



FCC PART 90

TEST REPORT

For

SHENZHEN COVALUE COMMUNICATIONS CO., LTD.

2/F., Bldg.24, XiLi Industrial Park, No.119Xinguang Rd, Xili, Nanshan, Shenzhen, Guangdong, China

FCC ID: Y4GCU780-1

| Report Type: Original Report | | Product Type: Two way radio |
|------------------------------|--------------------|-----------------------------|
| Test Engineer: | Brown Lu | Brown Lu |
| Report Number: | R1DG121022010 | 0-00 |
| Report Date: | 2013-03-22 | |
| | Sula Huang | Sula through |
| Reviewed By: | RF Engineer | 179. |
| Test Laboratory: | 6/F, the 3rd Phase | 320018 320008 |

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. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP*, or any agency of the Federal Government.

^{*} This report may contain data that are not covered by the NVLAP accreditation and shall be marked with an asterisk "*\pm"

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| Test Procedure | |
| Test Data | |

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The SHENZHEN COVALUE COMMUNICATIONS CO., LTD.'s product, model number: CU780-1 (FCC ID: Y4GCU780-1) (the "EUT") in this report was a Two way radio, which was measured approximately: 13.5 cm (L) x 6.5 cm (W) x 4.2 cm (H), rated input voltage: DC 7.4 V Li-ion battery.

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Technical specifications:

Frequency range: 136-174 MHz

Output power: 1.079 W (Low), 5.383 W (High) (Conducted power)

Modulation: FM Ej cpp Channel spacing: 12.5 kHz

Objective

This test report is prepared on behalf of SHENZHEN COVALUE COMMUNICATIONS CO., LTD. in accordance with Part 2 and Part 90 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, Sub-part J as well as the following individual parts:

Part 90 - Private Land Mobile Radio Service

Applicable Standards: TIA 603-D and ANSI 63.4-2009.

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.

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^{*} All measurement and test data in this report was gathered from production sample serial number: 121022010 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2012-10-22.

Test Facility

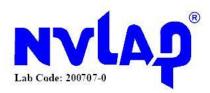
The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

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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 December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm.

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SYSTEM TEST CONFIGURATION

Description of Test Configuration

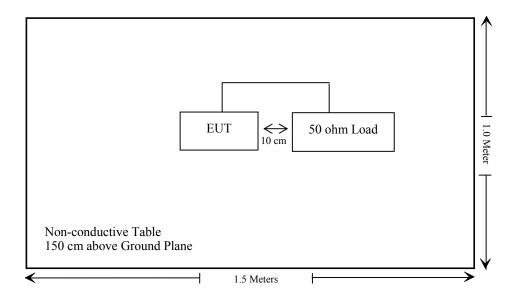
The system was configured for testing in a test mode which has been done in the factory.

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Equipment Modifications

No modification was made to the EUT tested.

Block Diagram of Test Setup



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SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Results |
|---------------------------------|---------------------------------------|------------|
| §1.1307 (b); §2.1093 | RF Exposure | Compliance |
| §2.1046; §90.205 | RF Output Power | Compliance |
| §2.1047; §90.207 | Modulation Characteristic | Compliance |
| \$2.1049; \$90.209; \$90.210 | Occupied Bandwidth & Emission Mask | Compliance |
| §2.1051; §90.210 | Spurious Emission at Antenna Terminal | Compliance |
| §2.1053; §90.210 | Spurious Radiated Emissions | Compliance |
| §2.1055; §90.213 | Frequency Stability | Compliance |
| §90.214 | Transient Frequency Behavior | Compliance |

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Note: The uncertainty of any RF tests which use conducted method measurement is 0.96 dB.

The uncertainty of any radiation emissions measurement is 4.0 dB.

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FCC §1.1307(b) & §2.1093 - RF EXPOSURE

Applicable Standard

According to FCC §1.1307(b) and §2.1093, protable device operates Part 90 should be subjected to rountine environmental evaluation for RF exposure prior or equipment authorization or use.

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Result: Compliance.

Please refer to SAR Report Number: R12120312-FCC-SAR.

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FCC §2.1046 & §90.205- RF OUTPUT POWER

Applicable Standard

FCC §2.1046 and §90.205.

Test Procedure

Conducted RF Output Power:

TIA-603-D section 2.2.1

Radiated method:

TIA 603-D section 2.2.17

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

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Spectrum Analyzer setting:

 RBW
 Video B/W

 100 kHz
 300 kHz

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|-----------------|---------------------|--------|------------------|---------------------|-------------------------|
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 8386001028 | 2011-11-24 | 2012-11-23 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-2 | 2011-11-28 | 2014-11-27 |
| HP | Synthesized Sweeper | 8341B | 2624A00116 | 2012-04-11 | 2013-04-10 |
| COM POWER | Dipole Antenna | AD-100 | 041000 | 2012-06-06 | 2013-06-05 |

^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Test Data

Environmental Conditions

| Temperature: | 23~25 ℃ |
|--------------------|-----------------|
| Relative Humidity: | 55~56 % |
| ATM Pressure: | 100.0~100.1 kPa |

The testing was performed by Brown Lu on 2012-11-11 and 2013-02-20.

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Test Mode: Transmitting

Test Result: Compliance. Please refer to following table.

Conducted Power:

| Channel Spacing (kHz) | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Power level |
|-----------------------|--------------------|-----------------------|---------------------|-------------|
| | 136.5 | 37.25 | 5.309 | High |
| | 136.5 | 30.09 | 1.021 | Low |
| 12.5 | 155.5 | 37.31 | 5.383 | High |
| 12.5 | 155.5 | 30.25 | 1.059 | Low |
| | 173.5 | 37.21 | 5.260 | High |
| | 173.5 | 30.33 | 1.079 | Low |

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ERP: (High Power)

| | Receiver | TurnTable | Rx Antenna | | Substituted | | Absolute | |
|--------------------|---------------------------|-----------------|------------|----------------|----------------------|-----------------|-------------------------|----------------|
| Frequency (MHz) | Reading (dBµV) | Angle Degree | Height (m) | Polar (H/V) | SG Level (dBm) | Cable loss (dB) | Antenna Gain (dB) | Level (dBm) |
| | Channel Spacing: 12.5 kHz | | | | | | | |
| 136.5 | 102.19 | 150 | 1.5 | V | 17.1 | 0.26 | 0 | 16.84 |
| 155.5 | 113.25 | 178 | 1.6 | V | 29.2 | 0.27 | 0 | 28.93 |
| 173.5 | 97.26 | 283 | 1.7 | V | 15.3 | 0.28 | 0 | 15.02 |

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FCC §2.1047 & §90.207 - MODULATION CHARACTERISTIC

Applicable Standard

FCC§2.1047 & §90.207:

(a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz. for equipment which is required to have a low pass filter, the frequency response of the filter, or all of the circuitry installed between the modulation limited and the modulated stage shall be supplied.

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(b) Equipment which employs modulation limiting, a curve showing the percentage of modulation versus the modulation input voltage shall be supplied.

Test Procedure

Test Method: TIA/EIA-603 2.2.3

Test Equipment List and Details

| Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|--------------|------------------------------|-----------|------------|---------------------|-------------------------|
| HP | RF Communication Test Set | 8920 | 3438A05201 | 2012-06-14 | 2013-06-13 |

^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Test Data

Environmental Conditions

| Temperature: | 23~25 ℃ |
|--------------------|-----------------|
| Relative Humidity: | 55~56 % |
| ATM Pressure: | 100.0~100.1 kPa |

The testing was performed by Brown Lu on 2012-11-11 and 2013-02-20.

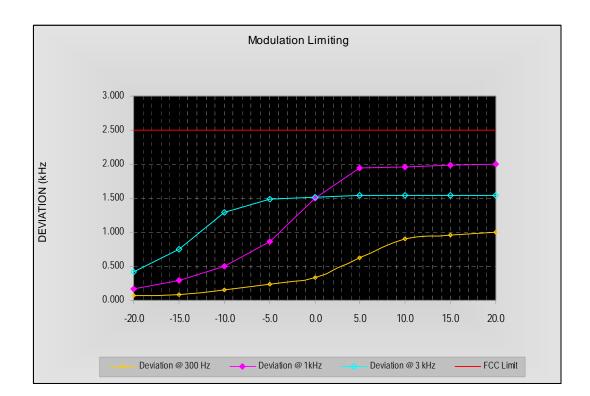
Test Mode: Transmitting

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MODULATION LIMITING

Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, Low Power

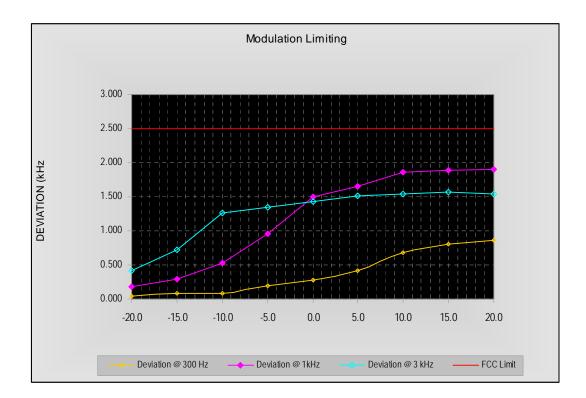
| Audio Input | Freq | uency Deviation (| kHz) | FCC Limit | |
|-------------|----------|-------------------|---------|-----------|--|
| Level (dB) | @ 300 Hz | @ 1kHz | @ 3 kHz | (kHz) | |
| 20.0 | 1.004 | 2.001 | 1.540 | 2.5 | |
| 15.0 | 0.953 | 1.982 | 1.544 | 2.5 | |
| 10.0 | 0.902 | 1.962 | 1.544 | 2.5 | |
| 5.0 | 0.628 | 1.944 | 1.548 | 2.5 | |
| 0.0 | 0.339 | 1.500 | 1.514 | 2.5 | |
| -5.0 | 0.233 | 0.864 | 1.493 | 2.5 | |
| -10.0 | 0.158 | 0.495 | 1.292 | 2.5 | |
| -15.0 | 0.087 | 0.289 | 0.745 | 2.5 | |
| -20.0 | 0.068 | 0.169 | 0.418 | 2.5 | |



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Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, High Power

| Audio Input | Freq | uency Deviation (| kHz) | FCC Limit | |
|-------------|----------|-------------------|---------|-----------|--|
| Level (dB) | @ 300 Hz | @ 1kHz | @ 3 kHz | (kHz) | |
| 20.0 | 0.868 | 1.896 | 1.536 | 2.5 | |
| 15.0 | 0.812 | 1.887 | 1.563 | 2.5 | |
| 10.0 | 0.675 | 1.868 | 1.542 | 2.5 | |
| 5.0 | 0.417 | 1.656 | 1.512 | 2.5 | |
| 0.0 | 0.283 | 1.500 | 1.428 | 2.5 | |
| -5.0 | 0.192 | 0.956 | 1.342 | 2.5 | |
| -10.0 | 0.088 | 0.524 | 1.265 | 2.5 | |
| -15.0 | 0.078 | 0.287 | 0.723 | 2.5 | |
| -20.0 | 0.043 | 0.175 | 0.410 | 2.5 | |

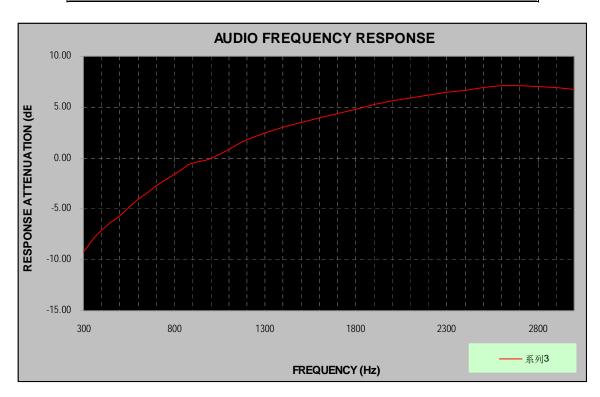


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Audio Frequency Response

Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, Low Power

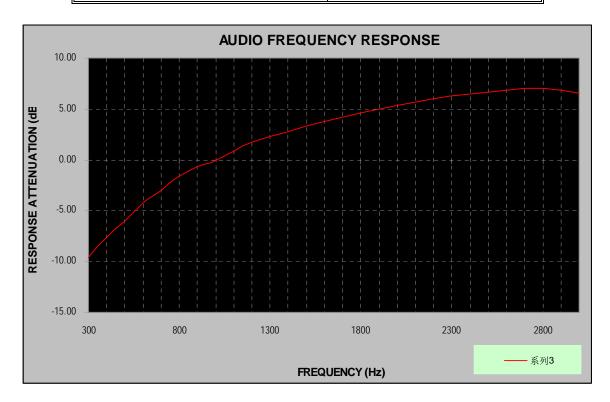
| Audio Frequency (Hz) | Response Attenuation (dB) |
|----------------------|---------------------------|
| 300 | -9.27 |
| 400 | -7.13 |
| 500 | -5.71 |
| 600 | -4.01 |
| 700 | -2.76 |
| 800 | -1.58 |
| 900 | -0.50 |
| 1000 | 0.00 |
| 1200 | 1.81 |
| 1400 | 3.01 |
| 1600 | 3.96 |
| 1800 | 4.84 |
| 2000 | 5.60 |
| 2200 | 6.21 |
| 2400 | 6.67 |
| 2600 | 7.10 |
| 2800 | 7.07 |
| 3000 | 6.78 |



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Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, High Power

| Audio Frequency (Hz) | Response Attenuation (dB) |
|----------------------|---------------------------|
| 300 | -9.63 |
| 400 | -7.62 |
| 500 | -6.09 |
| 600 | -4.24 |
| 700 | -3.00 |
| 800 | -1.64 |
| 900 | -0.71 |
| 1000 | 0.00 |
| 1200 | 1.70 |
| 1400 | 2.77 |
| 1600 | 3.81 |
| 1800 | 4.63 |
| 2000 | 5.35 |
| 2200 | 5.97 |
| 2400 | 6.47 |
| 2600 | 6.82 |
| 2800 | 7.03 |
| 3000 | 6.56 |



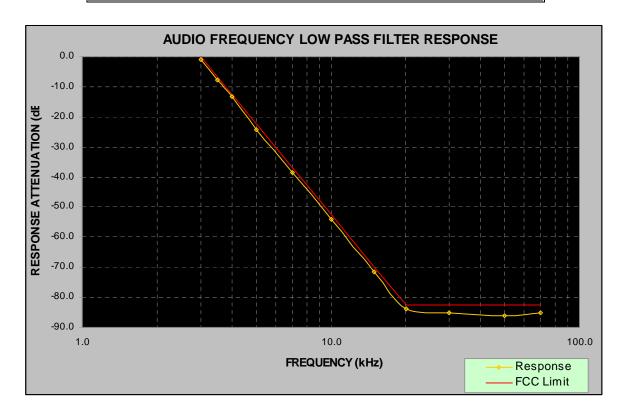
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Audio Frequency Low Pass Filter Response

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Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, Low Power

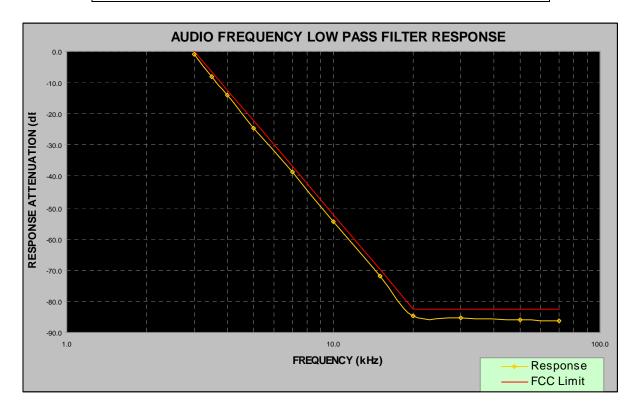
| Audio Frequency (kHz) | Response Attenuation (dB) | FCC Limit (dB) |
|--------------------------|---------------------------|----------------|
| 3.0 | -1.0 | 0.0 |
| 3.5 | -7.7 | -6.7 |
| 4.0 | -13.4 | -12.5 |
| 5.0 | -24.4 | -22.2 |
| 7.0 | -38.6 | -36.8 |
| 10.0 | -54.0 | -52.3 |
| 15.0 | -71.6 | -69.9 |
| 20.0 | -83.7 | -82.5 |
| 30.0 | -85.3 | -82.5 |
| 50.0 | -86.1 | -82.5 |
| 70.0 | -85.3 | -82.5 |



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Carrier Frequency: 155.5 MHz, Channel Separation=12.5 kHz, High Power

| Audio Frequency (kHz) | Response Attenuation (dB) | FCC Limit (dB) |
|--------------------------|---------------------------|----------------|
| 3.0 | -0.9 | 0.0 |
| 3.5 | -8.1 | -6.7 |
| 4.0 | -13.9 | -12.5 |
| 5.0 | -24.5 | -22.2 |
| 7.0 | -38.6 | -36.8 |
| 10.0 | -54.5 | -52.3 |
| 15.0 | -71.8 | -69.9 |
| 20.0 | -84.7 | -82.5 |
| 30.0 | -85.3 | -82.5 |
| 50.0 | -85.8 | -82.5 |
| 70.0 | -86.2 | -82.5 |



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FCC §2.1049, §90.209 & §90.210 – OCCUPIED BANDWIDTH & EMISSION MASK

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Applicable Standard

FCC §2.1049, §90.209 and §90.210

Emission Mask D—12.5 kHz channel bandwidth equipment. 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:

- 1) For any frequency removed from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 , 0dB.
- 2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.626 kHz but no more than 12.5 kHz, at least 7.27 (f_d –2.88 kHz) dB.
- 3) 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+10logP

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

- 1) For any frequency removed from the center of the assigned channel by more than 50 percent up to and including 100 percent of the authorized bandwidth, at least 25 dB.
- 2) On any frequency removed from the center of the assigned channel by more than 100 percent up to and including 250 percent, at least 35 dB.
- 3) On any frequency removed from the center of the assigned channel by more than 250 percent at least:

43+10logP

The resolution bandwidth was 300 Hz or greater for measuring up to 250 kHz from the edge of the authorized frequency segment, and 30 kHz or greater for measuring more than 250 kHz from the authorized frequency segment.

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 100 Hz and the spectrum was recorded in the frequency band ± 35 kHz from the carrier frequency.

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Test Equipment List and Details

| Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|-----------------|------------------------------|-----------|------------|---------------------|-------------------------|
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 8386001028 | 2011-11-24 | 2013-11-23 |
| НР | RF Communication Test Set | 8920 | 3438A05201 | 2012-06-14 | 2013-06-13 |

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Test Data

Environmental Conditions

| Temperature: | 20~25 °C |
|--------------------|-----------------|
| Relative Humidity: | 50~56 % |
| ATM Pressure: | 100.0~101.0 kPa |

The testing was performed by Brown Lu from 2012-10-28 to 2013-03-11.

Result: Compliance. Please refer to the following table and plot.

| Channel Spacing (kHz) | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | 26 dB Bandwidth (kHz) | Power level |
|-----------------------|--------------------|------------------------------|--------------------------|-------------|
| 12.5 | 155.5 | 5.21 | 10.12 | High |

Emission Designator:

 $B_n=2M+2DK$

Where M = 3 kHz, D = 2.0 kHz, K = 1

 $B_n = 2*3 + 2*2.0 = 10.0 \text{ kHz}$

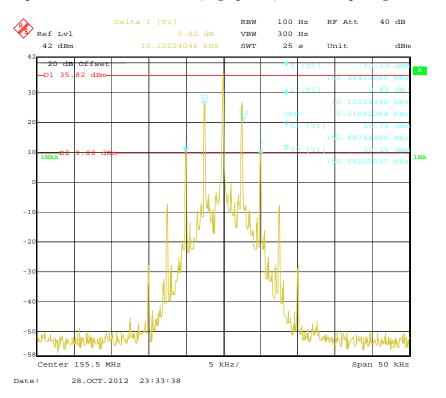
Type of emission: 10K0F3E

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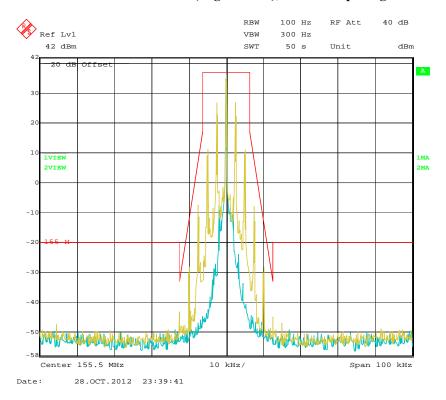
^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Occupied Bandwidth-155.5 MHz (High power), Channel Spacing=12.5 kHz

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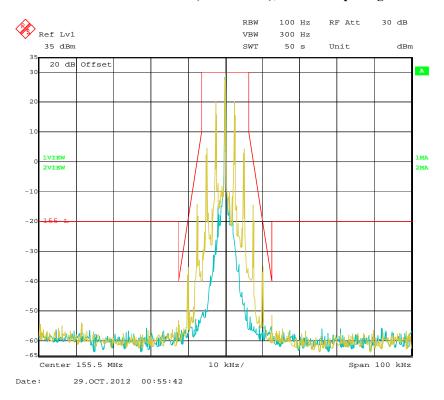
Emission Mask D - 155.5 MHz (High Power), Channel Spacing=12.5 kHz



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Emission Mask D – 155.5 MHz (Low Power), Channel Spacing=12.5 kHz

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FCC §2.1051 & §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

Emission Mask D—12.5 kHz channel bandwidth equipment. 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:

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- 1) For any frequency removed from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 , 0 dB.
- 2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.626 kHz but no more than 12.5 kHz, at least 7.27 (f_d-2.88 kHz) dB.
- 3) 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+10logP

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 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Equipment List and Details

| Manufacturer | Description | Model No. | Model No. Serial No. | | Calibration Due Date |
|-----------------|-----------------|-----------|----------------------|------------|-------------------------|
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 8386001028 | 2011-11-24 | 2013-11-23 |

^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Test Data

Environmental Conditions

| Temperature: | 20~24 °C |
|--------------------|-----------------|
| Relative Humidity: | 50~55 % |
| ATM Pressure: | 100.0~101.0 kPa |

The testing was performed by Brown Lu from 2012-10-25 to 2013-03-11.

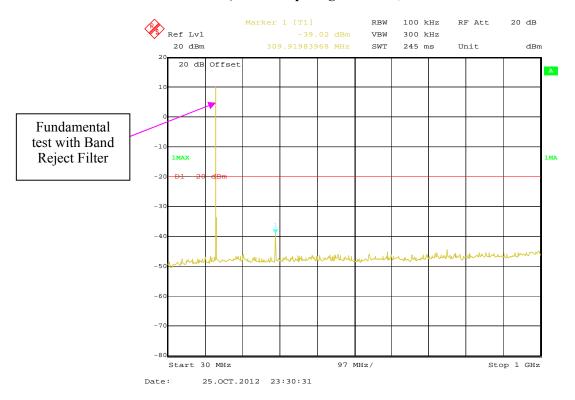
Test Mode: Transmitting

Please refer to the following plots.

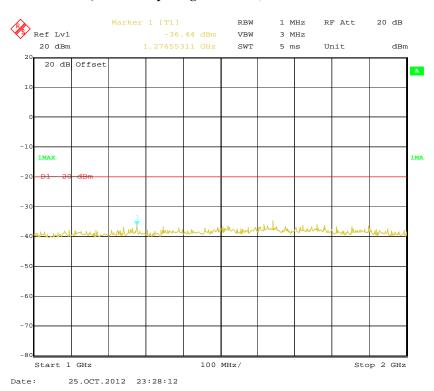
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30 MHz - 1 GHz (Channel Spacing: 12.5 kHz, Middle Channel: 155.5 MHz)

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1 GHz - 2 GHz (Channel Spacing: 12.5 kHz, Middle Channel: 155.5 MHz)



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FCC §2.1053 & §90.210 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §2.1053 and §90.210

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.

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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 teeth 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 1g (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB =50+10 Log₁₀ (power out in Watts) for EUT with a 12.5 kHz channel bandwidth.

Test Equipment List and Details

| Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|-----------------|---------------------|-------------|------------|---------------------|-------------------------|
| Sunol Sciences | Horn Antenna | DRH-118 | A052304 | 2011-12-01 | 2014-11-30 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-2 | 2011-11-28 | 2014-11-27 |
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 8386001028 | 2011-11-24 | 2012-11-23 |
| HP | Signal Generator | 8657A | 3217A04699 | 2011-12-19 | 2012-12-18 |
| A.H. System | Horn Antenna | SAS-200/571 | 135 | 2012-02-11 | 2015-02-10 |
| HP | Synthesized Sweeper | 8341B | 2624A00116 | 2012-05-17 | 2013-05-16 |

^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Test Data

Environmental Conditions

| Temperature: | 25 ℃ |
|--------------------|-----------|
| Relative Humidity: | 56 % |
| ATM Pressure: | 100.1 kPa |

The testing was performed by Brown Lu on 2012-11-11.

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Test Mode: Transmitting(worst case)

30 MHz-2 GHz:

| | Receiver | TurnTable | Rx Aı | ntenna | | Substitute | d | Absolute | FCC Part 90 | |
|---|-------------------|-----------------|------------|------------------|----------------------|----------------|---------------------|-------------|-------------|----------------|
| Frequency (MHz) | Reading (dBµV) | Angle Degree | Height (m) | Polar (H / V) | SG Level (dBm) | Cable loss(dB) | Antenna Gain(dB) | Level (dBm) | Limit (dBm) | Margin (dB) |
| Middle Channel: 155.5MHz, Channel spacing: 12.5 kHz | | | | | | | | | | |
| 311 | 63.24 | 145 | 1.7 | Н | -33.3 | 0.38 | 0 | -33.68 | -20 | 13.68 |
| 311 | 60.76 | 115 | 1.8 | V | -35.2 | 0.38 | 0 | -35.58 | -20 | 15.58 |
| 1244.5 | 42.72 | 36 | 1.8 | Н | -55.7 | 0.80 | 8.50 | -48.00 | -20 | 28.00 |
| 1244.5 | 43.11 | 115 | 1.7 | V | -57.9 | 0.80 | 8.50 | -50.20 | -20 | 30.20 |

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| Remark: | |
|---------|--|
| (1) | Absolute level (dBm) = Substituted SG level -Cable loss + Antenna Gain |
| (2) | Measuring frequencies from 30 MHz to the 2 GHz. |
| (3) | Margin=Limit-Absolute Level |

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FCC §2.1055 & §90.213- FREQUENCY STABILITY

Applicable Standard

FCC §2.1055 & §90.213

Test Procedure

Frequency Stability vs. Temperature:

The EUT was placed inside the temperature chamber. The Power 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 counter.

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The frequency stability shall be measured with variation of primary supply voltage as follows:

- (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.

Test Equipment List and Details

| Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|-----------------|--------------------------------|-----------|------------|---------------------|-------------------------|
| Hewlett-Packard | Frequency Counter | 5343A | 2232A00827 | 2012-04-15 | 2013-04-14 |
| ESPEC | Temperature & Humidity Chamber | EL-10KA | 09107726 | 2011-11-24 | 2012-11-23 |

^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM).

Test Data

Environmental Conditions

| Temperature: | 20~25 °C |
|--------------------|-----------------|
| Relative Humidity: | 50~56 % |
| ATM Pressure: | 100.0~101.0 kPa |

The testing was performed by Brown Lu from 2012-11-11 to 2013-03-11.

Test Mode: Transmitting

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| Reference Frequency: 155.5 MHz, Channel Separation: 12.5 kHz | | | | | |
|--|-----------------------------------|--|--------|----------------|--|
| Test Envi | ironment | Frequency Measure with Time Elapsed | | | |
| Temperature (°C) | Power Supplied (V _{DC}) | Measured Frequency Frequency Error (MHz) (ppm) | | Limit (ppm) | |
| | Frequency Stab | ility versus Temperatu | ire | | |
| 50 | 7.4 | 155.500017 | 0.1093 | 5.0 | |
| 40 | 7.4 | 155.500015 | 0.0965 | 5.0 | |
| 30 | 7.4 | 155.500011 | 0.0707 | 5.0 | |
| 20 | 7.4 | 155.500009 | 0.0579 | 5.0 | |
| 10 | 7.4 | 155.500010 | 0.0643 | 5.0 | |
| 0 | 7.4 | 155.500012 | 0.0772 | 5.0 | |
| -10 | 7.4 | 155.500014 | 0.0900 | 5.0 | |
| -20 | 7.4 | 155.500015 | 0.0965 | 5.0 | |
| -30 | 7.4 | 155.500016 | 0.1029 | 5.0 | |
| Frequency Stability versus Voltage | | | | | |
| 20 | 6.3 | 155.500014 | 0.0900 | 5.0 | |

Note: the battery operation end point is 6.3V which is specified by manufacturer.

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FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

Regulations: FCC §90.214

Test method: ANSI/TIA-603-D 2010, section 2.2.19.3

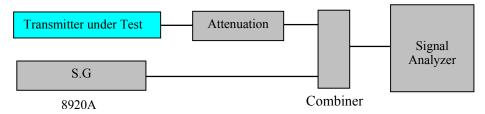
Test Equipment List and Details

| Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|-----------------|-------------------------------|-----------|------------|---------------------|-------------------------|
| Rohde & Schwarz | Signal Analyzer | FSIQ26 | 8386001028 | 2011-11-24 | 2013-11-23 |
| HP | RF Communications Test Set | HP8920A | 3438A05201 | 2012-06-14 | 2013-06-13 |

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Test Procedure

TIA-603-D 2.2.19.3



Test Data

Environmental Conditions

| Temperature: | 20~25 °C |
|--------------------|-----------------|
| Relative Humidity: | 50~56 % |
| ATM Pressure: | 100.0~101.0 kPa |

The testing was performed by Brown Lu from 2012-10-26 to 2013-03-11.

| Operation Frequency (MHz) | Channel Separation (kHz) | Time Period (ms) | Maximum frequency difference (kHz) | Result |
|------------------------------|--------------------------------|-----------------------|--|--------|
| | | <5.0(t ₁) | ±12.5 kHz | |
| 155.5 | 12.5 | $< 20.0(t_2)$ | $\pm 6.25 \text{ kHz}$ | Pass |
| | | $<5.0(t_3)$ | ±12.5 kHz | |

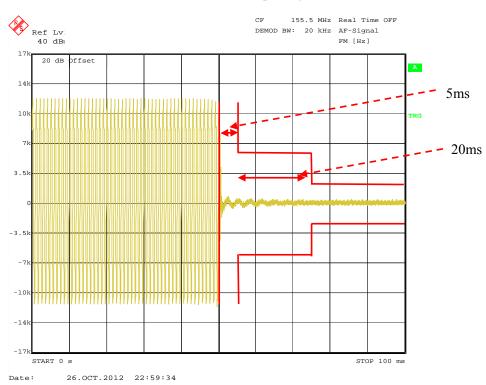
Please refer to the following plots.

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^{*} Statement of Traceability: Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to National Institute of Metrology (NIM)

Turn on (Low Power, Channel Spacing=12.5 kHz)

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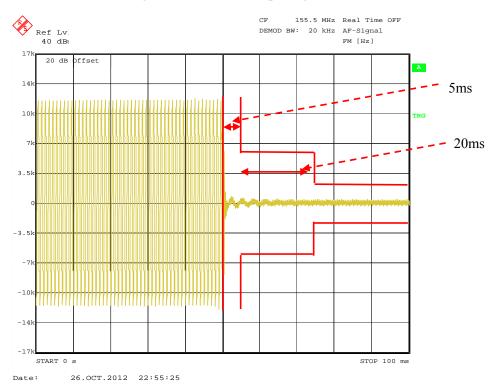
Turn off (Low Power, Channel Spacing=12.5 kHz)



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Turn on (High Power, Channel Spacing=12.5 kHz)

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Turn off (High Power, Channel Spacing=12.5 kHz)



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

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