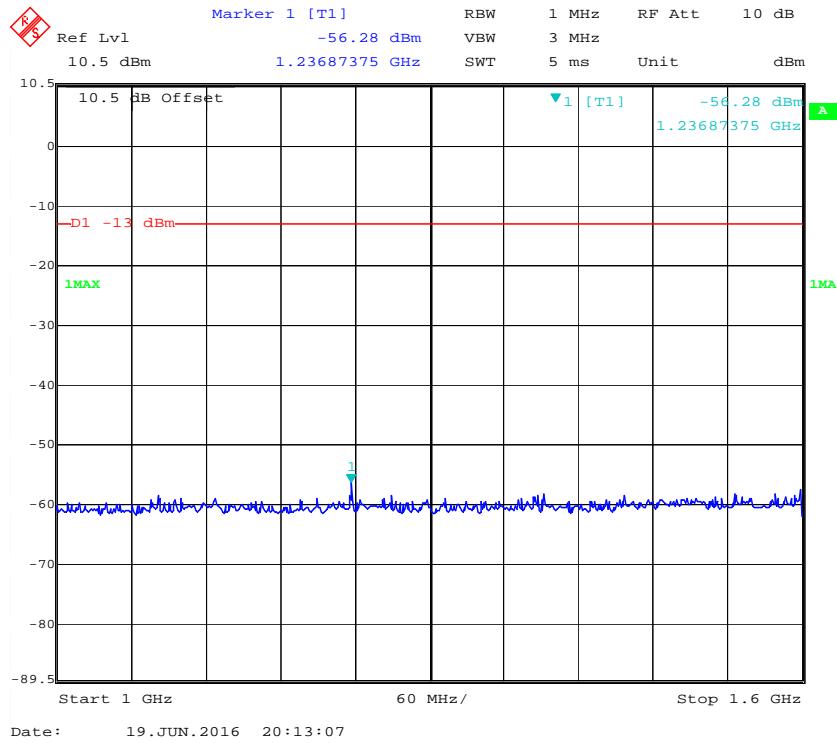
Temperature:	21 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Candy Li on 2016-06-19.

Test Mode: Transmitting

Please refer to the following plots.

30 MHz – 1 GHz, 151.88 MHz**1 GHz – 1.6 GHz, 151.88 MHz**

30 MHz – 1 GHz, 154.60 MHz**1 GHz – 1.6 GHz, 154.60 MHz**

FCC §2.1053 & §95.635(e) - RADIATED SPURIOUS EMISSION

Applicable Standard

FCC §2.1053 and §95.635(e)

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \log_{10} (\text{TXpwr in Watts}/0.001)$ - the absolute level
For 151.820 MHz, 151.880 MHz and 151.940 MHz:

Spurious attenuation limit in dB = $50 + 10 \log_{10} (\text{power out in Watts})$

For 154.570 MHz and 154.600 MHz:

Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2016-05-06	2017-05-06
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2015-12-15	2016-12-14
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Mini	Amplifier	ZVA-183-S+	5969001149	2016-04-23	2017-04-23
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2016-04-14	2017-04-14
A.H. System	Horn Antenna	SAS-200/571	135	2016-08-18	2017-08-17
COM POWER	Dipole Antenna	AD-100	041000	2015-08-18	2016-08-18
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2015-10-22	2016-10-22
Ducommun technologies	RF Cable	104PEA	218124002	2015-10-22	2016-10-22
Ducommun technologies	RF Cable	RG-214	1	2016-05-06	2017-05-06
Ducommun technologies	RF Cable	RG-214	2	2016-05-06	2017-05-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Candy Li on 2016-06-28.

Test Mode: Transmitting

Channel: 151.88MHz

Indicated		Table Angle Degree	Test Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Receiver Reading (dBuV)		Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
303.76	56.26	18	1.5	H	-40.7	0.36	0	-41.06	-20	21.06
303.76	52.17	313	1.4	V	-44.8	0.36	0	-45.16	-20	25.16
455.64	62.96	301	1.6	H	-34.0	0.47	0	-34.47	-20	14.47
455.64	57.38	289	1.5	V	-39.6	0.47	0	-40.07	-20	20.07
607.52	64.02	209	1.7	H	-33.0	0.57	0	-33.57	-20	13.57
607.52	63.71	73	1.5	V	-33.3	0.57	0	-33.87	-20	13.87
759.40	66.19	191	1.8	H	-30.8	0.65	0	-31.45	-20	11.45
759.40	60.38	222	1.5	V	-36.6	0.65	0	-37.25	-20	17.25
1366.92	64.58	150	1.4	H	-45.1	1.20	6.40	-39.90	-20	19.90
1366.92	65.76	60	1.9	V	-43.9	1.20	6.40	-38.70	-20	18.70
1518.80	63.69	86	1.2	H	-45.9	1.20	6.50	-40.60	-20	20.60
1518.80	64.38	75	2.0	V	-44.3	1.20	6.50	-39.00	-20	19.00

Channel: 154.60 MHz

Indicated		Table Angle Degree	Test Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency (MHz)	Receiver Reading (dBuV)		Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
309.20	56.97	252	1.4	H	-40.0	0.36	0	-40.36	-13	27.36
309.20	48.88	276	1.5	V	-48.1	0.36	0	-48.46	-13	35.46
463.80	62.30	51	1.5	H	-34.7	0.47	0	-35.17	-13	22.17
463.80	56.49	197	1.7	V	-40.5	0.47	0	-40.97	-13	27.97
618.40	59.82	280	1.3	H	-37.2	0.57	0	-37.77	-13	24.77
618.40	60.87	136	1.5	V	-36.1	0.57	0	-36.67	-13	23.67
773.00	66.04	15	1.5	H	-31.0	0.65	0	-31.65	-13	18.65
773.00	56.84	344	1.6	V	-40.2	0.65	0	-40.85	-13	27.85
1391.40	63.74	99	1.9	H	-45.9	1.20	6.40	-40.70	-13	27.70
1391.40	63.68	170	2.4	V	-46.0	1.20	6.40	-40.80	-13	27.80
1546.00	64.99	312	1.8	H	-44.6	1.20	6.50	-39.30	-13	26.30
1546.00	65.57	97	2.3	V	-43.1	1.20	6.50	-37.80	-13	24.80

Note:

- 1) Absolute Level = SG Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

FCC§2.1055 (d), §95.632(c) - FREQUENCY STABILITY**Applicable Standard**

According to FCC §2.1055(a) (1), the frequency stability shall be measured with variation of ambient temperature from -30°C to $+50^{\circ}\text{C}$, and according to FCC 2.1055(d) (2), the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point which is specified by the manufacturer.

According to FCC §95.632(c), MURS transmitters must maintain a frequency stability of 5.0 ppm, or 2.0 ppm if designed to operate with a 6.25 kHz bandwidth.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Frequency Counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Frequency Counter.

Frequency Stability vs. Voltage:

- 1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
- (2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

The output frequency was recorded for each voltage.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
Hewlett-Packard	Frequency Counter	5343A	2232A00827	2013-05-09	2016-05-08
Ducommun technologies	RF Cable	RG-214	3	2016-05-06	2017-05-06
WUHUAN	Temperature & Humidity Chamber	HTP205	20021115	NCR	NCR

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	24 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Candy Li on 2015-12-28.

Test Mode: Transmitting

MURS: 151.88 MHz

Reference Frequency: 151.88 MHz, Limit: ± 5 ppm			
Environment Temperature (°C)	Voltage Supplied (V _{AC})	Measurement Frequency (MHz)	Frequency Error (ppm)
Frequency Stability Ver. Temperature			
50	120	151.880124	0.816
40	120	151.880108	0.711
30	120	151.880116	0.764
20	120	151.880122	0.803
10	120	151.880097	0.639
0	120	151.880135	0.889
-10	120	151.880127	0.836
-20	120	151.880115	0.757
-30	120	151.880142	0.935
Frequency Stability Ver. Input Voltage			
20	102	151.880120	0.790
20	138	151.880139	0.915

MURS: 154.60 MHz

Reference Frequency: 154.60 MHz, Limit: ± 5 ppm			
Environment Temperature (°C)	Voltage Supplied (V_{AC})	Measurement Frequency (MHz)	Frequency Error (ppm)
Frequency Stability Ver. Temperature			
50	120	154.600113	0.731
40	120	154.600125	0.809
30	120	154.600103	0.666
20	120	154.600114	0.737
10	120	154.600109	0.705
0	120	154.600111	0.718
-10	120	154.600126	0.815
-20	120	154.600137	0.886
-30	120	154.600125	0.809
Frequency Stability Ver. Input Voltage			
20	102	154.600122	0.789
20	138	154.600141	0.912

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