



FCC PART 90 TYPE APPROVAL EMI MEASUREMENT AND TEST REPORT

For

SHENZHEN HYT SCIENCE&TECHNOLOGY CO., LTD

R2-High-Tech Industrial Park
ShenZhen, China

FCC ID: R74TC-700U

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| This Report Concerns: <input checked="" type="checkbox"/> Original Report | Equipment Type: Two-way Radio |
| Test Engineer: Hang Tan  | |
| Report No.: R0504126 | |
| Report Date: 2005-05-27 | |
| Reviewed By: Daniel Deng  | |
| Prepared By: Bay Area Compliance Laboratory Corporation 230 Commercial Street Sunnyvale, CA 94085 Tel: (408) 732-9162 Fax: (408) 732 9164 | |

Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Shenzhen HYT Science&Technology Co.,Ltd*'s FCC ID: *R74TC-700U* or the "EUT" as referred to in this report is a Two-way Radio, which measures approximately 25.5cmL x 6cmW x 4cmH.

**The test data gathered are from production sample serial number 05404F0083 provided by the manufacturer.*

Objective

This type approval report is prepared on behalf of *Shenzhen HYT Science&Technology Co.,Ltd* in accordance with Part 2 and Part 90 of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emission at antenna terminal, frequency stability, transient frequency behavior and radiated margin.

Related Submittal(s)/Grant(s)

No Related Submittals

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 EIA 137-A, TIA EIA 98-C, TIA/EIA-603, ANSI 63.4-2003, 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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory, Corp. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. 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 and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations is attached hereinafter and can also be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

SYSTEM TEST CONFIGURATION

Justification

The host system was configured for testing according to TIA/EIA-603.

The EUT was tested in the normal (native) operating mode to represent *worst-case* results during the final qualification test.

Block Diagram

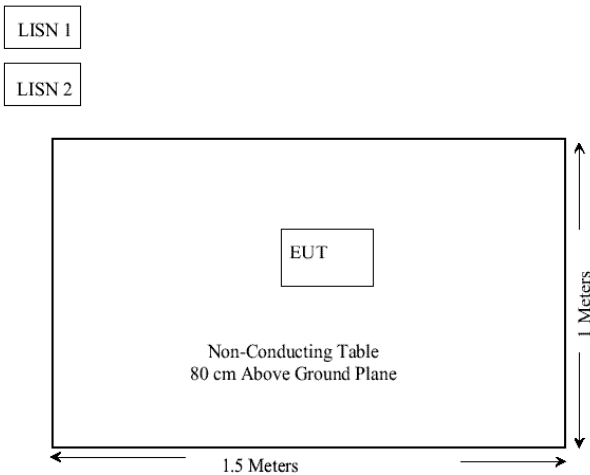
Please refer to Exhibit D.

Equipment Modifications

No modifications were made to the EUT.

Test Setup Block Diagram

The EUT is a standalone device.



SUMMARY OF TEST RESULTS

| FCC RULE | DESCRIPTION OF TEST | RESULT |
|-----------------------|--|-----------|
| § 2.1046 | Conducted Output Power | Compliant |
| § 2.1046, § 90.205 | RF Output Power | Compliant |
| § 2.1047 § 90.207 | Modulation Characteristics | Compliant |
| § 2.1049 § 90.209 | Emission, Occupied Bandwidth | Compliant |
| § 2.1051 § 90.210 | Spurious emissions at antenna terminals | Compliant |
| § 2.1053 § 90.210 | Field strength of spurious radiation | Compliant |
| § 2.1055 § 90.213 | Frequency stability vs. temperature Frequency stability vs. voltage | Compliant |
| § 90.214 | Transient Frequency Behavior | Compliant |

§2.1046 - CONDUCTED OUTPUT POWER

Provision Applicable

Per FCC §2.1046 and §90.205: maximum ERP is dependent upon the station's antenna HAAT and required service area.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuator.

Test Equipment

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|-----------------|--------------------|---------|---------------|------------|
| HP | Analyzer, Spectrum | 8565EC | 3946A00131 | 2004-08-06 |
| Hewlett Packard | Plotter | HP7470A | N/A | N/R |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

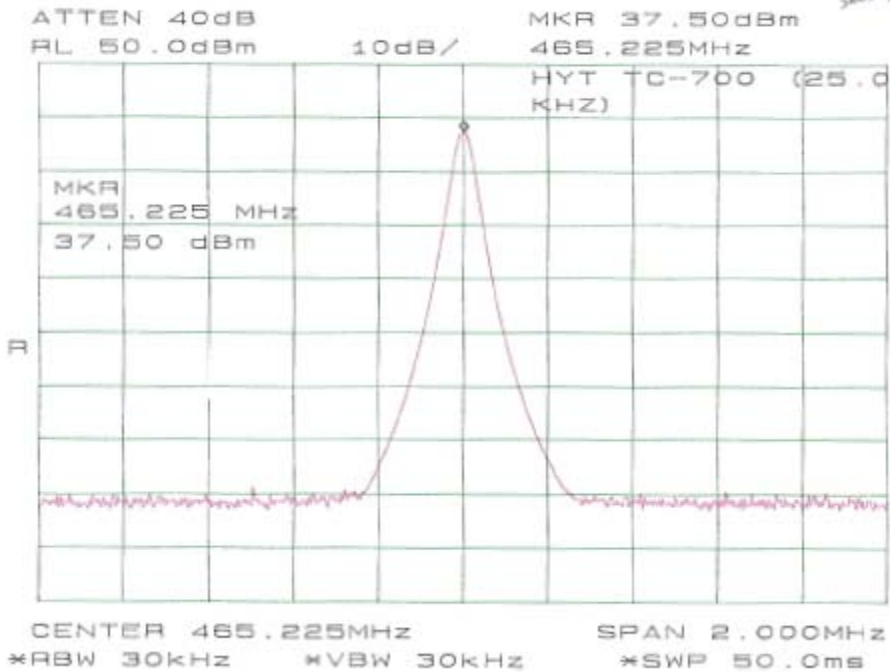
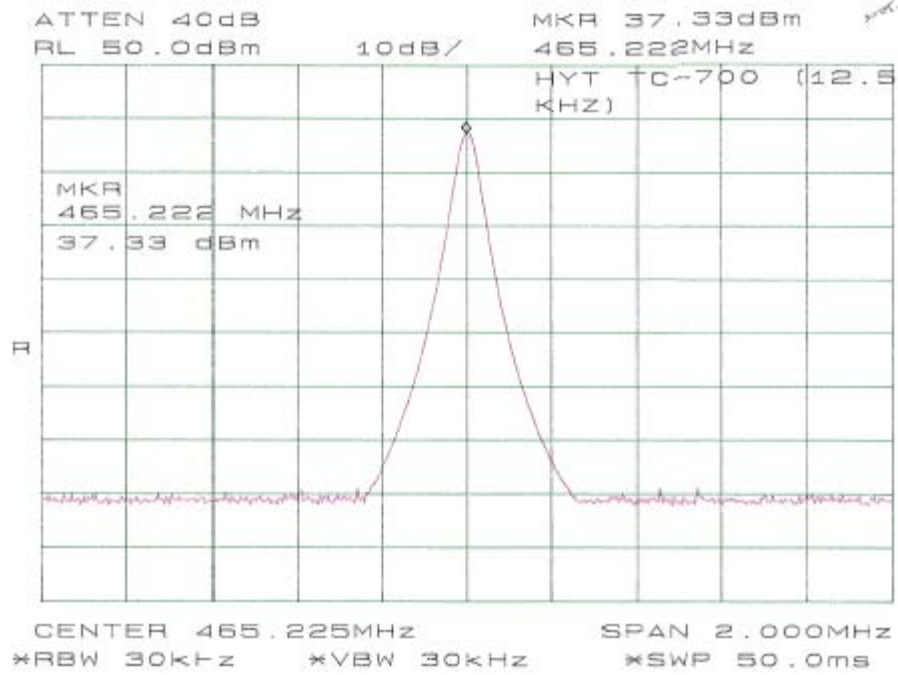
| | |
|--------------------|-----------|
| Temperature: | 19° C |
| Relative Humidity: | 73% |
| ATM Pressure: | 1016 mbar |

The testing was performed by Hang Tan on 2005-05-19.

Test Results

| Frequency Spacing (kHz) | Frequency (MHz) | Output Power in dBm | Output Power in W |
|-------------------------|-----------------|---------------------|-------------------|
| 12.5 | 465.225 | 37.33 | 5.41 |
| 25 | 465.225 | 37.50 | 5.62 |

Note: The power output may depend on the intended use of the EUT. For all tests, the EUT was set to maximum conditions.



§2.1046 and §90.205 – RF OUTPUT POWER

Provision Applicable

Per FCC §2.1046 and §90.205: maximum ERP is dependent upon the station's antenna HAAT and required service area.

Test Procedure

1. On a test site, the EUT shall be placed at 1.5m height on a turn table, and in the position closest to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the quasi-peak detector is used for the measurement.
4. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a substitution antenna.
10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

17. The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|-----------------|-------------------|-------------|---------------|------------|
| HP | Amplifier | 8447E | 2944A10187 | 2004-09-23 |
| Sunol Sciences | Sunol Sciences | JB1 | A013105-3 | 2005-02-11 |
| AH System | Horn Antenna | SAS-200/511 | 261 | 2004-08-02 |
| HP | Generator, Signal | 8648C | 3426A01345 | 2004-05-17 |
| Com-Power | Antenna, Dipole | AD-100 | 2219 | 2003-09-26 |
| Rohde & Schwarz | Test Receiver | ESCI | 100044 | 2004-09-29 |

* **Statement of Traceability:** BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 19° C |
| Relative Humidity: | 73% |
| ATM Pressure: | 1016 mbar |

The testing was performed by Hang Tan on 2005-05-19.

Test Results

For 25kHz Channel Bandwidth:

| FREQUENCY (MHZ) | SUBSTITUTION READING (dBm) | SUBSTITUTION ANTENNA GAIN | SUBSTITUTION CABLE LOSS (dB) | ERP (dBm) |
|--------------------|----------------------------------|---------------------------------|------------------------------------|--------------|
| 465.225 | 35.3 | 1.5 | 0.2 | 36.6 |

For 12.5kHz Channel Bandwidth:

| FREQUENCY (MHZ) | SUBSTITUTION READING (dBm) | SUBSTITUTION ANTENNA GAIN | SUBSTITUTION CABLE LOSS (dB) | ERP (dBm) |
|--------------------|----------------------------------|---------------------------------|------------------------------------|--------------|
| 465.225 | 35.4 | 1.5 | 0.2 | 36.7 |

Sample calculation:

Absolute level = substitution reading + antenna gain - cable loss

For example:

$$36.7 = 35.4 + 1.5 - 0.2$$

§2.1047, §90.207 - MODULATION CHARACTERISTIC

Applicable Standard

§2.1047 & §90.205:

- (a) Equipment which utilizes voice modulated communication shall show the frequency response of the audio modulating circuit over a range of 100 to 5000Hz. 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.
- (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

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|-----------------|---------------------|--------|---------------|------------|
| HP | Spectrum Analyzer | 8565EC | 3946A00131 | 2004-08-06 |
| Hewlett Packard | Modulation Analyzer | 8901A | 2026A00847 | 2004-08-19 |
| Nanyan | Audio Generator | NY2201 | 420 | N/R |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 22° C |
| Relative Humidity: | 66% |
| ATM Pressure: | 1021mbar |

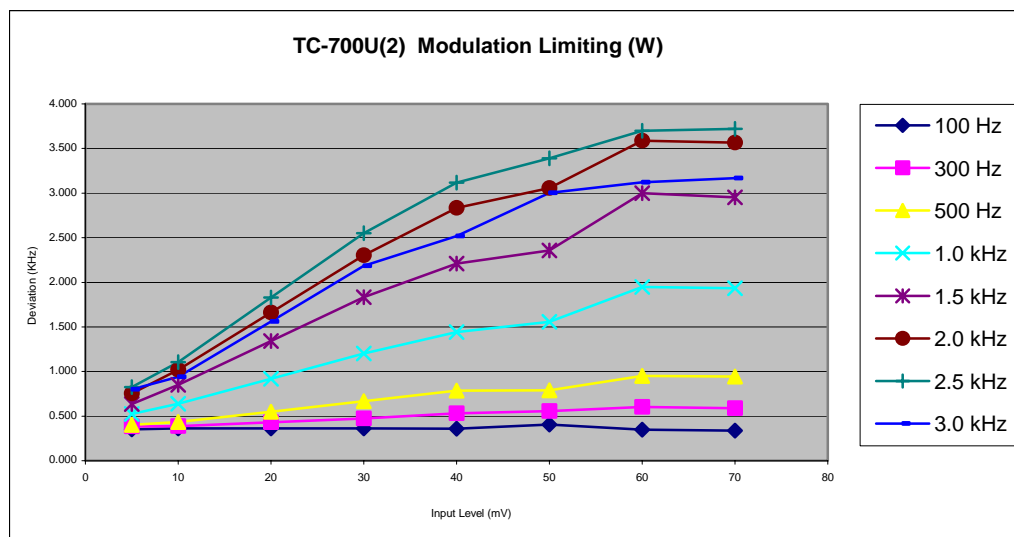
The testing was performed by Hang Tan on 2005-05-19.

Test Results

The plot(s) of modulation characteristic is presented hereinafter as reference.

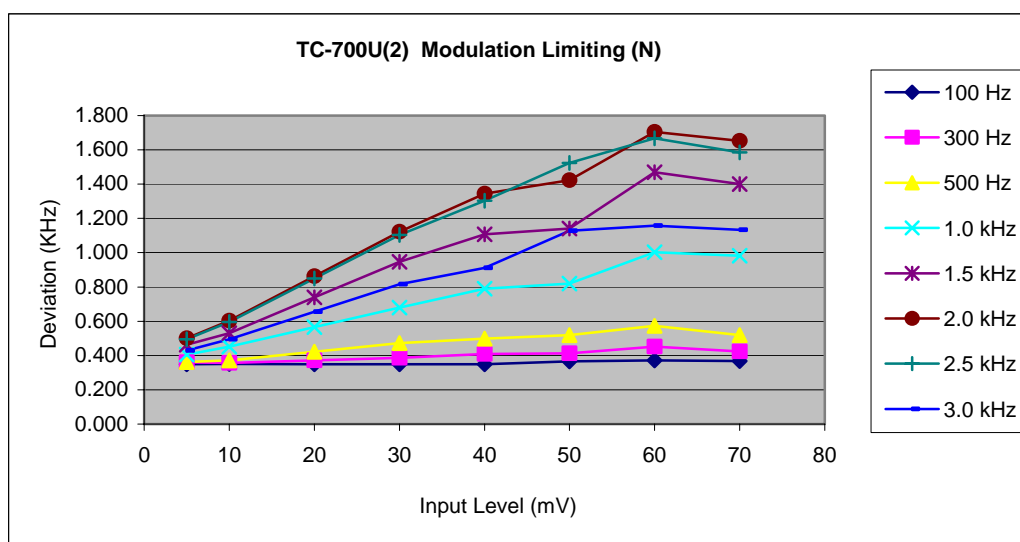
25 kHz channel spacing:

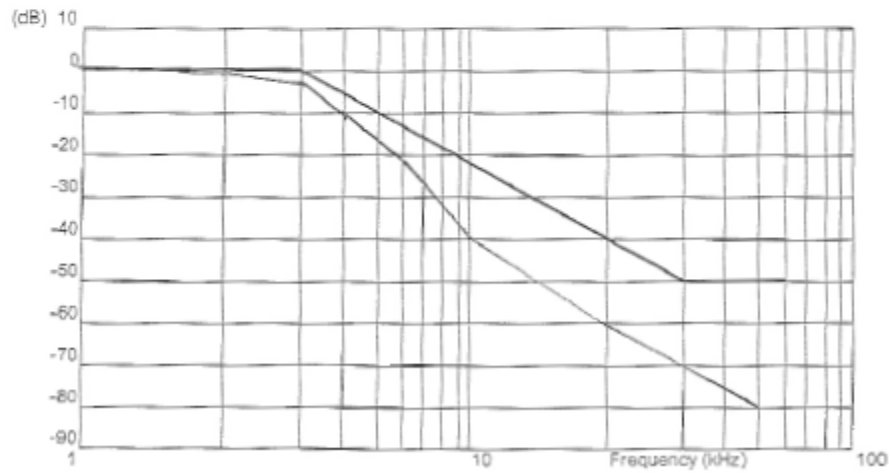
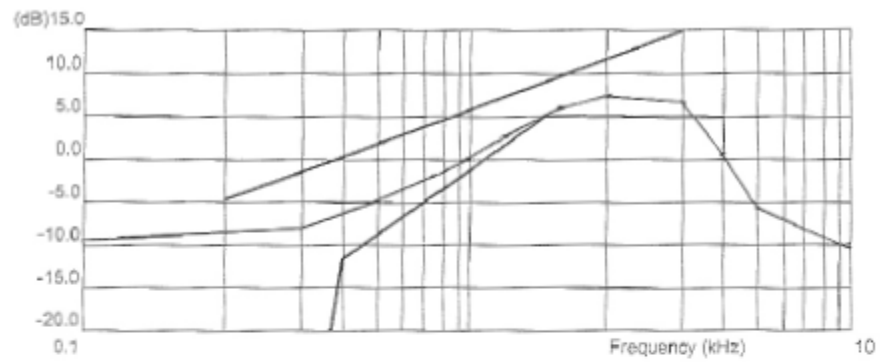
| Input (mV) | 100 Hz | 300 Hz | 500 Hz | 1.0 kHz | 1.5 kHz | 2.0 kHz | 2.5 kHz | 3.0 kHz |
|------------|--------|--------|--------|---------|---------|---------|---------|---------|
| 5 | 0.352 | 0.383 | 0.403 | 0.525 | 0.636 | 0.755 | 0.824 | 0.799 |
| 10 | 0.361 | 0.389 | 0.434 | 0.637 | 0.851 | 1.020 | 1.106 | 0.941 |
| 20 | 0.361 | 0.431 | 0.551 | 0.920 | 1.342 | 1.661 | 1.829 | 1.562 |
| 30 | 0.361 | 0.473 | 0.667 | 1.203 | 1.833 | 2.302 | 2.551 | 2.183 |
| 40 | 0.360 | 0.532 | 0.786 | 1.441 | 2.209 | 2.833 | 3.118 | 2.520 |
| 50 | 0.407 | 0.556 | 0.789 | 1.556 | 2.356 | 3.056 | 3.389 | 3.003 |
| 60 | 0.347 | 0.601 | 0.952 | 1.947 | 2.998 | 3.587 | 3.700 | 3.122 |
| 70 | 0.336 | 0.590 | 0.943 | 1.935 | 2.952 | 3.565 | 3.719 | 3.166 |



12.5 kHz channel spacing:

| Input (mV) | 100 Hz | 300 Hz | 500 Hz | 1.0 kHz | 1.5 kHz | 2.0 kHz | 2.5 kHz | 3.0 kHz |
|------------|--------|--------|--------|---------|---------|---------|---------|---------|
| 5 | 0.350 | 0.360 | 0.363 | 0.405 | 0.463 | 0.500 | 0.494 | 0.430 |
| 10 | 0.351 | 0.356 | 0.371 | 0.452 | 0.531 | 0.603 | 0.596 | 0.495 |
| 20 | 0.350 | 0.371 | 0.422 | 0.566 | 0.739 | 0.863 | 0.850 | 0.656 |
| 30 | 0.349 | 0.386 | 0.472 | 0.680 | 0.946 | 1.123 | 1.103 | 0.816 |
| 40 | 0.350 | 0.409 | 0.499 | 0.789 | 1.107 | 1.345 | 1.304 | 0.912 |
| 50 | 0.366 | 0.412 | 0.519 | 0.819 | 1.140 | 1.423 | 1.523 | 1.127 |
| 60 | 0.372 | 0.452 | 0.573 | 1.003 | 1.469 | 1.705 | 1.668 | 1.157 |
| 70 | 0.368 | 0.423 | 0.520 | 0.982 | 1.400 | 1.652 | 1.586 | 1.133 |





§2.1049, and § 90.209 – OCCUPIED BANDWIDTH

Applicable Standard

§2.1049, §90.209 and §90.210

12.5kHz bandwidth:

For any frequency removed from the center of the authorized bandwidth f_0 to 5.625kHz removed from f_0 , 0dB.

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.626kHz but no more than 12.5kHz, at least 7.27 ($f_d - 2.88$ kHz) dB.

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5kHz at least:

$$50 + 10 \log P = 50 + 10 \log(5.41) = 57.33 \text{ dB}$$

25kHz bandwidth:

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.

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.

On any frequency removed from the center of the assigned channel by more than 250 percent at least:

$$43 + 10 \log P = 43 + 10 \log(5.62) = 50.50 \text{ dB}$$

The resolution bandwidth was 300Hz or greater for measuring up to 250kHz from the edge of the authorized frequency segment, and 30kHz or greater for measuring more than 250kHz 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 300 Hz and the spectrum was recorded in the frequency band ± 50 KHz from the carrier frequency.

Test Equipment

| Manufacturer | Description | Model No. | Serial No. | Calibration Date |
|-----------------|-------------------|-----------|------------|------------------|
| HP | Spectrum Analyzer | 8565EC | 3946A00131 | 2004-08-06 |
| Hewlett Packard | Plotter | HP7470A | N/A | N/A |
| Nanyan | Audio Generator | NY2201 | 00042 | N/A |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

| | |
|--------------------|----------|
| Temperature: | 22° C |
| Relative Humidity: | 66% |
| ATM Pressure: | 1021mbar |

The testing was performed by Hang Tan on 2005-05-19.

Test Results

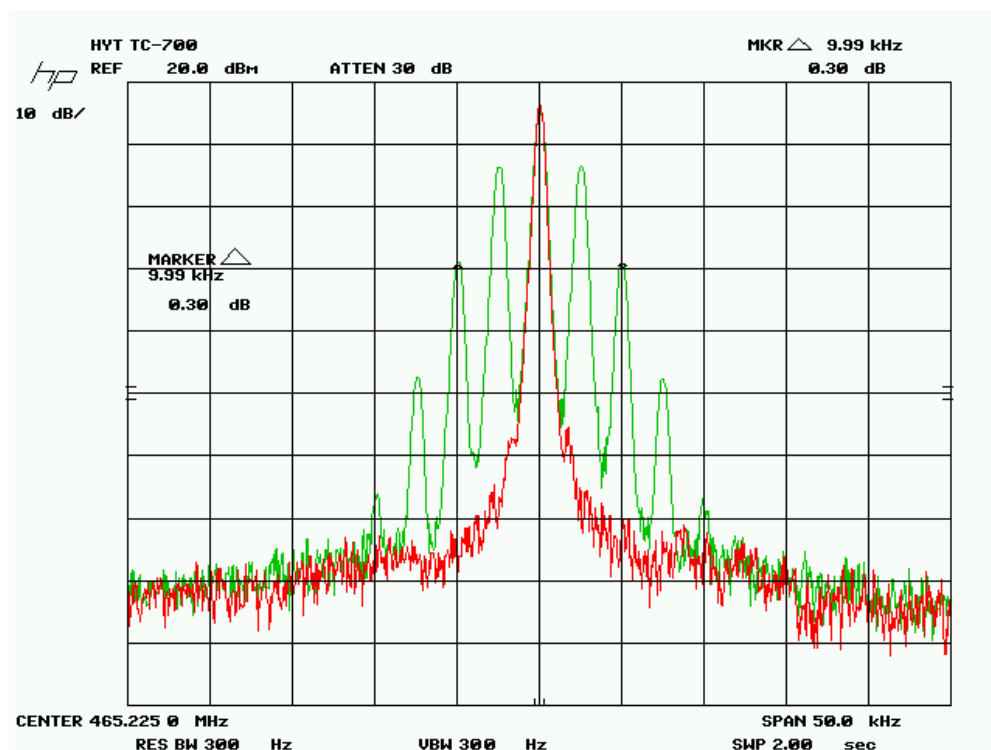
Please refer to the hereinafter plots.

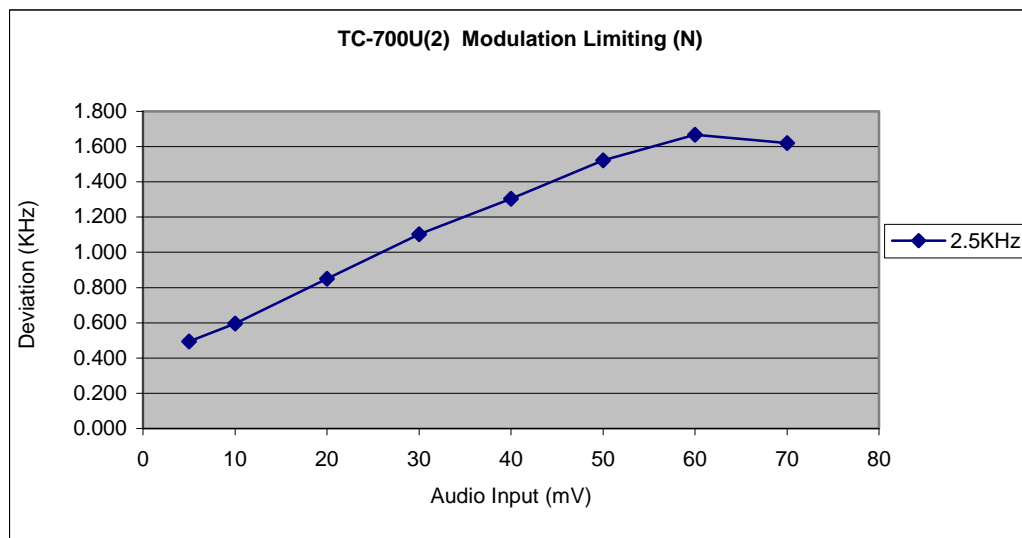
Emission Designator:

For 12.5KHz Channel Spacing: $2M+2D = 2x3+2x2.5 = 11K0F3E$

For 25 KHz Channel Spacing: $2M+2D = 2x3+2x5 = 16K0F3E$

For 12.5 KHz Channel Spacing:

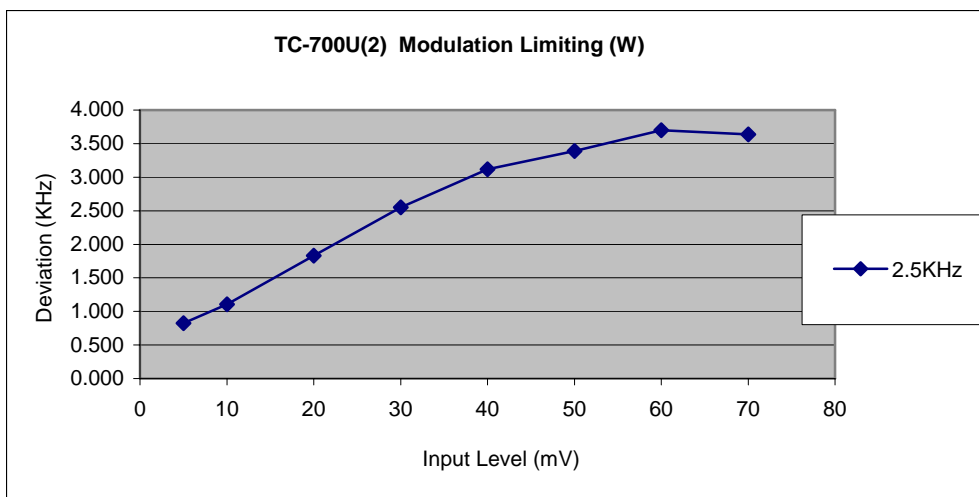
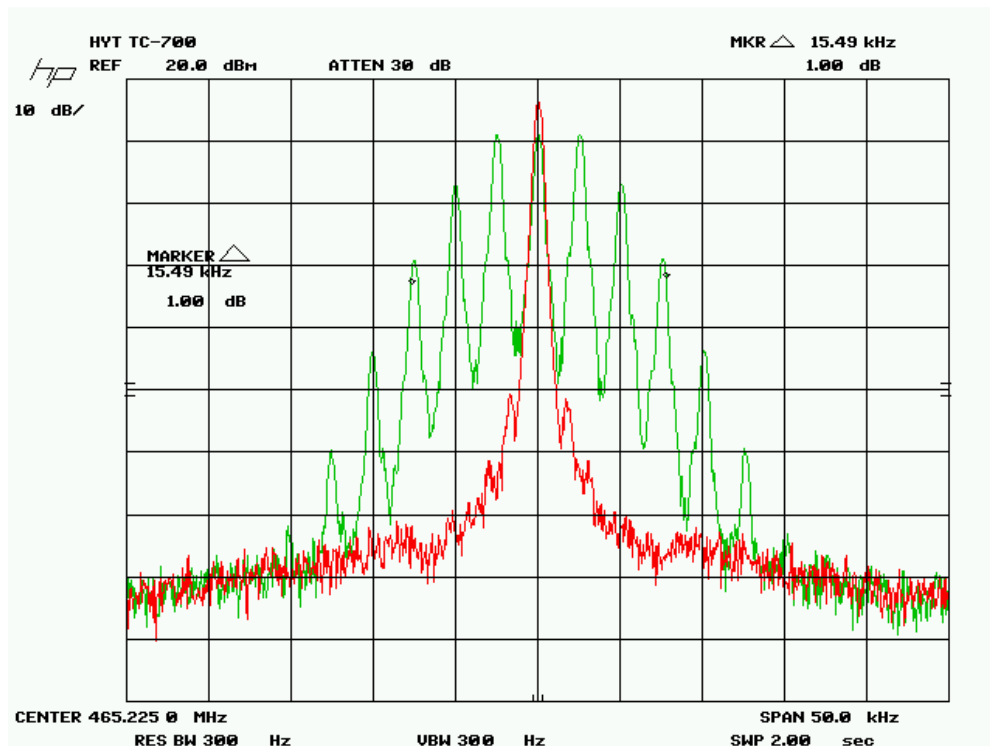




12.5kHz Channel Spacing:

| Input (mV) | 2.5KHz |
|------------|--------|
| 5 | 0.494 |
| 10 | 0.596 |
| 20 | 0.850 |
| 30 | 1.103 |
| 40 | 1.304 |
| 50 | 1.523 |
| 60 | 1.668 |
| 70 | 1.620 |

For 25 KHz Channel Spacing:



25kHz Channel Spacing:

| Input (mV) | 2.5KHz |
|------------|--------|
| 5 | 0.824 |
| 10 | 1.106 |
| 20 | 1.829 |
| 30 | 2.551 |
| 40 | 3.118 |
| 50 | 3.389 |
| 60 | 3.700 |
| 70 | 3.640 |

§2.1051 and §90.210 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

§2.1051 and §90.210 (25kHz bandwidth only)

On any frequency removed from the center of the assigned channel by more than 250 percent at least:

$$43+10\log P=43+10\log(5.62)=50.50\text{dB}$$

§90.210 (12.5kHz bandwidth only)

On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5kHz at least:

$$50+10\log P=50+10\log(5.41)=57.33\text{dB}$$

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Equipment

| Manufacturer | Description | Model No. | Serial No. | Calibration Date |
|--------------|-------------------|-----------|------------|------------------|
| HP | Spectrum Analyzer | 8565EC | 3946A00131 | 2004-08-06 |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

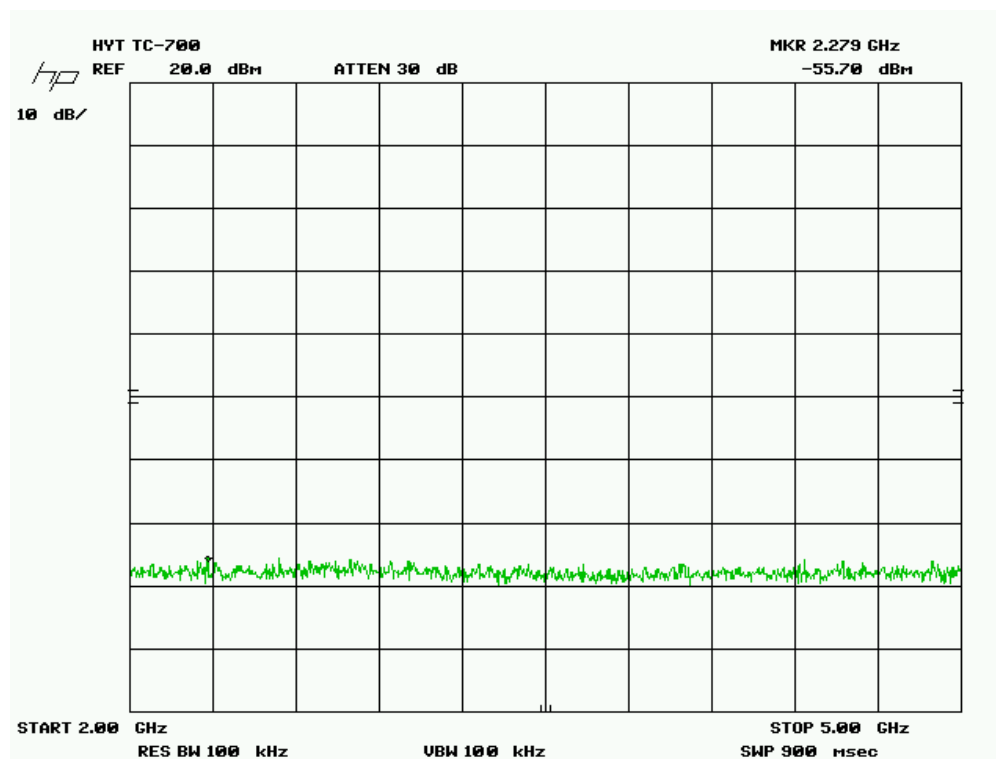
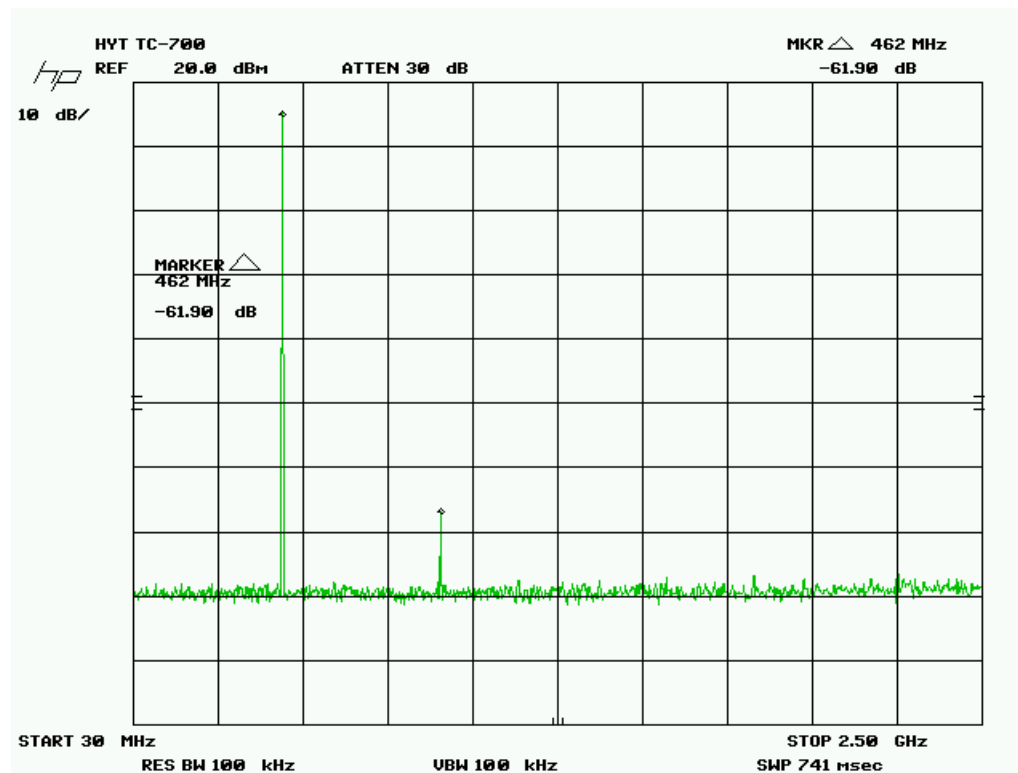
| | |
|--------------------|----------|
| Temperature: | 22° C |
| Relative Humidity: | 66% |
| ATM Pressure: | 1021mbar |

The testing was performed by Hang Tan on 2005-05-19.

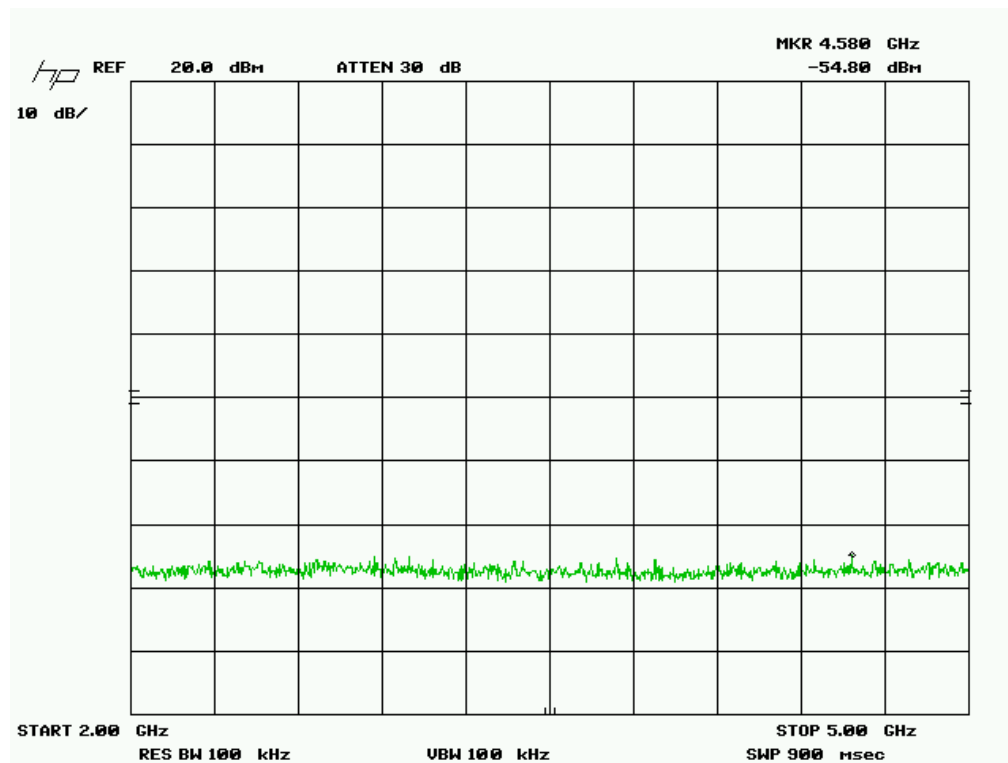
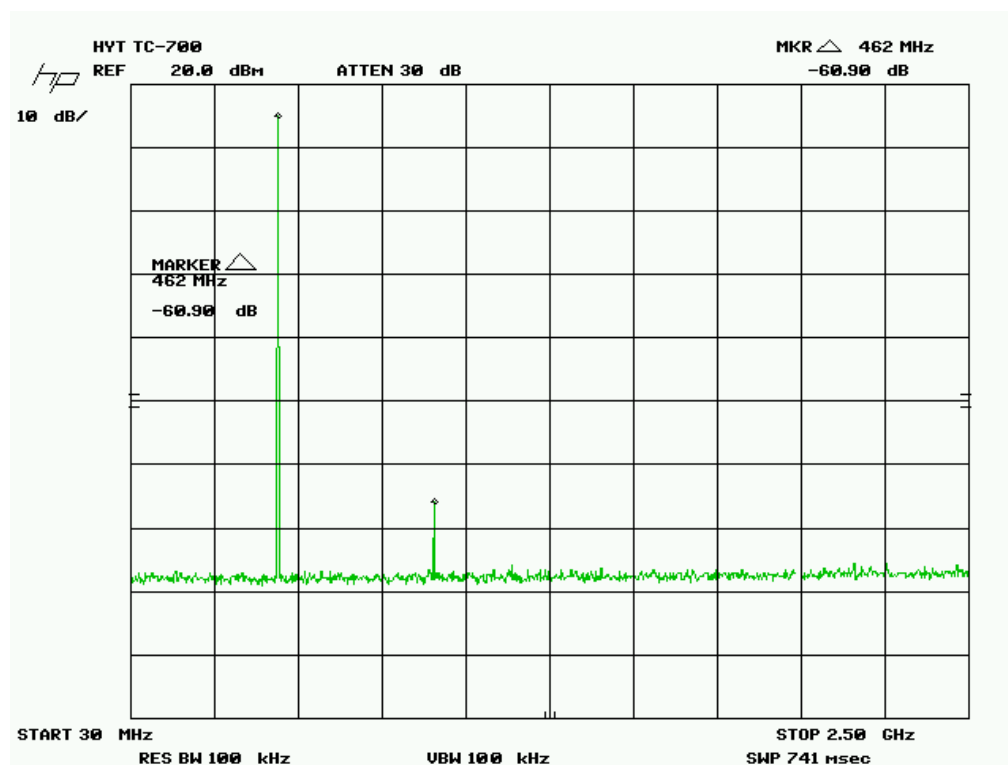
Test Results

Please refer to the hereinafter plots.

For 12.5kHz Channel Spacing:



For 25 kHz Channel Spacing:



§2.1053 and §90.210 - RADIATED SPURIOUS EMISSION

Applicable Standard

§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.

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 = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \log_{10} (\text{power out in Watts})$ for EUT with a 25KHz channel bandwidth.

Spurious attenuation limit in dB = $50 + 10 \log_{10} (\text{power out in Watts})$ for EUT with a 12.5KHz channel bandwidth.

Test Equipment

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|-----------------|------------------|-------------|---------------|------------|
| Sunol Sciences | Sunol Sciences | JB1 | A013105-3 | 2005-02-11 |
| A.H. System | Horn Antenna | SAS-200/571 | 2455-261 | 2004-08-02 |
| HP | Signal Generator | 8648C | 3426A01345 | 2004-05-17 |
| Com-Power | Antenna, Dipole | AD-100 | 2219 | 2004-09-26 |
| Rohde & Schwarz | Test Receiver | ESCI | 100044 | 2004-09-29 |
| HP | Pre Amplifier | 8447D | 2944A10187 | 2004-08-25 |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 18° C |
| Relative Humidity: | 63% |
| ATM Pressure: | 1020 mbar |

The testing was performed by Hang Tan on 2005-05-20.

Test Result

-10.4dB at 930.48MHz, for 25KHz channel bandwidth

-4.1dB at 930.48MHz, for 12.5KHz channel bandwidth

| EUT | | | | | Substitution | | | | Absolute Power | FCC 90 | | |
|--|--------------|--------------|--------------|-----------|---------------|-------------|-----------------|---------------|----------------|-----------|-----------|----------|
| Frequency MHz | Ampl. dBuV/m | Angle Degree | Height Meter | Polar H/V | Half-wavel cm | Reading dBm | Antenna Gain dB | Cable Loss dB | dBm | Limit dBm | Margin dB | Comments |
| Mid Channel, High Power (Wide 25kHz) | | | | | | | | | | | | |
| 465.25 | 132.2 | 0 | 2.2 | H | 16.1 | 34.6 | 1.5 | 0.2 | 35.9 | | | Fund |
| 465.25 | 132.6 | 120 | 1.5 | V | 16.1 | 35.3 | 1.5 | 0.2 | 36.6 | | | Fund |
| 930.48 | 61.3 | 120 | 1.4 | H | 8.1 | -23.8 | 1.1 | 0.7 | -23.4 | -13 | -10.4 | |
| 930.48 | 61.5 | 45 | 1.6 | V | 8.1 | -23.8 | 1.1 | 0.7 | -23.4 | -13 | -10.4 | |
| 459.21 | 60.5 | 210 | 1.0 | V | 16.3 | -25.7 | 1.5 | 0.2 | -24.4 | -13 | -11.4 | |
| 459.21 | 58.3 | 330 | 1.0 | H | 16.3 | -29.9 | 1.5 | 0.2 | -28.6 | -13 | -15.6 | |
| 1395.74 | 48.3 | 330 | 1.2 | V | 5.4 | -36.9 | 7.0 | 1.4 | -31.3 | -13 | -18.3 | |
| 1395.74 | 48.0 | 270 | 2.0 | H | 5.4 | -37.2 | 7.0 | 1.4 | -31.6 | -13 | -18.6 | |
| Mid Channel, High Power (Narrow 12.5kHz) | | | | | | | | | | | | |
| 465.25 | 132.3 | 210 | 1.2 | H | 16.1 | 34.7 | 1.5 | 0.2 | 36.0 | | | Fund |
| 465.25 | 132.7 | 75 | 1.6 | V | 16.1 | 35.4 | 1.5 | 0.2 | 36.7 | | | Fund |
| 930.48 | 60.7 | 110 | 1.2 | H | 8.1 | -24.5 | 1.1 | 0.7 | -24.1 | -20 | -4.1 | |
| 459.21 | 60.3 | 210 | 1.3 | V | 16.3 | -25.9 | 1.5 | 0.2 | -24.6 | -20 | -4.6 | |
| 930.48 | 59.9 | 45 | 1.6 | V | 8.1 | -25.3 | 1.1 | 0.7 | -24.9 | -20 | -4.9 | |
| 459.21 | 57.3 | 330 | 1.0 | H | 16.3 | -30.8 | 1.5 | 0.2 | -29.5 | -20 | -9.5 | |
| 1395.74 | 48.6 | 330 | 1.2 | V | 5.4 | -36.5 | 7.0 | 1.4 | -30.9 | -20 | -10.9 | |
| 1395.74 | 47.9 | 300 | 1.4 | H | 5.4 | -37.3 | 7.0 | 1.4 | -31.7 | -20 | -11.7 | |

Fund: Fundamental

Note:

- 1) No preamplifier used.
- 2) Test in three orthogonal plane.
- 3) Normal condition

Compliance Statement:

According to FCC Part 15, at 3-meter distance the emission from an intentional radiator shall not exceed the field strength level 40 dBuV/m within 30-88 MHz, 43.5 dBuV/m within 88-216 MHz, 46dBuV/m within 216-960 MHz, 54dBuV/m above 960 MHz. The level of any unwanted emissions shall not exceed the level of the fundamental frequency.

The levels of unwanted emission of this device were below the above limits. This device was compliant with the FCC Part 15.

§2.1055 (d) and §90.213- FREQUENCY STABILITY

Applicable Standard

§2.1055 (d)

§90.213

For output power > 2 watts, the limit is 5ppm for 421-512 MHz.

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 counter.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.

Test Equipment

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|--------------|--|--------|---------------|------------|
| Tenney | Temperature Chamber -50 ⁰ to +100 ⁰ C | Versa | 12.222-193 | 2004-05-23 |
| HP | Spectrum Analyzer | 8565EC | 3946A00131 | 2004-08-06 |
| HP | DC Power Supply | 6236B | 2003A05705 | N/A |
| HP | Microwave Frequency Counter | 5342A | 2232A06383 | 2004/09/07 |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 18° C |
| Relative Humidity: | 63% |
| ATM Pressure: | 1020 mbar |

The testing was performed by Hang Tan on 2005-05-20.

Test Results

| | Temperature C | Measured Frequency MHz | Frequency Error PPM | Limit PPM |
|-----------------------------|------------------|---------------------------|------------------------|--------------|
| Normal Voltage (7.4V) | -30 | 489.874805 | -0.398061 | 5 |
| | -20 | 489.874804 | -0.400102 | 5 |
| | -10 | 489.874821 | -0.365399 | 5 |
| | 0 | 489.874913 | -0.177596 | 5 |
| | 10 | 489.875142 | 0.289870 | 5 |
| | 20 | 489.875216 | 0.440929 | 5 |
| | 30 | 489.875177 | 0.361317 | 5 |
| | 40 | 489.875351 | 0.716509 | 5 |
| | 50 | 489.875517 | 1.055371 | 5 |
| | 60 | 489.875571 | 1.165603 | 5 |
| Low Voltage (6.0V) | -30 | 489.874946 | -0.110232 | 5 |
| | -20 | 489.874970 | -0.061240 | 5 |
| | -10 | 489.874925 | -0.153100 | 5 |
| | 0 | 489.874995 | -0.010207 | 5 |
| | 10 | 489.875230 | 0.469508 | 5 |
| | 20 | 489.875198 | 0.404185 | 5 |
| | 30 | 489.875224 | 0.457260 | 5 |
| | 40 | 489.875441 | 0.900230 | 5 |
| | 50 | 489.875532 | 1.085991 | 5 |
| | 60 | 489.875598 | 1.220720 | 5 |

Ref freq: 489.87500 MHz

Normal voltage: 7.4V

§90.214 - TRANSIENT FREQUENCY BEHAVIOR

Standard Applicable

§90.214

Test Method

TIA/EIA-603 2.2.19

Test Equipment

| Manufacturer | Description | Model | Serial Number | Cal. Date |
|-----------------|---------------------|---------|---------------|------------|
| Tektronix | Oscilloscope | TDS7104 | B020557 | 2004-10-09 |
| HP | Modulation Analyzer | 8901A | 2026A00847 | 2004-08-09 |
| Rohde & Schwarz | Generator, Signal | SMIQ03 | DE23746 | 2004-07-03 |

* **Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Environmental Conditions

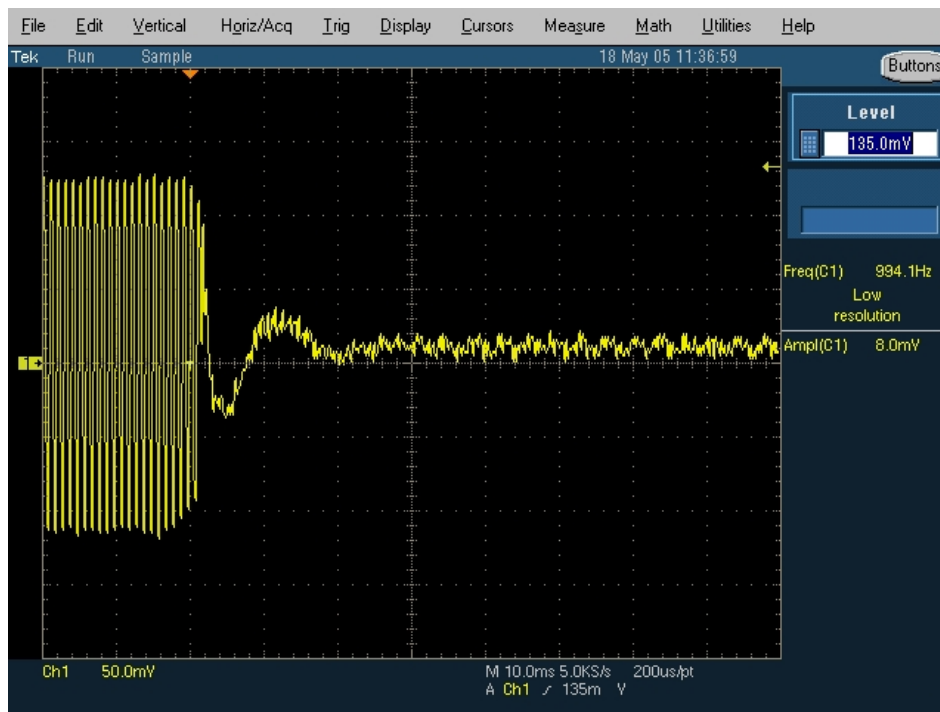
| | |
|--------------------|-----------|
| Temperature: | 18° C |
| Relative Humidity: | 63% |
| ATM Pressure: | 1020 mbar |

The testing was performed by Hang Tan on 2005-05-20.

Test Result

Please refer to the plot hereinafter.

Turn On:



Turn Off:

