LABCODE: 500069-0

FCC PART 90
TEST REPORT

For

FUJIAN NAN'AN BAOFENG ELECTRONICS CO.,LTD.

CHANGFU INDUSTRIAL ZONE, XIAMEI, NAN'AN, QUANZHOU, FUJIAN, CHINA

FCC ID: ZP5BF-82

Report Type:	**Product Type:**
Original Report	two way radio

Test Engineer:	Leon Chen
Report Number:	R2XM130510001-00
Report Date:	2013-07-05
Reviewed By:	Ivan Cao RF Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

FUJIAN NAN'AN BAOFENG ELECTRONICS CO.,LTD.'s product, model number: UV-82 *(FCC ID:ZP5BF-82)* the "EUT" in this report is a *two way radio*, which was measured approximately: 11.0cm(H) x 5.8 cm (W) x 3.2 cm(D), rated input voltage: 7.4 V_{DC} from battery or 10V_{DC} from adapter.

Adapter Information:
Model: A-88
Input: AC 100-240V, 50/60Hz
Output: DC 10V, 500mA

** All measurement and test data in this report was gathered from production sample serial number: 130510001 (Assigned by BACL, Dongguan). The EUT was received on 2013-05-13.*

Objective

This test report is prepared on behalf of *FUJIAN NAN'AN BAOFENG ELECTRONICS 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 63.4-2003.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan). 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. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) 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 February 02, 2012. 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.: 273710. 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. (Dongguan) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 500069-0).

The current scope of accreditations can be found at http://ts.nist.gov/standards/scopes/5000690.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode.

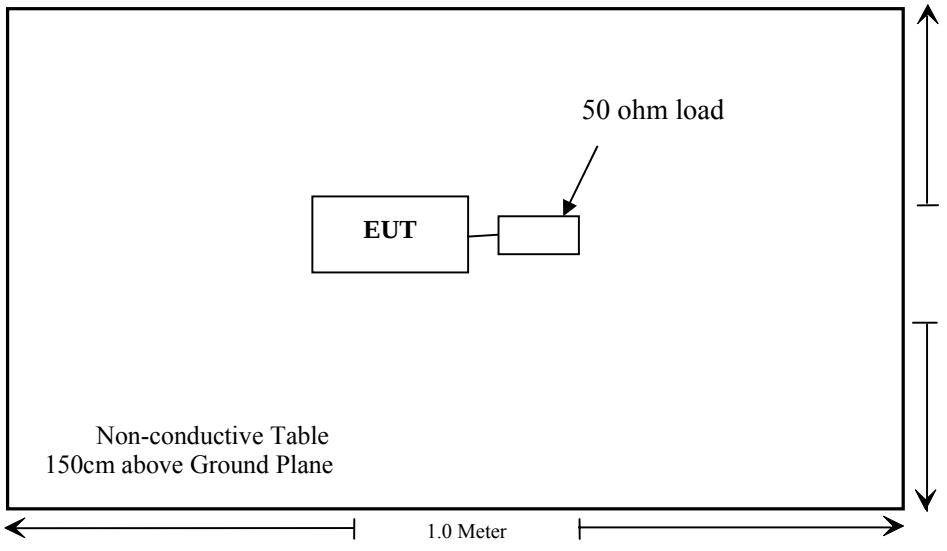
Specfication:

Operating Frequency Band	VHF: 136 – 174 MHz UHF: 400 – 520 MHz
Modulation Mode	FM
Channnel separation	12.5 kHz
Conducted Output Power	VHF: 37 dBm/30 dBm (high/low) UHF: 36 dBm/30 dBm (high/low)

Equipment Modifications

No modifications were made to the unit tested.

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
FCC §1.1310 & §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

.

FCC §1.1310 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: R2XM130510001-20 & R1309097-FCC-SAR.

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.

Spectrum Analyzer setting:

RBW	***Video B/W***
100 kHz	*300 kHz*

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15

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

Test Data

Environmental Conditions

Temperature:	28.2 °C
Relative Humidity:	69 %
ATM Pressure:	100.1 kPa

The testing was performed by Leon Chen on 2013-07-02.

Test Mode: Transmitting

Test Result: Compliance.

Please refer to following table.

VHF:

Frequency	High Power Level	Low Power Level
MHz	dBm	dBm
136.025(Not for FCC Review)	36.96	29.86
145.5(Not for FCC Review)	37.48	29.76
155.025	36.95	30.50
164.5	37.12	30.49
173.975(Not for FCC Review)	37.09	30.49

UHF:

Frequency	High Power Level	Low Power Level
MHz	dBm	dBm
400.025(Not for FCC Review)	35.79	30.54
420.025	35.95	30.12
440.025	36.24	30.26
460.025	36.31	30.01
480.025	36.14	29.75
500.025	35.86	29.87
519.975(Not for FCC Review)	35.78	30.12

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.
(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 Agilent	RF Communication Test Set	8920A	3325U00859	2012-10-19	2013-10-19

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

Test Data

Environmental Conditions

Temperature:	28.2 °C
Relative Humidity:	69%
ATM Pressure:	100.1 kPa

The testing was performed by Leon Chen on 2013-07-02.

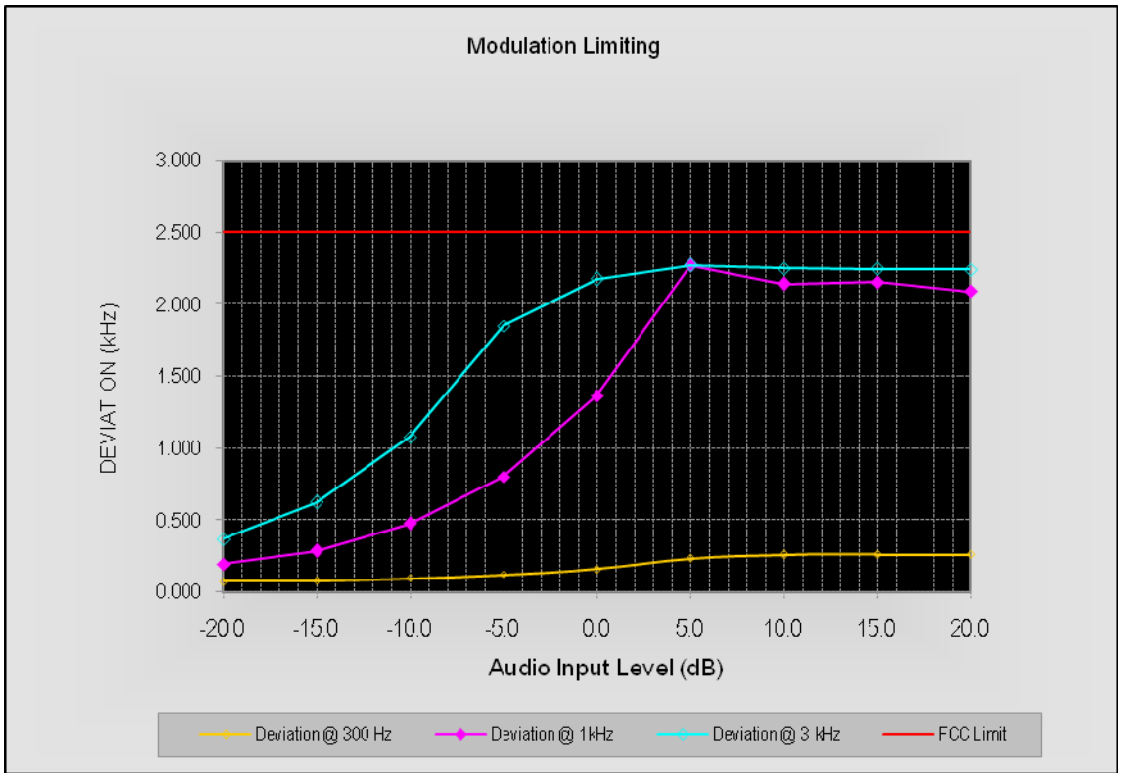
Test Mode: Transmitting

VHF:

MODULATION LIMITING (high power level)

Carrier Frequency: 155.025MHz, Channel Separation = 12.5 kHz

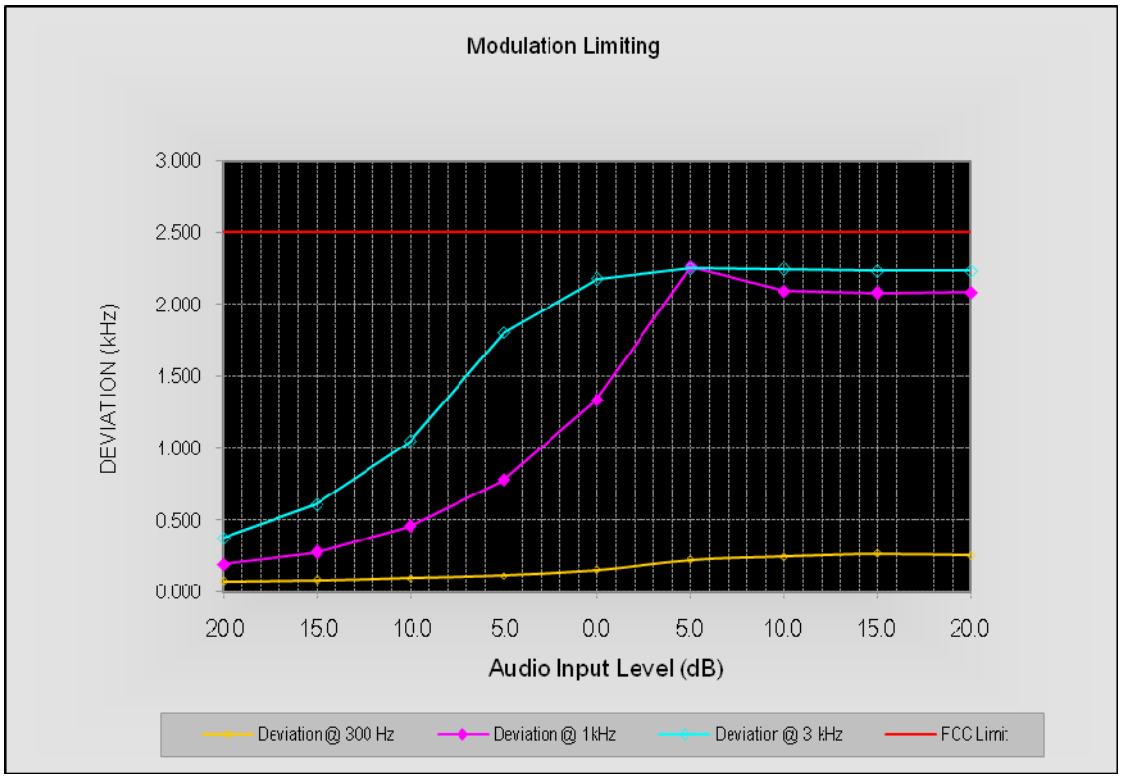
Audio Input Level [dBm]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	0.261	2.091	2.241	2.5
15.0	0.261	2.155	2.247	2.5
10.0	0.258	2.141	2.249	2.5
5.0	0.235	2.272	2.271	2.5
0.0	0.158	1.364	2.174	2.5
-5.0	0.121	0.802	1.851	2.5
-10.0	0.095	0.477	1.079	2.5
-15.0	0.078	0.284	0.625	2.5
-20.0	0.073	0.196	0.368	2.5



MODULATION LIMITING (low power level)

Carrier Frequency: 155.025 MHz, Channel Separation = 12.5 kHz

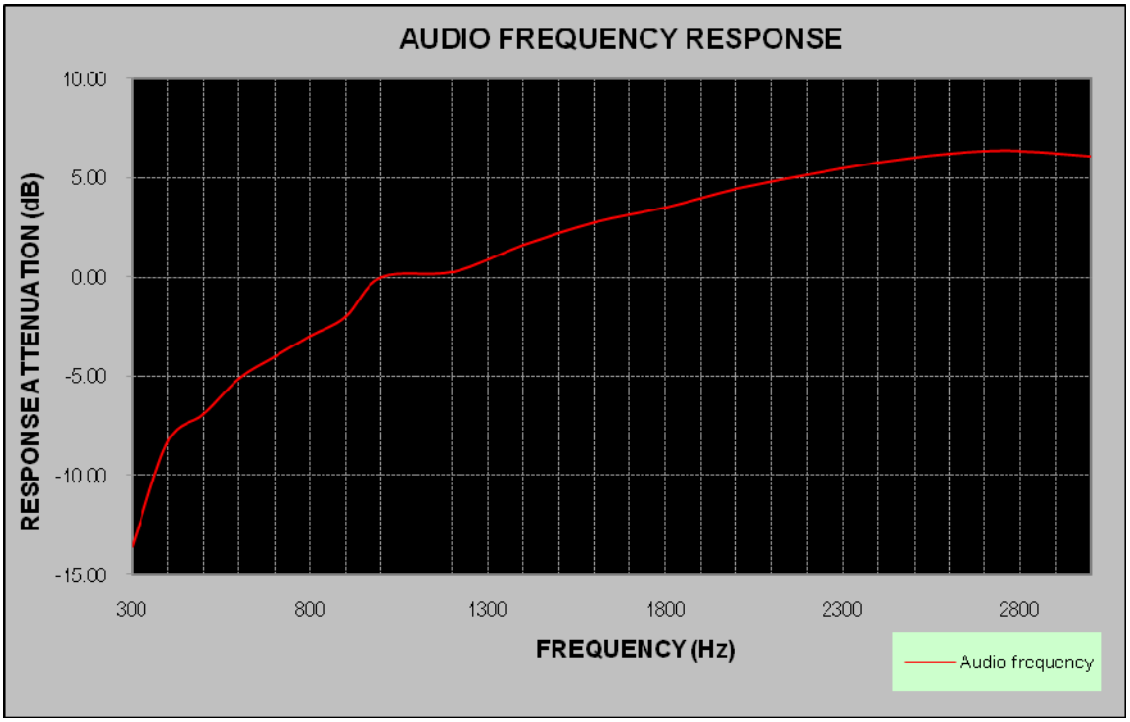
Audio Input Level [dBm]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	0.253	2.085	2.231	2.5
15.0	0.269	2.081	2.231	2.5
10.0	0.246	2.095	2.244	2.5
5.0	0.226	2.262	2.252	2.5
0.0	0.156	1.341	2.174	2.5
-5.0	0.117	0.778	1.805	2.5
-10.0	0.097	0.459	1.047	2.5
-15.0	0.085	0.276	0.612	2.5
-20.0	0.077	0.193	0.377	2.5



Audio Frequency Response (high power level)

Carrier Frequency: 155.025 MHz, Channel Separation = 12.5 kHz

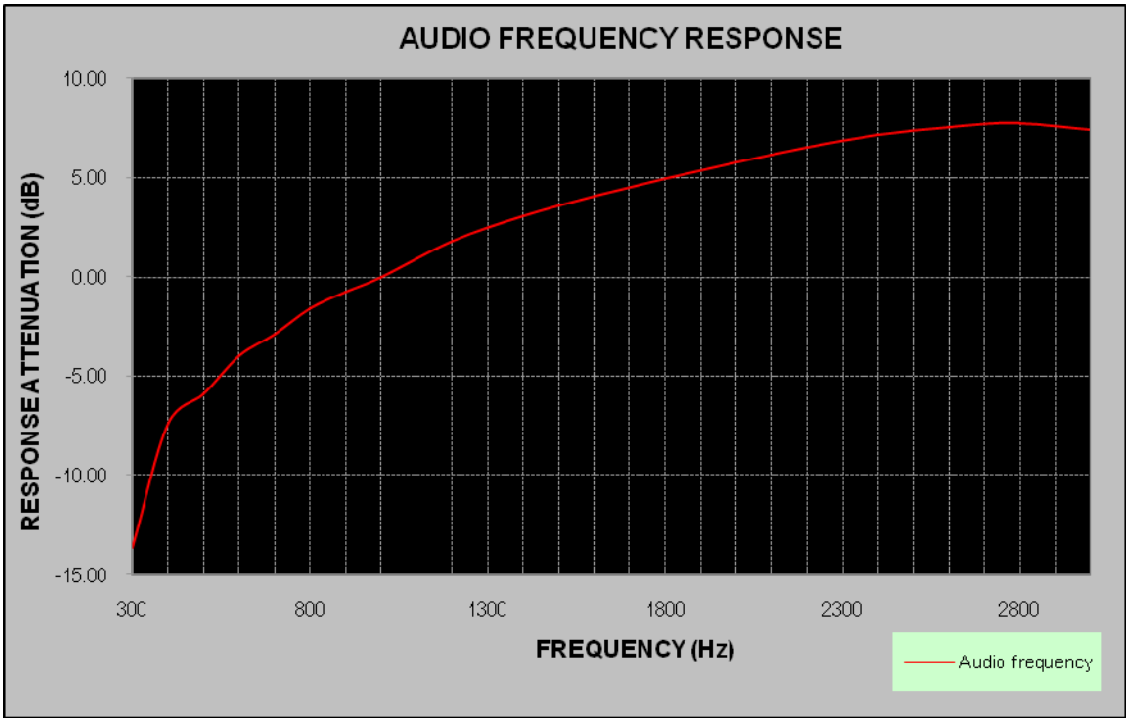
Audio Frequency (Hz)	Response Attenuation (dB)
300	-13.56
400	-8.22
500	-6.94
600	-5.10
700	-4.01
800	-2.97
900	-2.03
1000	0.00
1200	0.27
1400	1.61
1600	2.76
1800	3.53
2000	4.43
2200	5.17
2400	5.76
2600	6.24
2800	6.37
3000	6.09



Audio Frequency Response (low power level)

Carrier Frequency: 155.025 MHz, Channel Separation = 12.5 kHz

Audio Frequency (Hz)	Response Attenuation (dB)
300	-13.64
400	-7.37
500	-5.88
600	-3.99
700	-2.90
800	-1.60
900	-0.76
1000	0.00
1200	1.80
1400	3.07
1600	4.06
1800	4.98
2000	5.81
2200	6.55
2400	7.17
2600	7.58
2800	7.75
3000	7.40

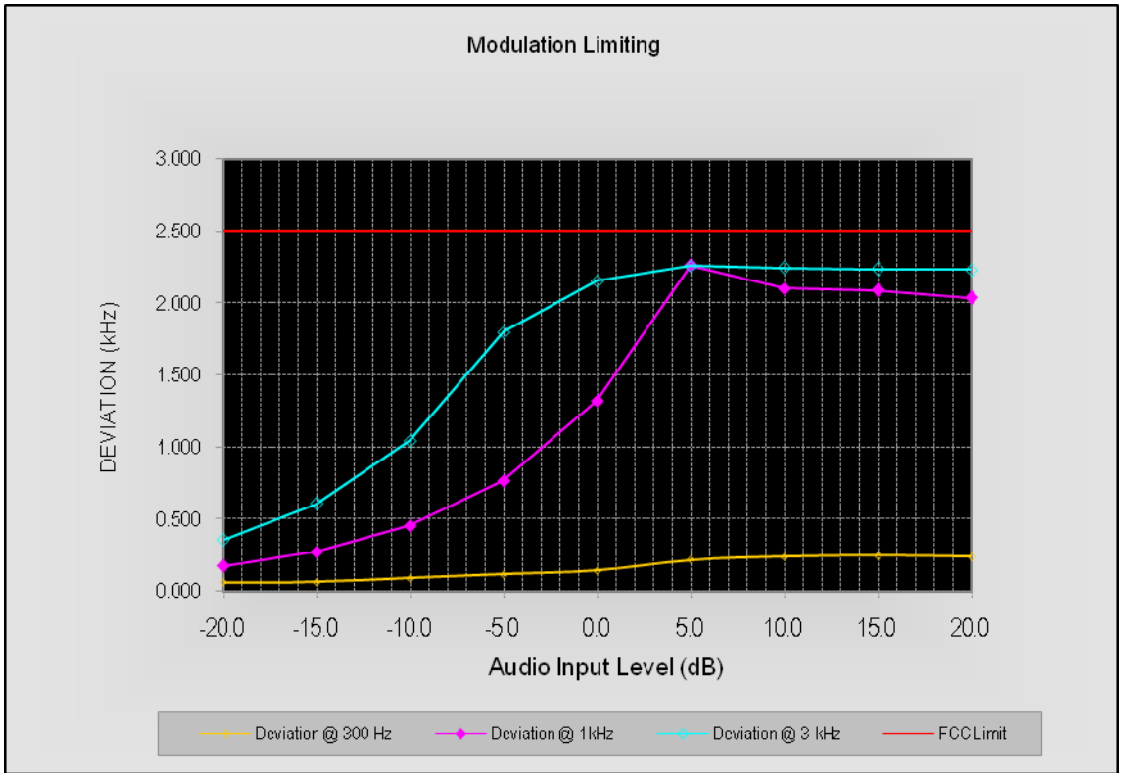


UHF:

MODULATION LIMITING (high power level)

Carrier Frequency: 460.025MHz, Channel Separation = 12.5 kHz

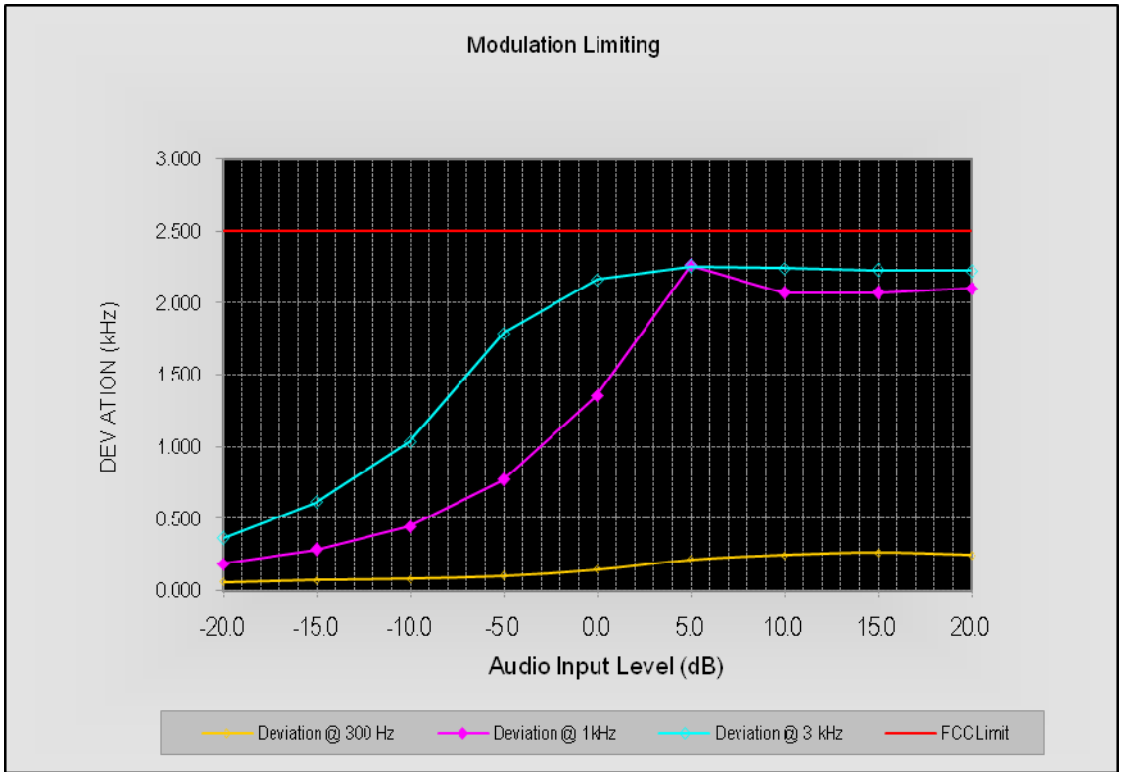
Audio Input Level [dBm]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	0.238	2.037	2.233	2.5
15.0	0.245	2.088	2.235	2.5
10.0	0.237	2.104	2.245	2.5
5.0	0.217	2.261	2.257	2.5
0.0	0.143	1.321	2.154	2.5
-5.0	0.118	0.765	1.801	2.5
-10.0	0.089	0.453	1.044	2.5
-15.0	0.066	0.272	0.605	2.5
-20.0	0.063	0.174	0.355	2.5



MODULATION LIMITING (low power level)

Carrier Frequency: 460.025 MHz, Channel Separation = 12.5 kHz

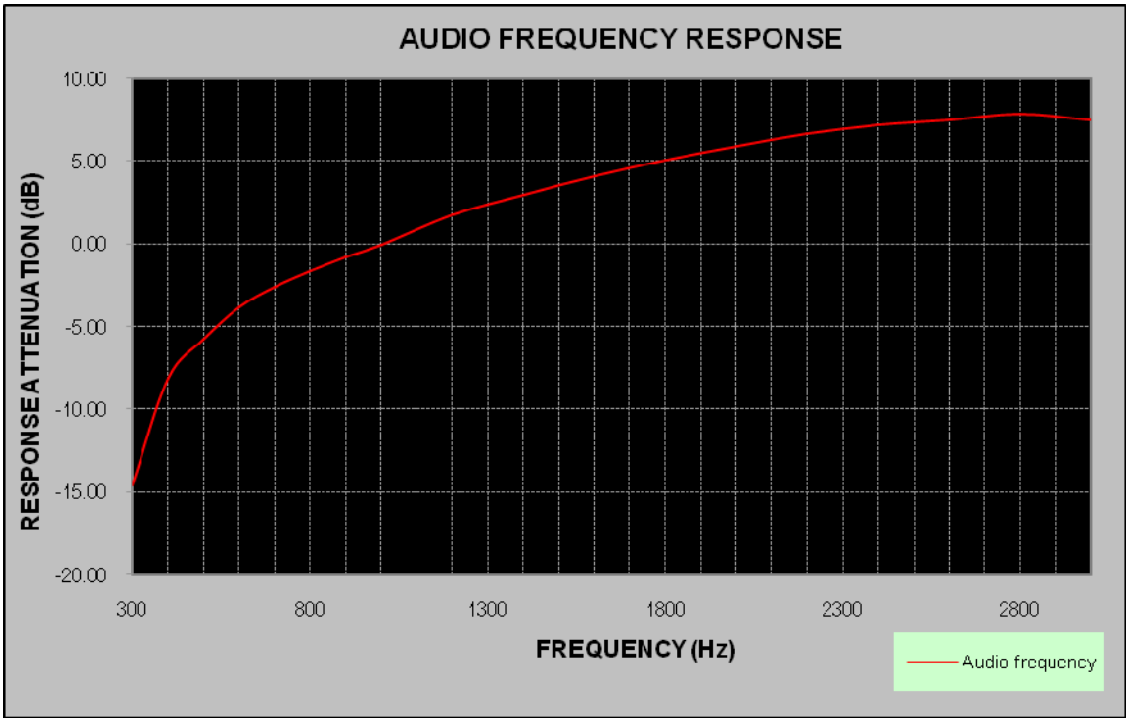
Audio Input Level [dBm]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	0.245	2.104	2.224	2.5
15.0	0.265	2.071	2.229	2.5
10.0	0.245	2.073	2.243	2.5
5.0	0.216	2.265	2.253	2.5
0.0	0.148	1.357	2.162	2.5
-5.0	0.103	0.772	1.791	2.5
-10.0	0.081	0.445	1.035	2.5
-15.0	0.074	0.284	0.617	2.5
-20.0	0.062	0.185	0.362	2.5



Audio Frequency Response (high power level)

Carrier Frequency: 460.025 MHz, Channel Separation = 12.5 kHz

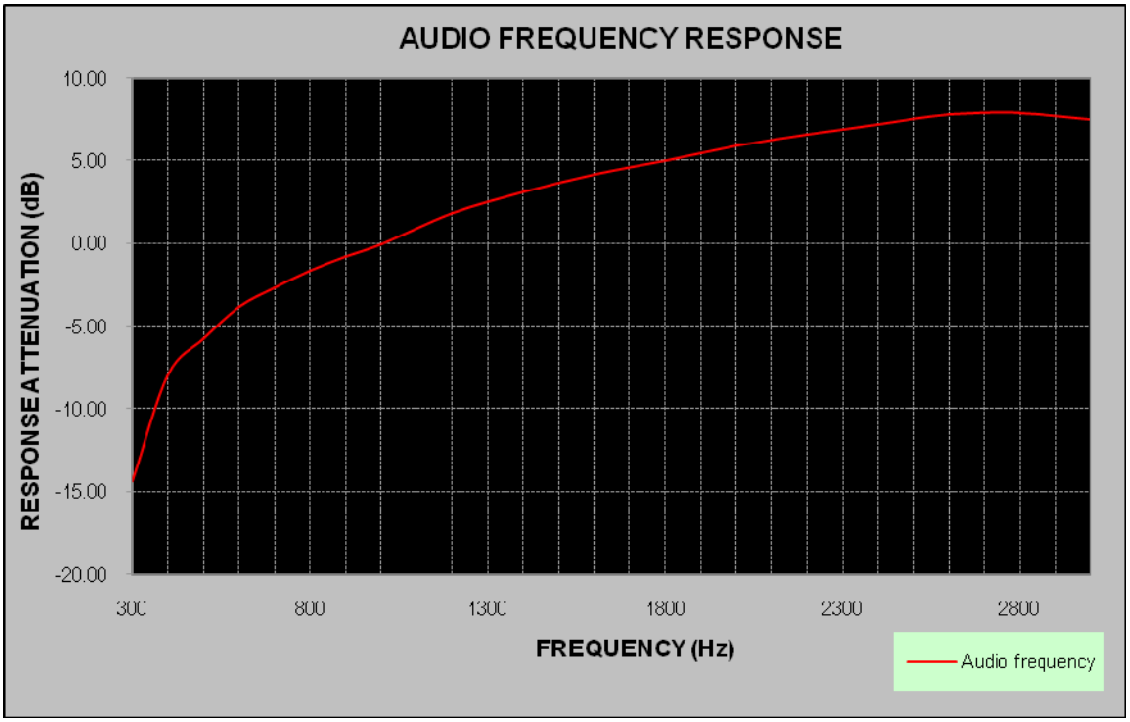
Audio Frequency (Hz)	Response Attenuation (dB)
300	-14.61
400	-8.13
500	-5.78
600	-3.80
700	-2.57
800	-1.64
900	-0.82
1000	0.00
1200	1.77
1400	3.00
1600	4.13
1800	5.06
2000	5.94
2200	6.64
2400	7.20
2600	7.51
2800	7.86
3000	7.52



Audio Frequency Response (low power level)

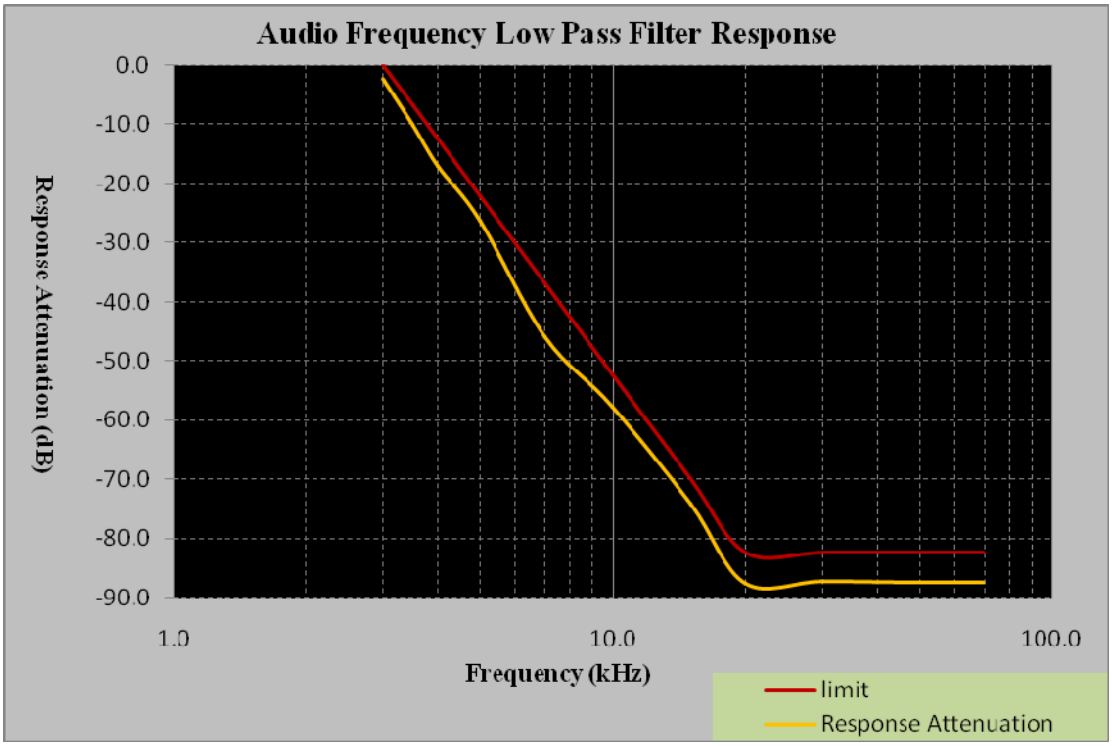
Carrier Frequency: 460.025 MHz, Channel Separation = 12.5 kHz

Audio Frequency (Hz)	Response Attenuation (dB)
300	-14.33
400	-7.92
500	-5.75
600	-3.82
700	-2.66
800	-1.60
900	-0.78
1000	0.00
1200	1.83
1400	3.09
1600	4.19
1800	5.03
2000	5.90
2200	6.58
2400	7.22
2600	7.79
2800	7.92
3000	7.52



Audio Frequency Low Pass Filter Response

Audio Frequency	Response Attenuation	Limit
kHz	dB	dB
3.0	-2.3	0.0
3.5	-10.1	-6.7
4.0	-17.0	-12.5
5.0	-26.3	-22.2
7.0	-45.8	-36.8
10.0	-57.7	-52.3
15.0	-74.2	-69.9
20.0	-87.6	-82.5
30.0	-87.2	-82.5
50.0	-87.4	-82.5
70.0	-87.4	-82.5



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

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

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15
Rohde&Schwarz	Spectrum analyzer	FSEM	DE31388	2013-5-7	2014-5-6

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

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 ±25 kHz from the carrier frequency.

Test Data

Environmental Conditions

Temperature:	28.2 ~ 28.3°C
Relative Humidity:	62 ~ 69 %
ATM Pressure:	100.1 ~ 100.3 kPa

The testing was performed by Leon Chen from 2013-07-02 to 2013-07-03.

VHF:

Frequency (MHz)	99% Occupied Bandwidth(kHz)	26 dB Bandwidth(kHz)	Emission power
155.025	10.00	10.70	High power level
155.025	10.00	10.70	Low power level

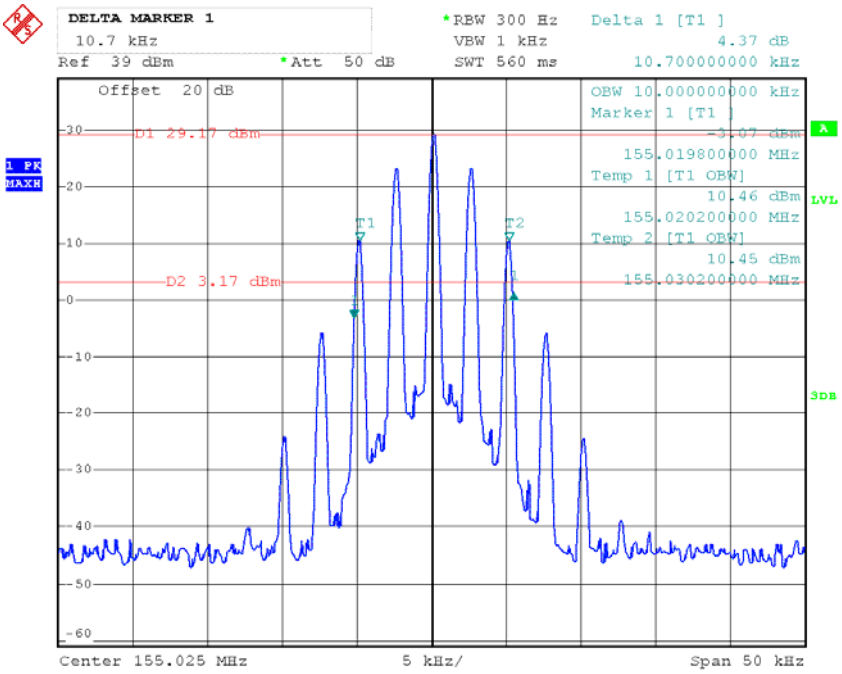
UHF:

Frequency (MHz)	99% Occupied Bandwidth(kHz)	26 dB Bandwidth(kHz)	Emission power
460.025	9.82	10.60	High power level
460.025	9.82	10.61	Low power level

Please refer to the emission mask hereinafter plots.

VHF:
Low power level:

Occupied Bandwidth



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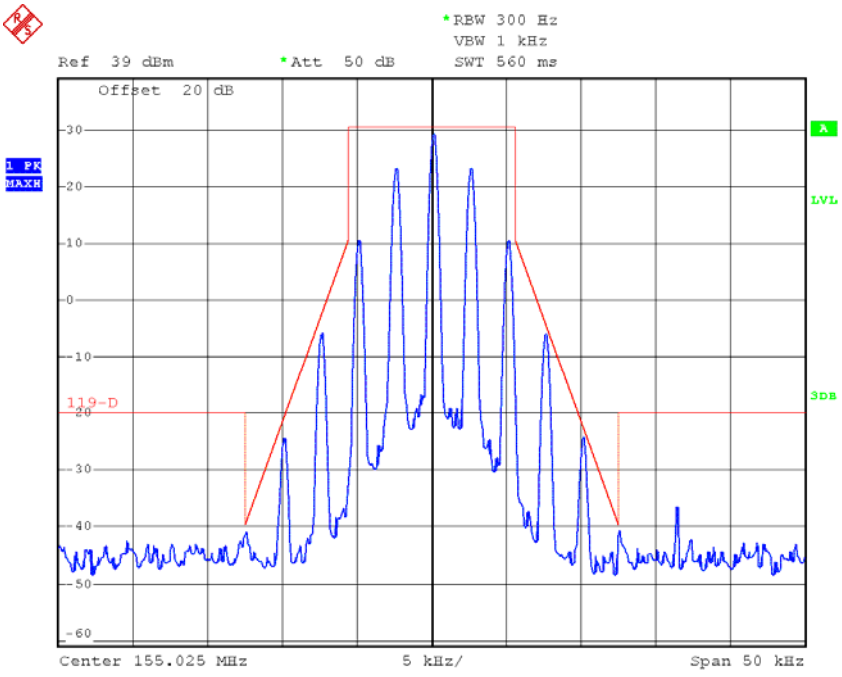
Emission Mask- Channel – Type D



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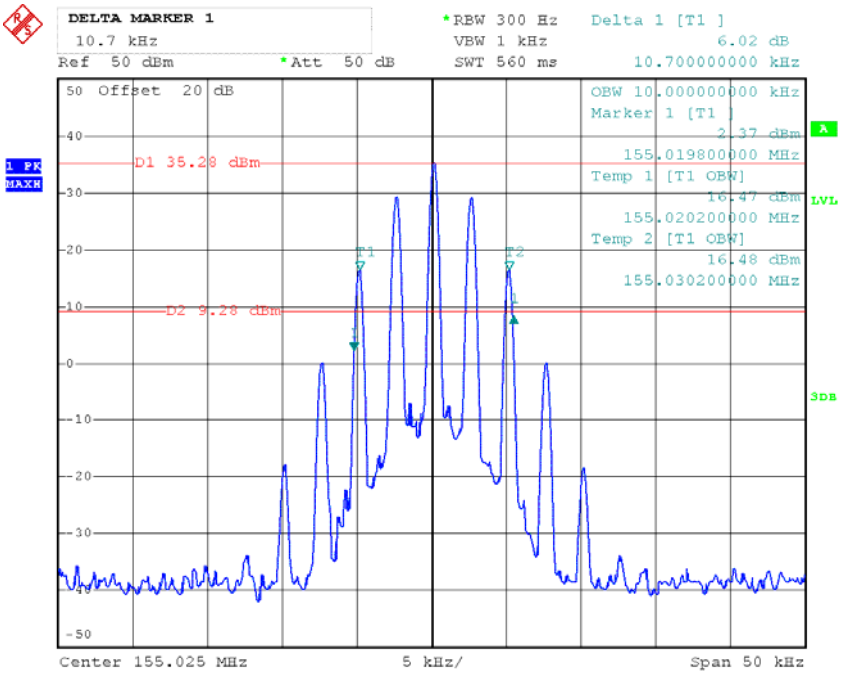
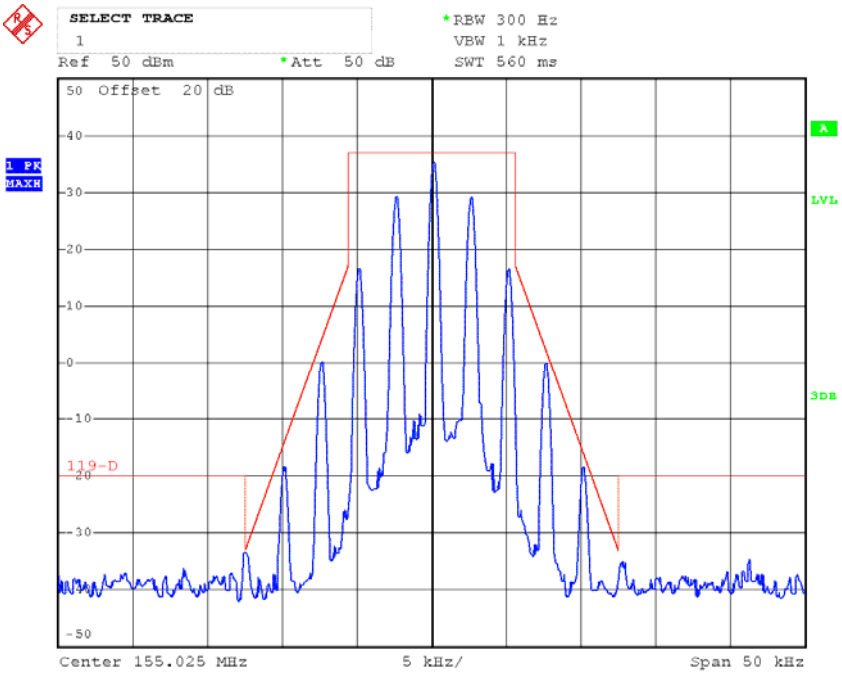
High power level:

Occupied Bandwidth

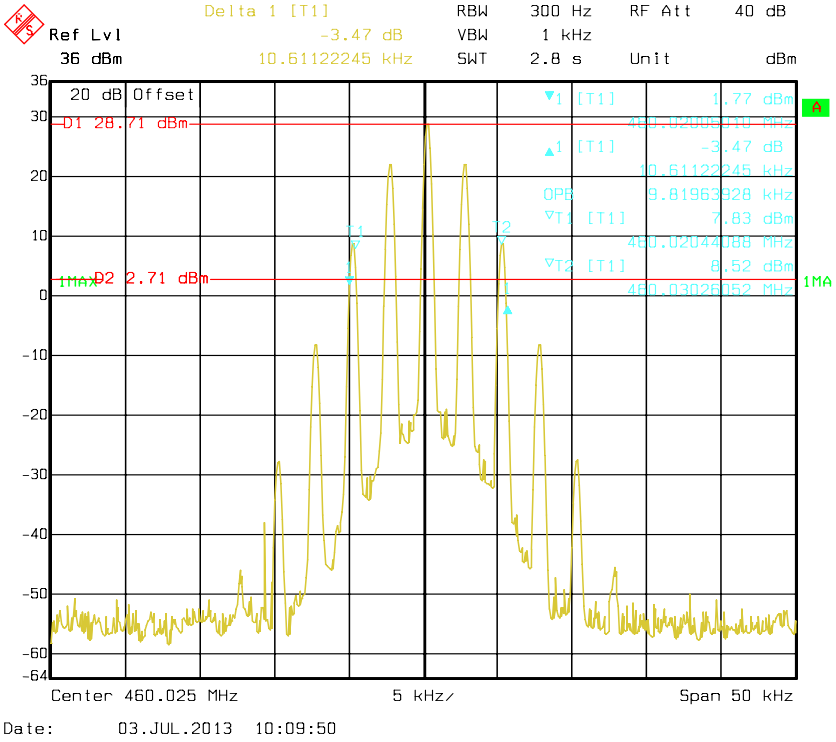


Emission Mask- Channel – Type D

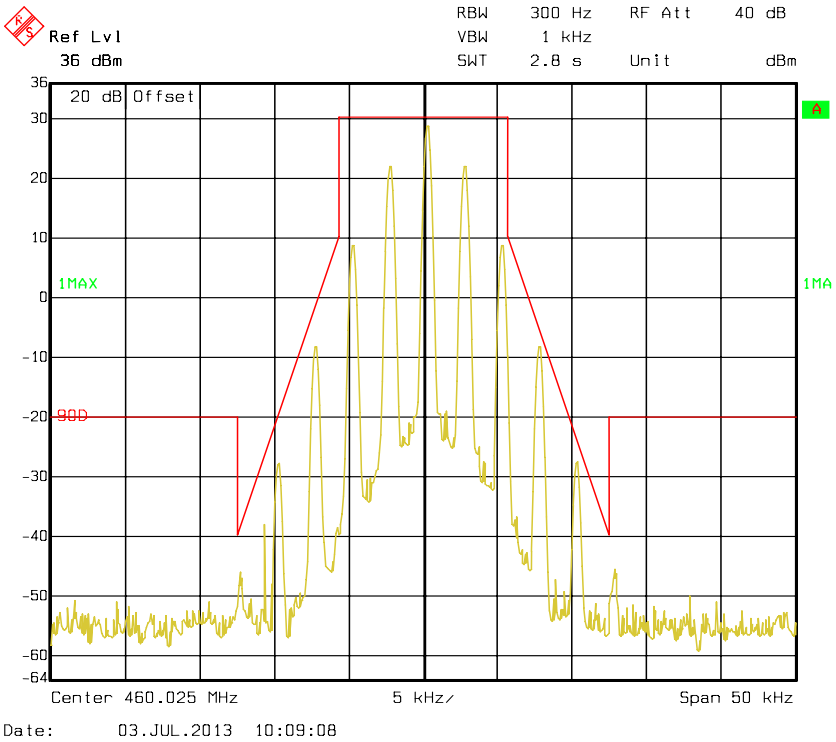


UHF:
Low power level:

Occupied Bandwidth

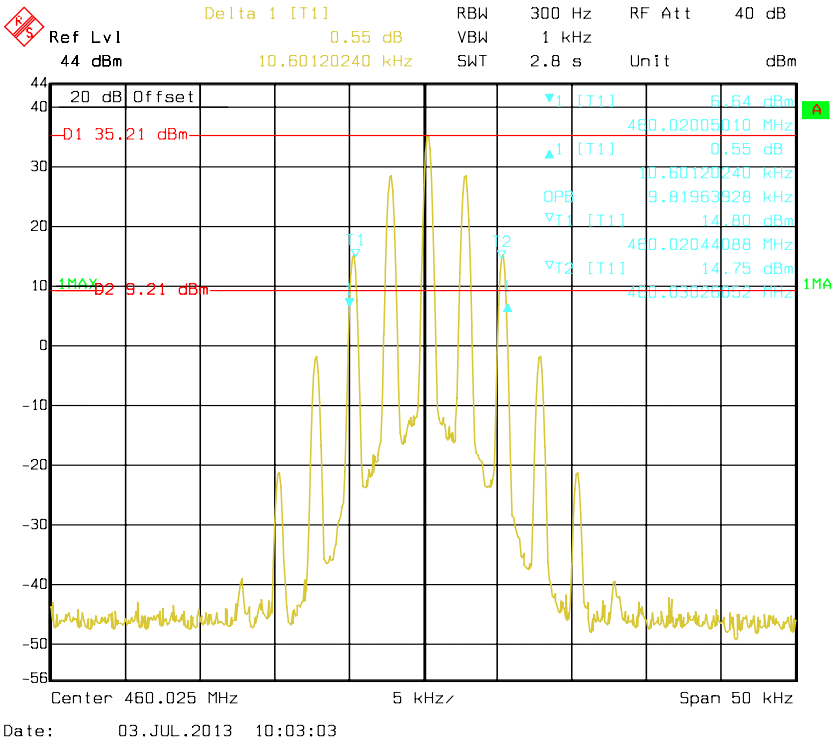


Emission Mask- Channel – Type D

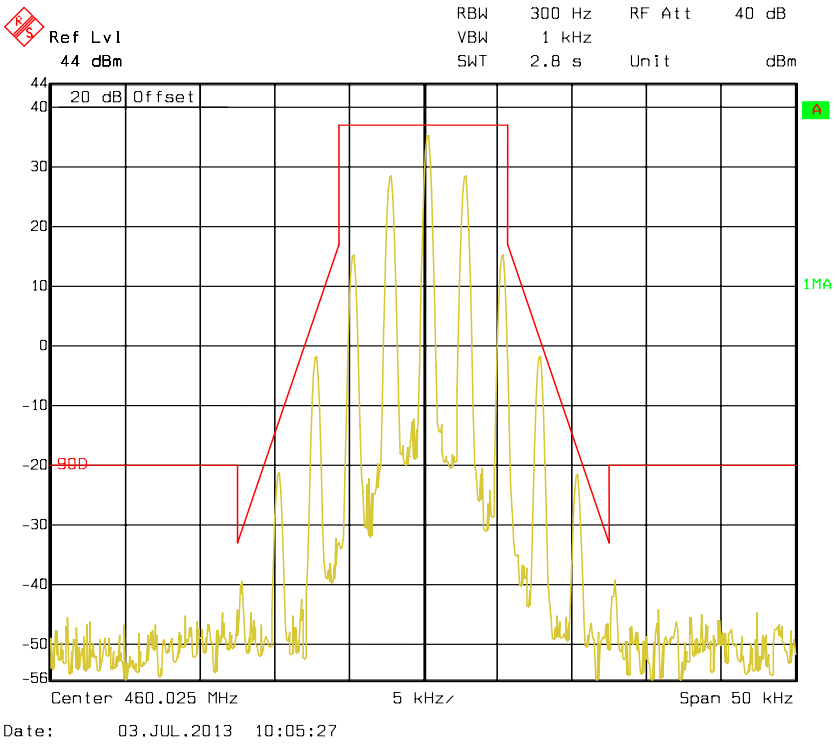


High power level:

Occupied Bandwidth



Emission Mask- Channel – Type D



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:

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=50+10log (P) dB or 70 dB, whichever is the lesser attenuation.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSP 38	100478	2013-6-16	2014-6-15
Rohde&Schwarz	Spectrum analyzer	FSEM	DE31388	2013-5-7	2014-5-6

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

Test Procedure

Spectrum analyzer settings:

1) Resolution Bandwidth = 10 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1 GHz.
2) Video Bandwidth ≥3 times the resolution bandwidth.
3) Sweep Speed ≤2000 Hz per second.
4) Detector Mode = mean or average power.

Test Data

Environmental Conditions

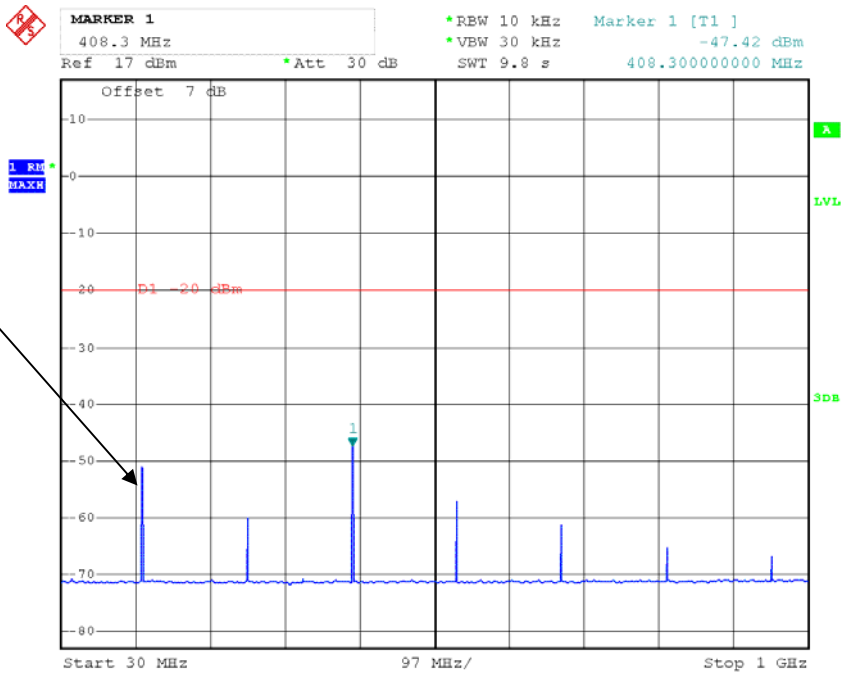
Temperature:	28.2 ~ 28.3 °C
Relative Humidity:	62 ~ 69%
ATM Pressure:	100.1 ~ 100.3 kPa

The testing was performed by Leon Chen from 2013-07-02 to 2013-07-03.

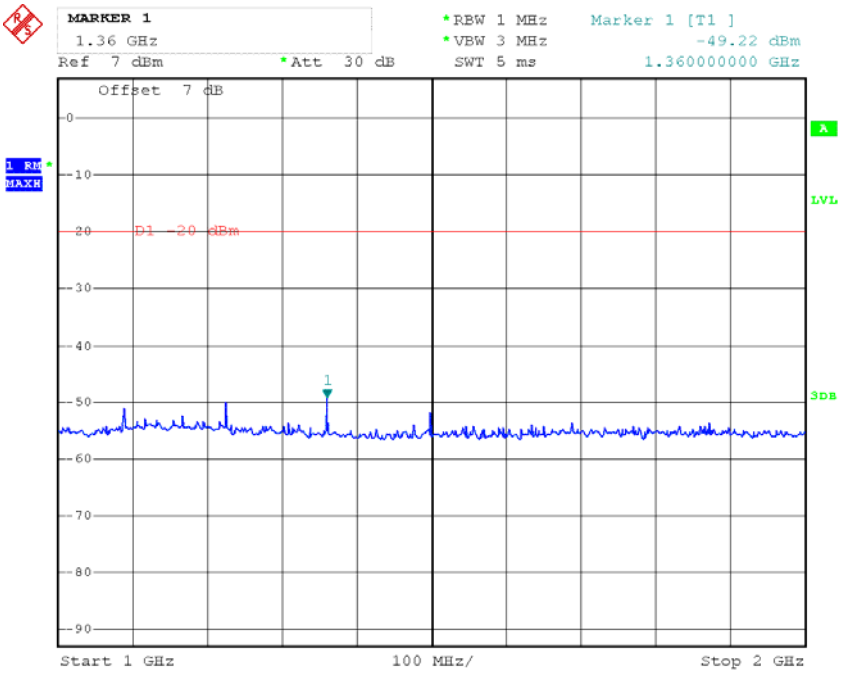
Please refer to the following plots.

VHF:

136.025 MHz - high power level (Not for FCC Review)

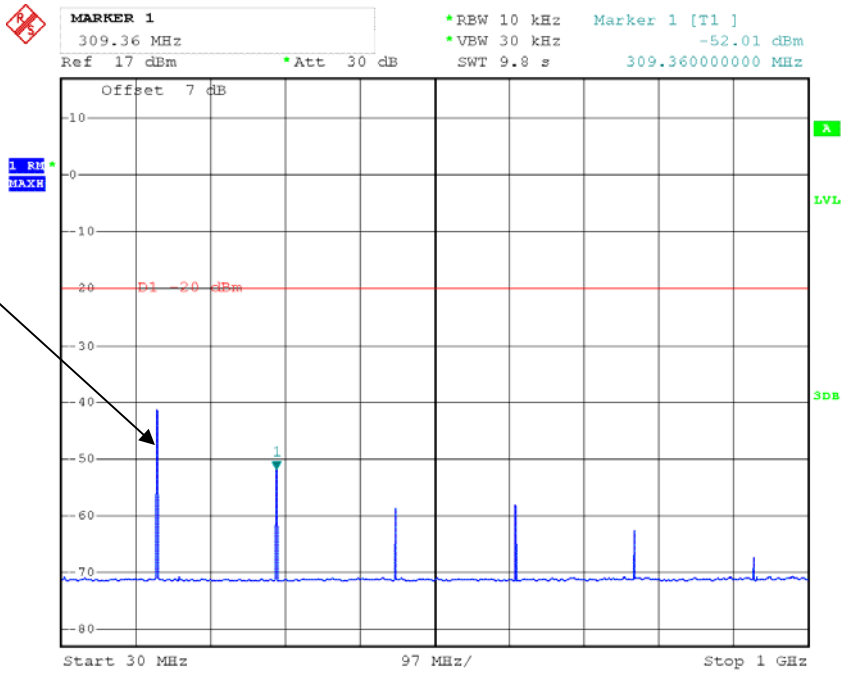


Fundamental
Test with band
Reject Filter



155.025 MHz - high power level

Fundamental
Test with band
Reject Filter



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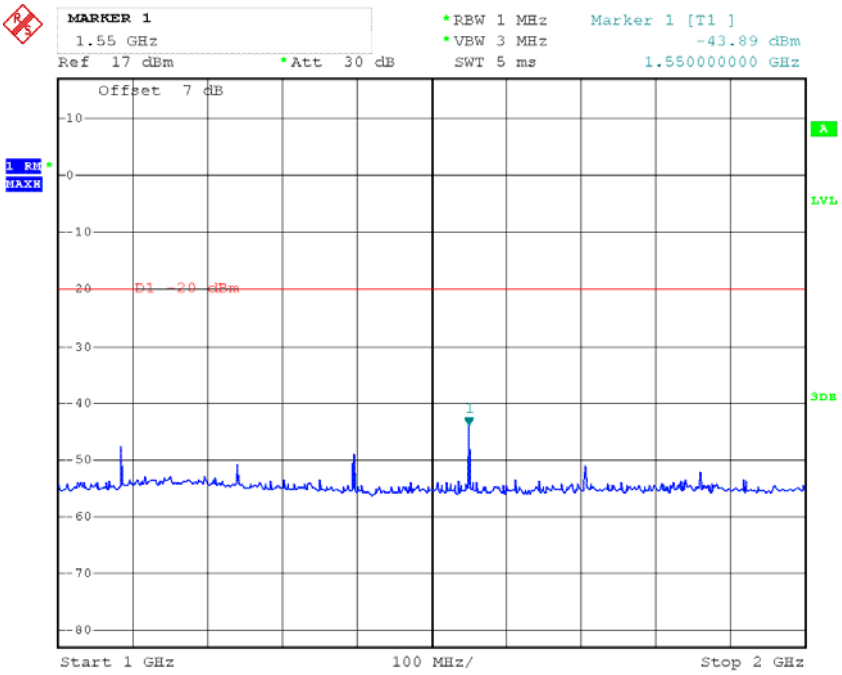
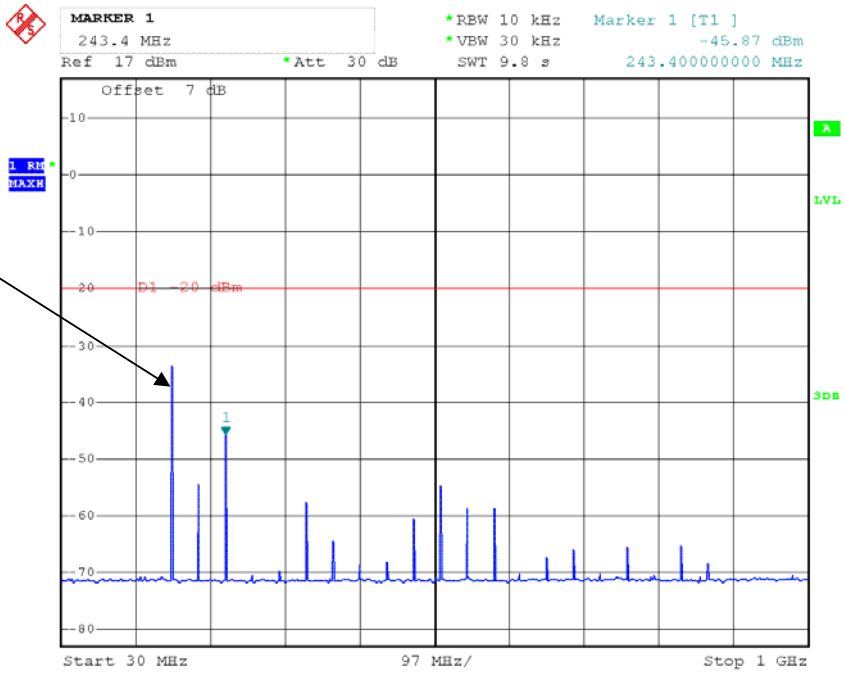


Date: 2.JUL.2013 16:40:56

173.975 MHz - high power level (Not for FCC Review)

Fundamental
Test with band
Reject Filter



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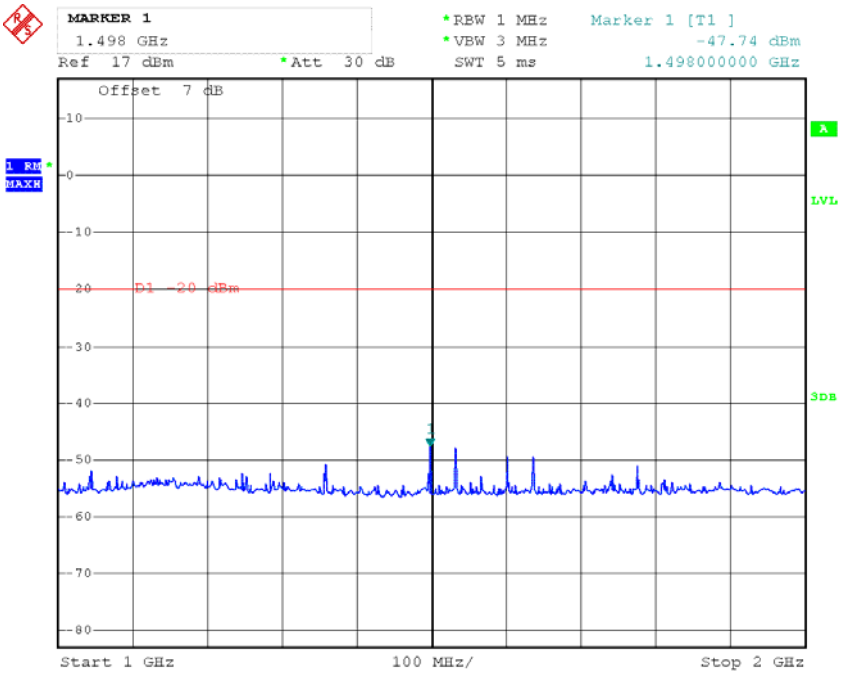
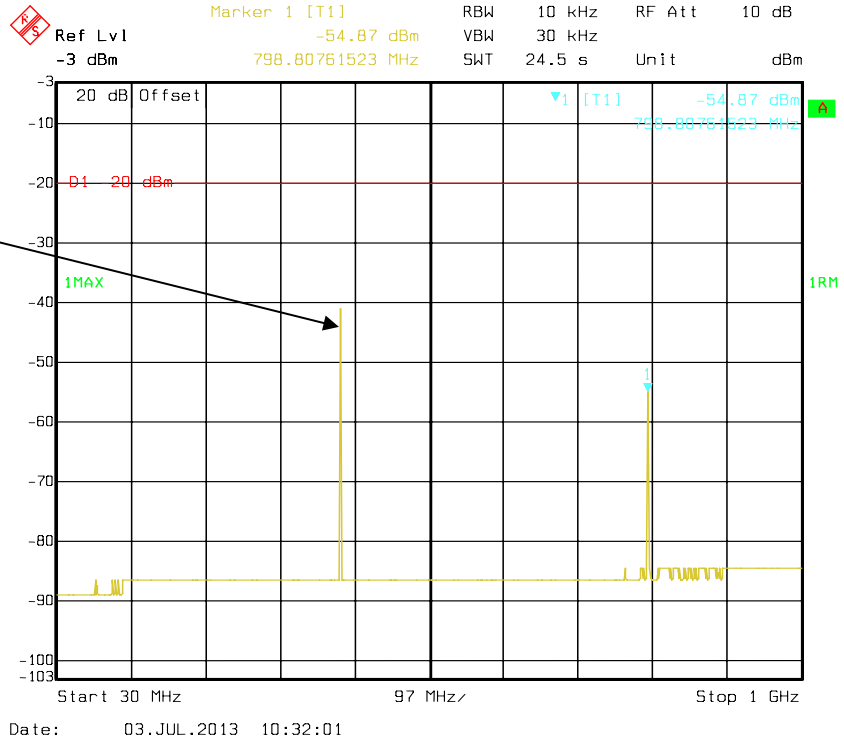


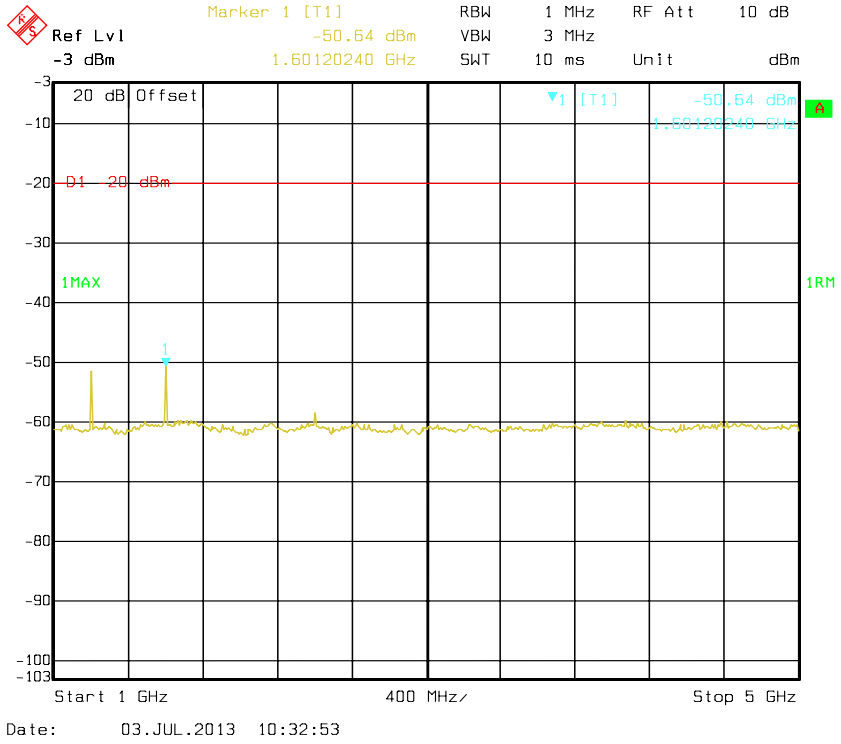
Date: 2.JUL.2013 16:49:09

UHF:

400.025 MHz - high power level (Not for FCC Review)

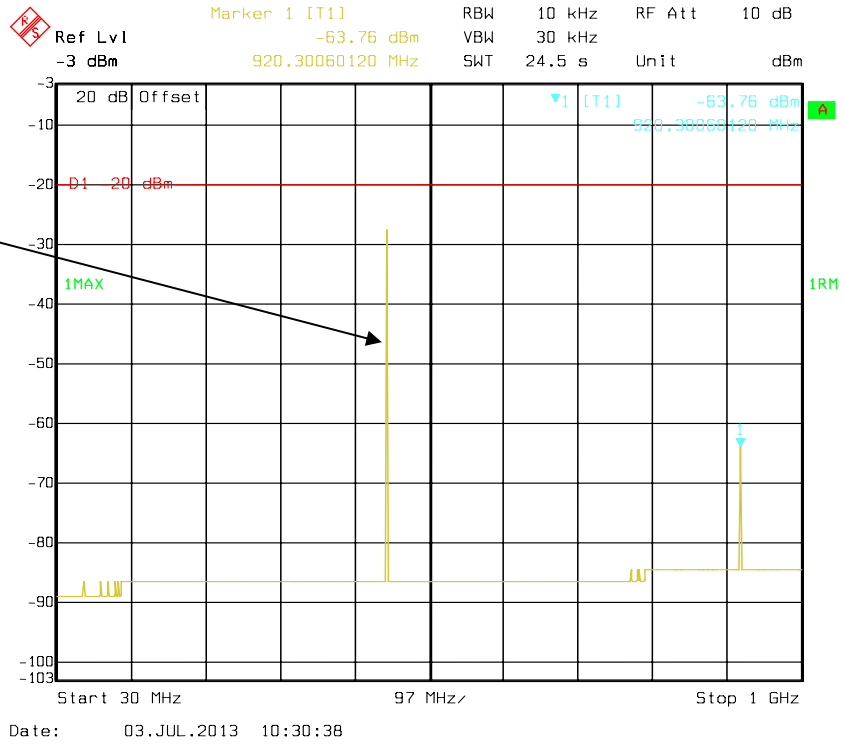
Fundamental
Test with band
Reject Filter

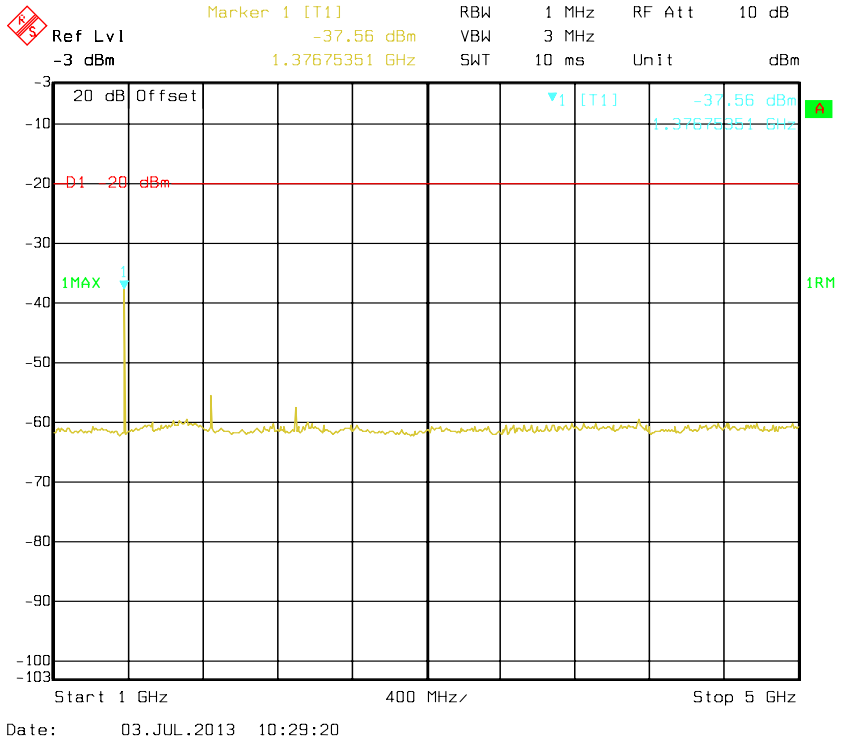




460.025 MHz - high power level

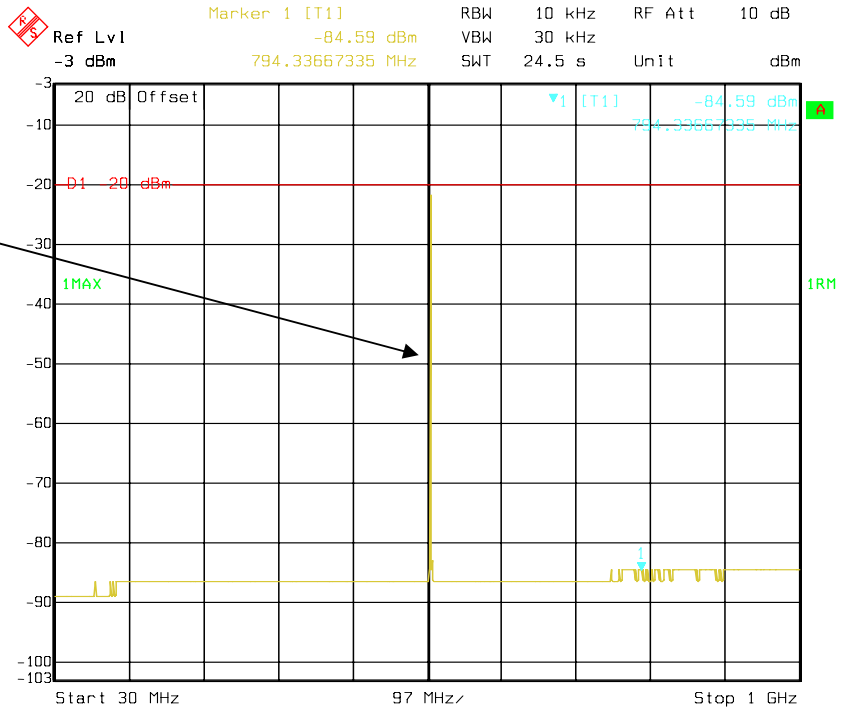
Fundamental
Test with band
Reject Filter

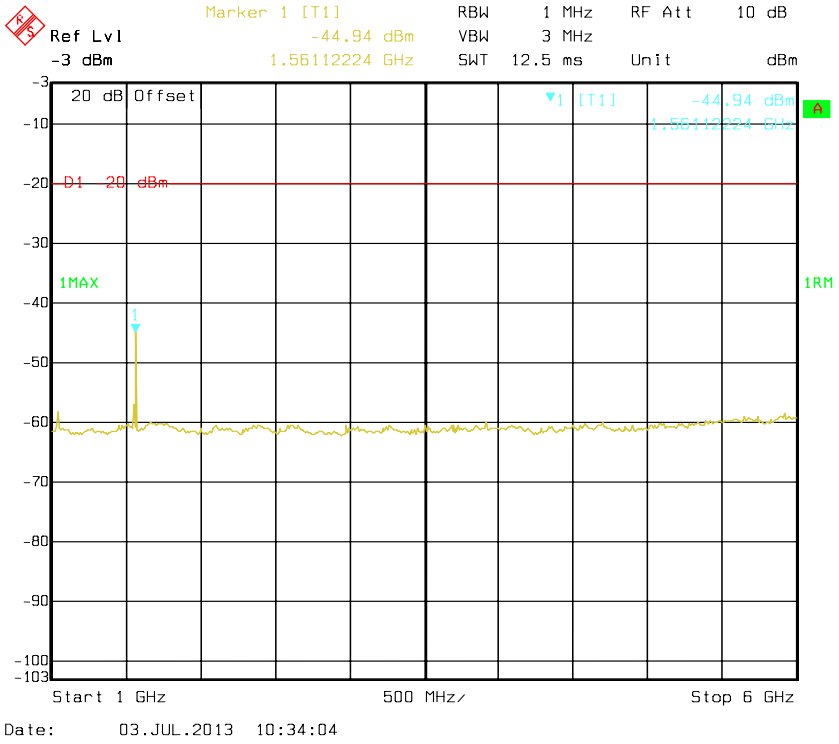




519.975 MHz - high power level (Not for FCC Review)

Fundamental
Test with band
Reject Filter





FCC §2.1053 & §90.210 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §2.1053 and §90.210

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	EMI TEST RECEIVER	ESCI	100224	2013-5-6	2014-5-5
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
Sunol Sciences	Antenna	JB3	A060611-1	2012-9-6	2015-9-5
TDK RF	horn antenna	HRN-0118	130 084	2012-9-6	2015-9-5
EMCO	Adjustable dipole antenna	3121C	9109-753	N/A	N/A
ETS LINDGREN	horn antenna	3115	000 527 35	2012-9-6	2015-9-5
HP	HP AMPLIFIER	8447E	2434A02181	N/A	N/A
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	N/A	N/A
Giga	Signal Generator	1026	320408	2013-3-15	2014-3-14

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

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 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 Log_{10} (power out in Watts) for EUT with a 12.5 kHz channel bandwidth.

Test Data

Environmental Conditions

Temperature:	28.3 °C
Relative Humidity:	62 %
ATM Pressure:	100.3 kPa

The testing was performed by Leon Chen on 2013-07-03.

VHF:

High power level (TX mode):

Frequency	Polar	S.A. Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
f_c = 136.025MHz (Not for FCC Review)								
272.050	H	65.76	-42.1	0.0	0.4	-42.5	-20.0	22.5
408.075	H	47.05	-47.8	0.0	0.5	-48.3	-20.0	28.3
544.100	H	34.39	-56.1	0.0	0.5	-56.6	-20.0	36.6
680.125	H	36.18	-53.4	0.0	0.6	-54.0	-20.0	34.0
816.150	H	26.79	-65.1	0.0	0.8	-65.9	-20.0	45.9
952.175	H	33.14	-53.8	0.0	0.9	-54.7	-20.0	34.7
1088.200	H	28.32	-71.8	7.5	1.2	-65.5	-20.0	45.5
1224.225	H	34.97	-66	7.6	1.2	-59.6	-20.0	39.6
1360.250	H	43.73	-57.6	8.7	1.3	-50.2	-20.0	30.2
272.050	V	55.86	-49.6	0.0	0.4	-50.0	-20.0	30.0
408.075	V	40.05	-52.2	0.0	0.5	-52.7	-20.0	32.7
544.100	V	30.53	-57.2	0.0	0.5	-57.7	-20.0	37.7
680.125	V	32.89	-54.6	0.0	0.6	-55.2	-20.0	35.2
816.150	V	30.73	-58.5	0.0	0.8	-59.3	-20.0	39.3
952.175	V	33.98	-50.5	0.0	0.9	-51.4	-20.0	31.4
1088.200	V	29.71	-70.5	7.5	1.2	-64.2	-20.0	44.2
1224.225	V	42.62	-58.5	7.6	1.2	-52.1	-20.0	32.1
1360.250	V	41.25	-60.5	8.7	1.3	-53.1	-20.0	33.1
f_c =155.025MHz								
310.050	H	51.66	-54.6	0.0	0.4	-55.0	-20.0	35.0
465.075	H	52.43	-38.3	0.0	0.5	-38.8	-20.0	18.8
620.100	H	39.61	-52.7	0.0	0.5	-53.2	-20.0	33.2
775.125	H	37.53	-53.5	0.0	0.8	-54.3	-20.0	34.3
930.150	H	36.51	-52.6	0.0	0.8	-53.4	-20.0	33.4
1085.175	H	43.17	-57	7.5	1.2	-50.7	-20.0	30.7
1240.200	H	35.58	-65.4	7.7	1.2	-58.9	-20.0	38.9
1395.225	H	44.31	-57.3	8.9	1.3	-49.7	-20.0	29.7
1550.250	H	39.67	-61.7	9.8	1.4	-53.3	-20.0	33.3
310.050	V	43.24	-60.5	0.0	0.4	-60.9	-20.0	40.9
465.075	V	46.85	-42.1	0.0	0.5	-42.6	-20.0	22.6
620.100	V	36.87	-51.5	0.0	0.5	-52.0	-20.0	32.0
775.125	V	40.91	-47.9	0.0	0.8	-48.7	-20.0	28.7
930.150	V	40.90	-45.3	0.0	0.8	-46.1	-20.0	26.1
1085.175	V	47.29	-52.9	7.5	1.2	-46.6	-20.0	26.6
1240.200	V	41.68	-59.5	7.7	1.2	-53.0	-20.0	33.0
1395.225	V	49.55	-52.4	8.9	1.3	-44.8	-20.0	24.8
1550.250	V	45.37	-56.1	9.8	1.4	-47.7	-20.0	27.7

f_c =173.975MHz (Not for FCC Review)								
347.950	H	42.43	-59.2	0.0	0.4	-59.6	-20.0	39.6
521.925	H	48.82	-40.6	0.0	0.5	-41.1	-20.0	21.1
695.900	H	33.74	-55.2	0.0	0.6	-55.8	-20.0	35.8
869.875	H	37.88	-54.1	0.0	0.7	-54.8	-20.0	34.8
1043.850	H	36.32	-64.1	7.7	1.1	-57.5	-20.0	37.5
1217.825	H	36.93	-64	7.5	1.2	-57.7	-20.0	37.7
1391.800	H	31.88	-69.7	8.9	1.3	-62.1	-20.0	42.1
1565.775	H	21.53	-79.8	9.9	1.4	-71.3	-20.0	51.3
1739.750	H	33.72	-66.6	10.9	1.5	-57.2	-20.0	37.2
347.950	V	32.19	-66.9	0.0	0.4	-67.3	-20.0	47.3
521.925	V	49.88	-37.5	0.0	0.5	-38.0	-20.0	18.0
695.900	V	34.95	-52.3	0.0	0.6	-52.9	-20.0	32.9
869.875	V	40.74	-47.9	0.0	0.7	-48.6	-20.0	28.6
1043.850	V	44.18	-55.8	7.7	1.1	-49.2	-20.0	29.2
1217.825	V	43.74	-57.4	7.5	1.2	-51.1	-20.0	31.1
1391.800	V	35.23	-66.7	8.9	1.3	-59.1	-20.0	39.1
1565.775	V	30.84	-70.6	9.9	1.4	-62.1	-20.0	42.1
1739.750	V	34.01	-66	10.9	1.5	-56.6	-20.0	36.6

UHF:

High power level (TX mode):

Frequency	Polar	S.A. Reading	S.G. Level	Antenna Gain	Cable Loss	Absolute Level	Limit	Margin
MHz	H/V	dBµV	dBm	dBd/dBi	dB	dBm	dBm	dB
f_c = 400.025MHz (Not for FCC Review)								
800.050	H	50.52	-41.3	0.0	0.8	-42.1	-20.0	22.1
1200.075	H	40.63	-60.4	7.3	1.2	-54.3	-20.0	34.3
1600.100	H	28.25	-72.9	10.1	1.4	-64.2	-20.0	44.2
2000.125	H	28.38	-69.5	12.0	1.7	-59.2	-20.0	39.2
2400.150	H	36.94	-60.9	12.3	1.9	-50.5	-20.0	30.5
2800.175	H	21.11	-77.3	13.1	3.2	-67.4	-20.0	47.4
3200.200	H	18.30	-77.7	13.6	2.8	-66.9	-20.0	46.9
3600.225	H	22.59	-72.8	14.1	3.4	-62.1	-20.0	42.1
4000.250	H	9.25	-83.5	14.0	3.3	-72.8	-20.0	52.8
800.050	V	47.09	-42.3	0.0	0.8	-43.1	-20.0	23.1
1200.075	V	43.42	-57.7	7.3	1.2	-51.6	-20.0	31.6
1600.100	V	37.87	-63.6	10.1	1.4	-54.9	-20.0	34.9
2000.125	V	31.71	-66.6	12.0	1.7	-56.3	-20.0	36.3
2400.150	V	39.94	-57.1	12.3	1.9	-46.7	-20.0	26.7
2800.175	V	28.85	-69.8	13.1	3.2	-59.9	-20.0	39.9
3200.200	V	21.20	-74.7	13.6	2.8	-63.9	-20.0	43.9
3600.225	V	25.18	-70.3	14.1	3.4	-59.6	-20.0	39.6
4000.250	V	10.16	-83.2	14.0	3.3	-72.5	-20.0	52.5

f_c =460.025MHz								
920.050	H	48.33	-41.8	0.0	0.8	-42.6	-20.0	22.6
1380.075	H	33.12	-68.4	8.8	1.3	-60.9	-20.0	40.9
1840.100	H	37.05	-61.8	11.4	1.5	-51.9	-20.0	31.9
2300.125	H	36.30	-60.8	11.2	2	-51.6	-20.0	31.6
2760.150	H	28.03	-70.5	13.1	3.1	-60.5	-20.0	40.5
3220.175	H	26.69	-69.4	13.6	2.9	-58.7	-20.0	38.7
3680.200	H	24.06	-71.1	14.0	3.6	-60.7	-20.0	40.7
4140.225	H	30.44	-60.9	13.8	4.5	-51.6	-20.0	31.6
4600.250	H	32.28	-60.9	14.2	6.6	-53.3	-20.0	33.3
920.050	V	49.35	-37.6	0.0	0.8	-38.4	-20.0	18.4
1380.075	V	46.25	-55.6	8.8	1.3	-48.1	-20.0	28.1
1840.100	V	39.29	-59.5	11.4	1.5	-49.6	-20.0	29.6
2300.125	V	37.10	-59.4	11.2	2	-50.2	-20.0	30.2
2760.150	V	26.84	-71.8	13.1	3.1	-61.8	-20.0	41.8
3220.175	V	26.58	-69.5	13.6	2.9	-58.8	-20.0	38.8
3680.200	V	23.86	-71	14.0	3.6	-60.6	-20.0	40.6
4140.225	V	35.28	-58.1	13.8	4.5	-48.8	-20.0	28.8
f_c =519.975MHz (Not for FCC Review)								
1039.950	H	46.77	-53.6	7.7	1.1	-47.0	-20.0	27.0
1559.925	H	30.83	-70.5	9.9	1.4	-62.0	-20.0	42.0
2079.900	H	27.09	-70.9	11.5	1.7	-61.1	-20.0	41.1
2599.875	H	21.09	-77.7	13.2	2.3	-66.8	-20.0	46.8
3119.850	H	22.56	-74.2	13.3	3	-63.9	-20.0	43.9
3639.825	H	19.12	-76.2	14.1	3.5	-65.6	-20.0	45.6
4159.800	H	28.02	-63.2	13.9	4.4	-53.7	-20.0	33.7
4679.775	H	23.92	-68.7	14.4	5.5	-59.8	-20.0	39.8
5199.750	H	15.90	-76.5	14.0	3.9	-66.4	-20.0	46.4
1039.950	V	48.52	-51.4	7.7	1.1	-44.8	-20.0	24.8
1559.925	V	36.30	-65.2	9.9	1.4	-56.7	-20.0	36.7
2079.900	V	35.01	-63.2	11.5	1.7	-53.4	-20.0	33.4
2599.875	V	24.67	-74	13.2	2.3	-63.1	-20.0	43.1
3119.850	V	18.44	-78.2	13.3	3	-67.9	-20.0	47.9
3639.825	V	20.66	-74.6	14.1	3.5	-64.0	-20.0	44.0
4159.800	V	32.94	-60.5	13.9	4.4	-51.0	-20.0	31.0
4679.775	V	35.77	-56.5	14.4	5.5	-47.6	-20.0	27.6
5199.750	V	26.36	-65.9	14.0	3.9	-55.8	-20.0	35.8

Note:
The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.

FCC §2.1055 & §90.213- FREQUENCY STABILITY

Applicable Standard

FCC §2.1055 & §90.213

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
Dongzhixu	Humidity tester	DP1000	201105083-3	2012-7-3	2013-7-2

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

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to DC or AC power supply and the RF output were connected to a frequency counter via feed-through attenuators. 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.

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.

(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 Data

Environmental Conditions

Temperature:	28.2 °C
Relative Humidity:	69%
ATM Pressure:	100.1 kPa

The testing was performed by Leon Chen on 2013-07-02.

Test Mode: Transmitting

VHF:

Reference Frequency: 155.025MHz, Limit: 5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{DC}**	**MHz**	**ppm**
-20	7.4	155.025224	1.44
-10	7.4	155.025226	1.46
0	7.4	155.025219	1.41
10	7.4	155.025220	1.42
20	7.4	155.025217	1.40
30	7.4	155.025223	1.44
40	7.4	155.025221	1.43
50	7.4	155.025225	1.45
60	7.4	155.025227	1.46
25	$V_{end\ point}$ = 6.29	155.025218	1.41

UHF:

Reference Frequency: 460.025MHz, Limit: 2.5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{DC}**	**MHz**	**ppm**
-20	7.4	460.025355	0.77
-10	7.4	460.025356	0.77
0	7.4	460.025348	0.76
10	7.4	460.025339	0.74
20	7.4	460.025340	0.74
30	7.4	460.025346	0.75
40	7.4	460.025352	0.77
50	7.4	460.025354	0.77
60	7.4	460.025355	0.77
25	$V_{end\ point}$ = 6.29	460.025343	0.75

Note: the battery operating end point was specified by the manufacturer.

FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

Regulations: FCC §90.214
Test method: ANSI/TIA-603-D 2010, section 2.2.19.3

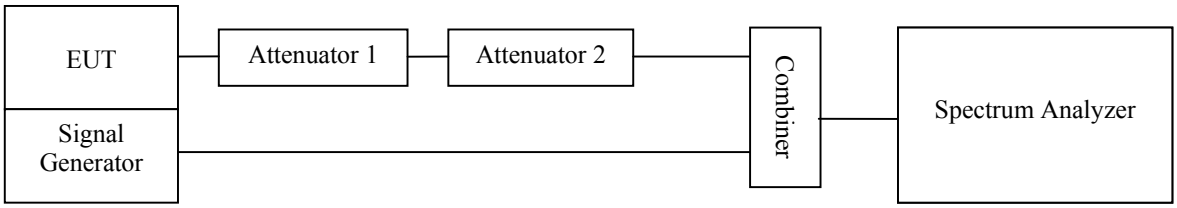
Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum analyzer	FSEM 30	849016/001	2012-9-4	2013-9-3
HP	Signal Generator	8648A	3426A00831	2012-11-29	2013-11-28

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

Test Procedure

a) Connect the EUT and test equipment as shown on the following block diagram.
b) Set the Spectrum Analyzer to measure FM deviation, and tune the RF frequency to the transmitter assigned frequency.
c) Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±12.5 kHz deviation and set its output level to -100dBm.
d) Turn on the transmitter.
e) Supply sufficient attenuation via the RF attenuator to provide an input level to the Spectrum Analyzer that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the Spectrum Analyzer as P_0.
f) Turn off the transmitter.
g) Adjust the RF level of the signal generator to provide RF power equal to P_0. This signal generator RF level shall be maintained throughout the rest of the measurement.
h) Remove the attenuation 1, so the input power to the Spectrum Analyzer is increased by 30 dB when the transmitter is turned on.
i) Adjust the vertical amplitude control of the spectrum analyzer to display the 1000 Hz at ±4 divisions vertically centered on the display. Set trigger mode of the Spectrum Analyzer to "Video", and tune the "trigger level" on suitable level. Then set the "tiger offset" to -10ms for turn on and -15ms for turn off.
j) Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be t_{on}. The trace should be maintained within the allowed divisions during the period t_1 and t_2.
k) Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum Analyzer. The trace should be maintained within the allowed divisions during the period t_3.



Test Data

Environmental Conditions

Temperature:	28.3 °C
Relative Humidity:	62 %
ATM Pressure:	100.3 kPa

The testing was performed by Leon Chen on 2013-07-03.

VHF:

Channel Separation (kHz)	Transient Period (ms)	Transient Frequency	Result
12.5	<5 (t1)	±12.5 kHz	Pass
	<20 (t2)	±6.25 kHz	
	<5 (t3)	±12.5 kHz	

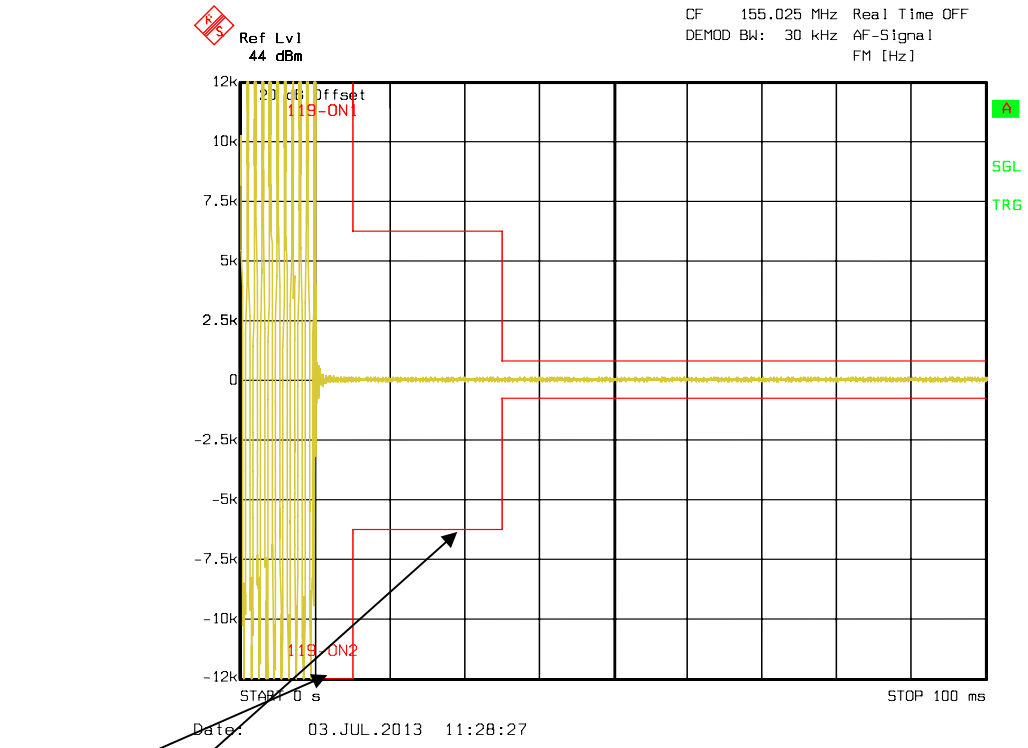
UHF:

Channel Separation (kHz)	Transient Period (ms)	Transient Frequency	Result
12.5	<10 (t1)	±12.5 kHz	Pass
	<25 (t2)	±6.25 kHz	
	<10 (t3)	±12.5 kHz	

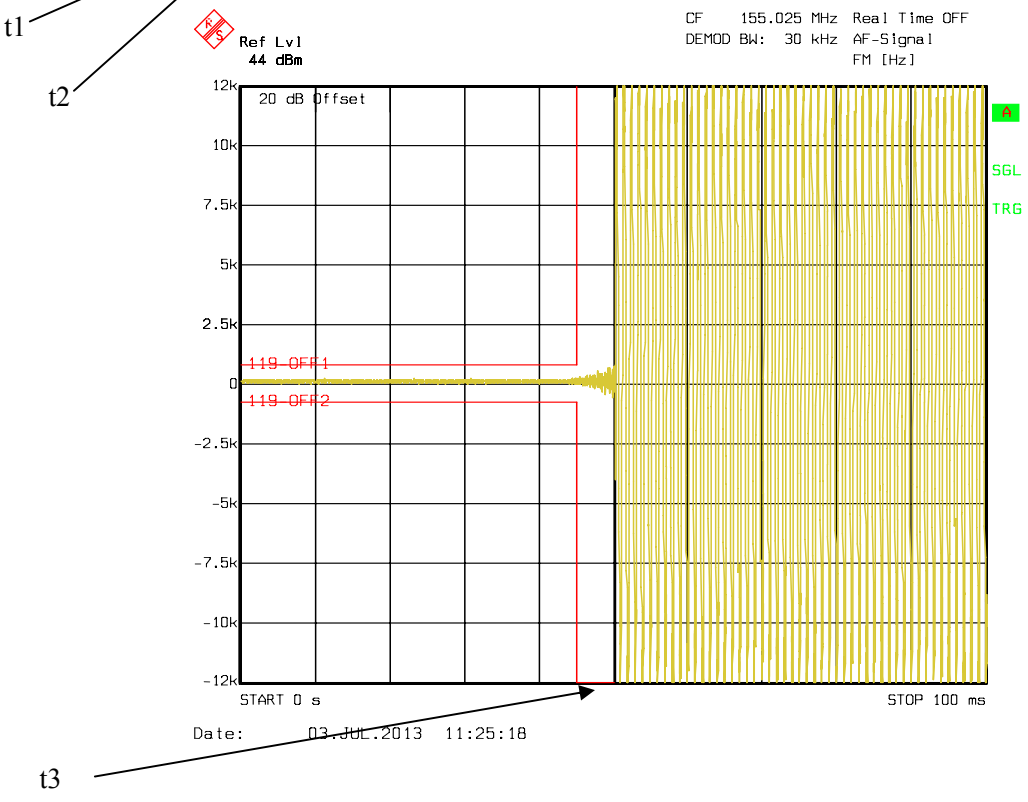
Please refer to the following plots.

VHF:

Turn on – 155.025 MHz - high power level



Turn off – 155.025 MHz - high power level

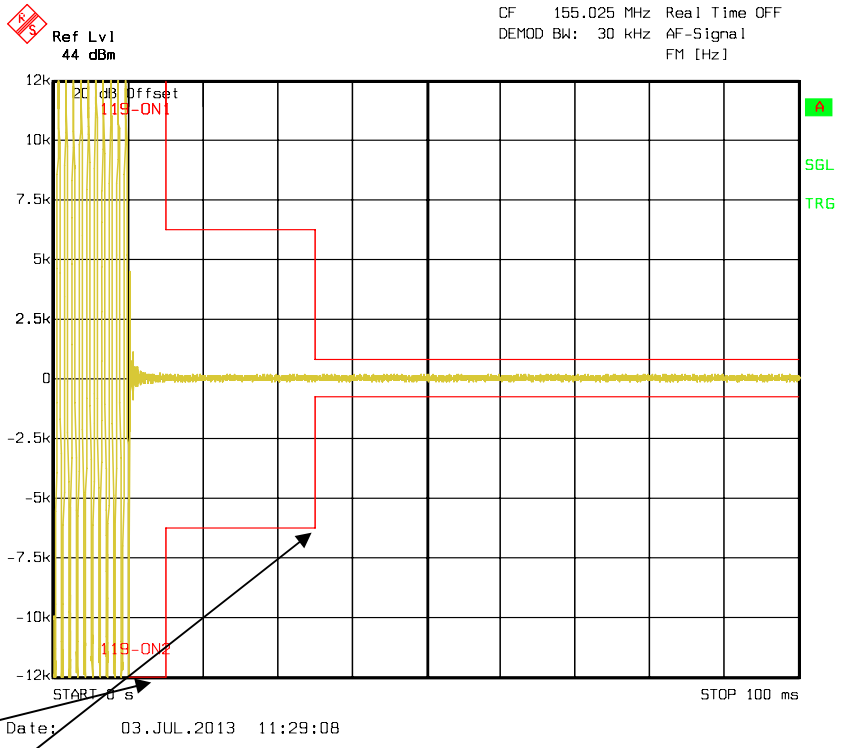


t1

t2

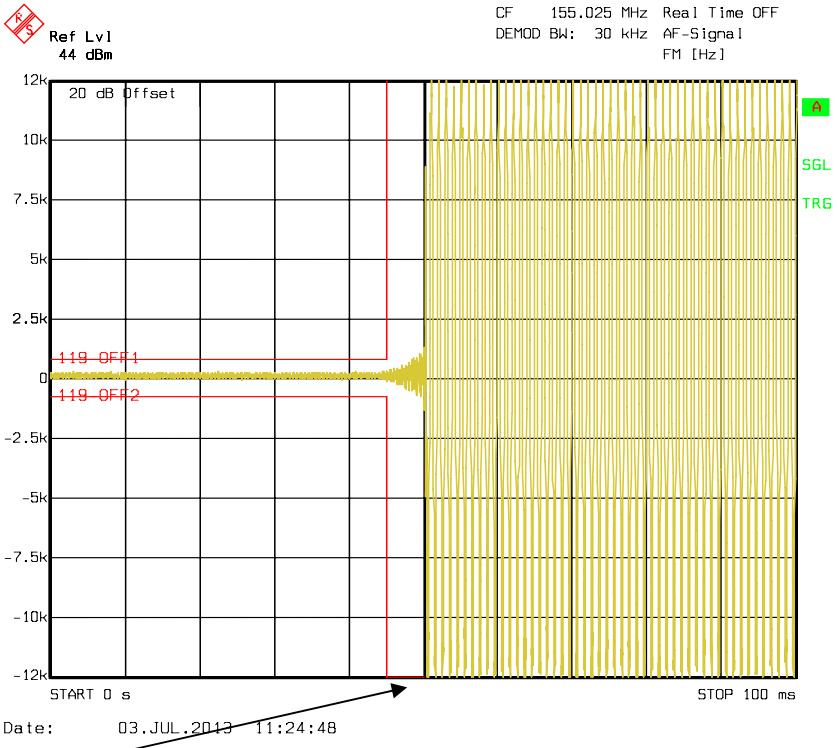
t3

Turn on –155.025 MHz - low power level



t1

Turn off –155.025 MHz - low power level

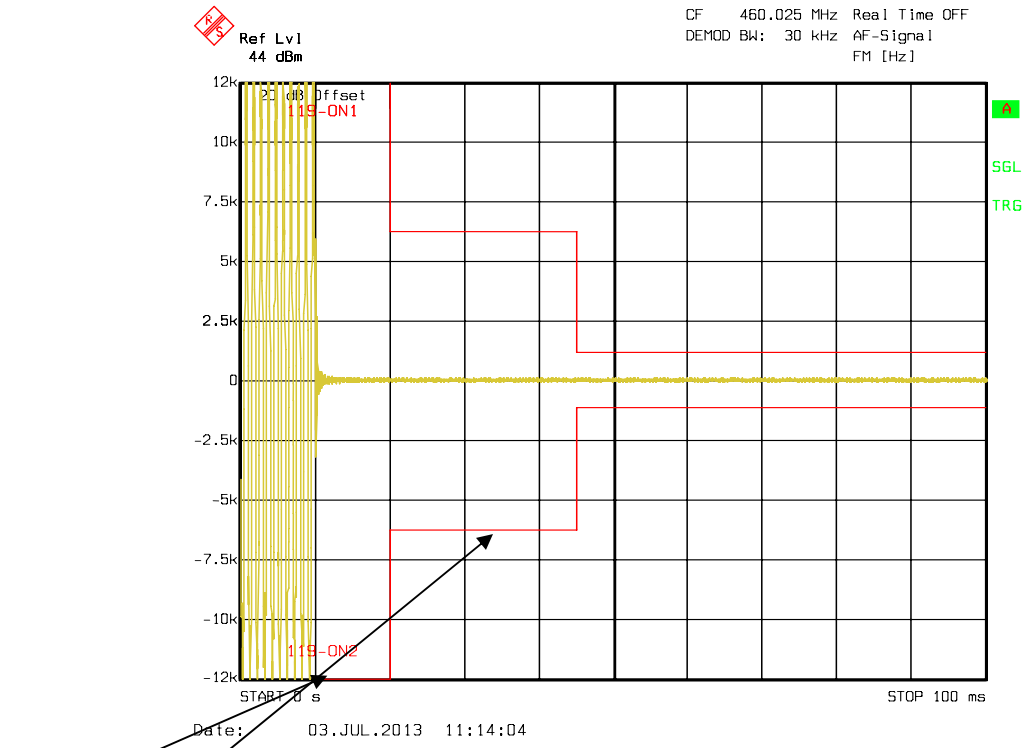


t2

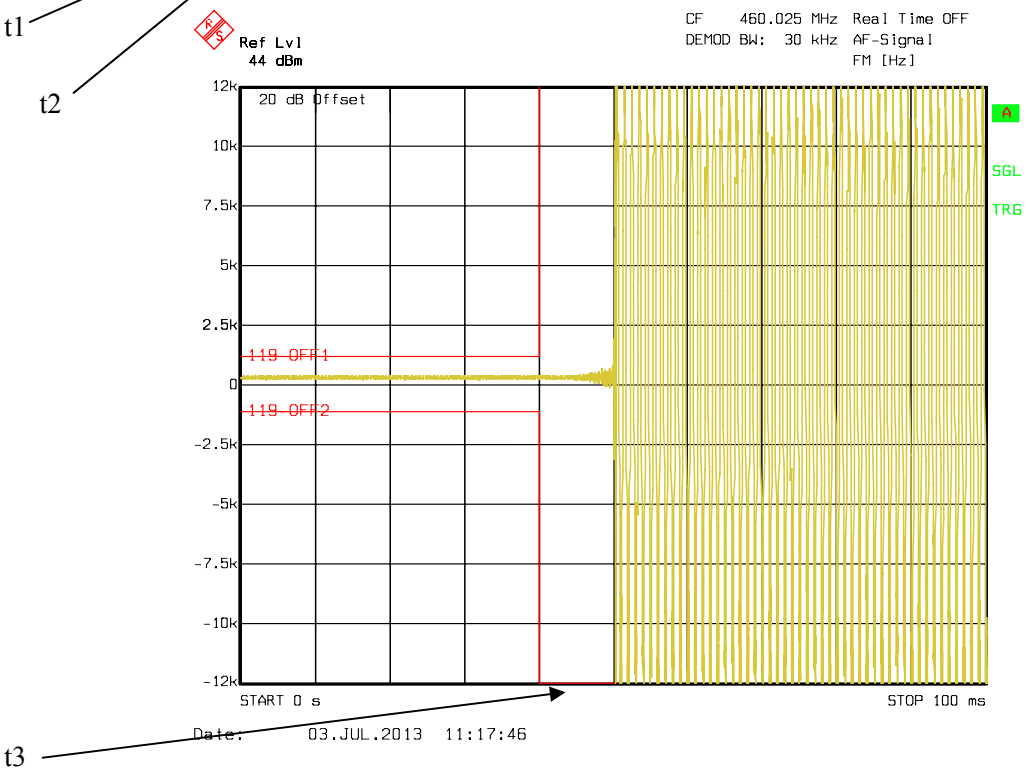
t3

UHF:

Turn on – 460.025 MHz - high power level



Turn off – 460.025 MHz - high power level

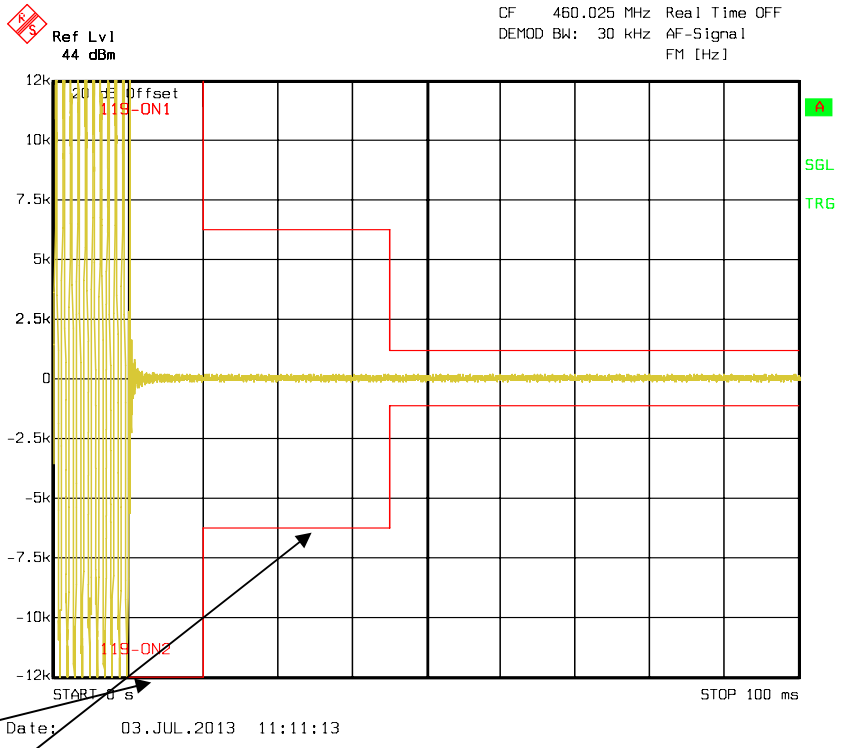


t1

t2

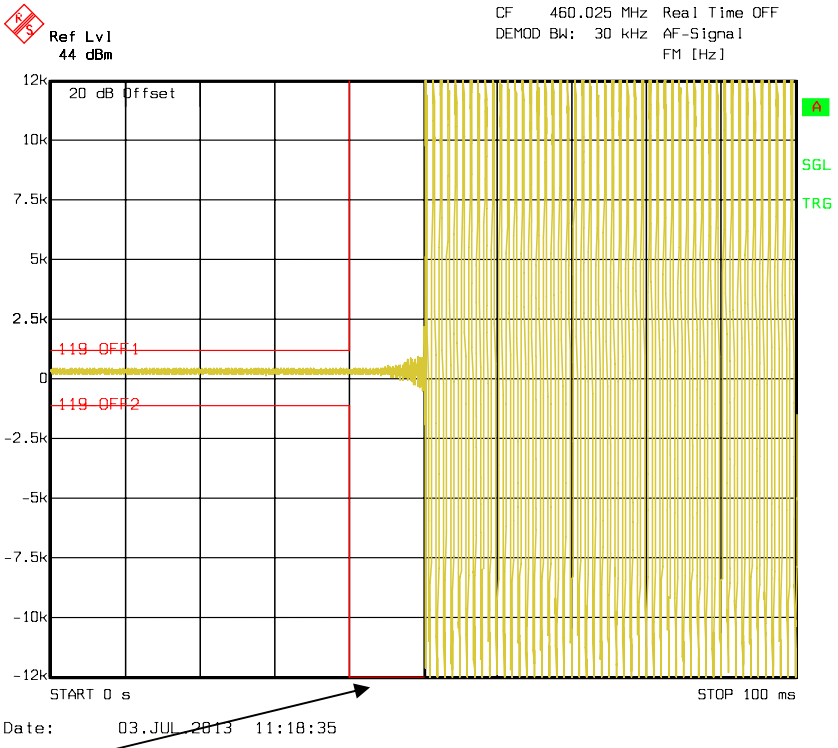
t3

Turn on –460.025 MHz - low power level



t1

Turn off –460.025 MHz - low power level



t2

t3

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