



FCC PART 90 TEST REPORT

For

SHENZHEN COVALUE COMMUNICATIONS CO.,LTD.

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

FCC ID: Y4GDR6000-1

Report Type: Original Report	Product Type: Two way radio
Test Engineer: Leon Chen	<i>leon chen</i>
Report Number: R2DG140126004-00	
Report Date: 2014-06-09	
Reviewed By: RF Leader	<i>Ivan Cao</i>
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Note: This test report is prepared for the customer shown above and for the device 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 "★" (Rev.2)

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The SHENZHEN COVALUE COMMUNICATIONS CO.,LTD.'s product, model: DR7000-1 (FCC ID: Y4GDR6000-1) (the "EUT") in this report is a *Two way radio*, which was measured approximately: 6.2 cm (L) x 13.3 cm (H) x 3.8 cm (T), rated input voltage: 7.4 VDC from battery.

Note: The series product, model DR6000-1, DR6100-1, DR7000-1, DR7100-1 are electrically identical, the difference between them is model name, we selected DR7000-1 for fully testing, and the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 140126004 (Assigned by BAACL.Dongguan). The EUT was received on 2014-01-27.*

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 Communications Commission's 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 Communications 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.

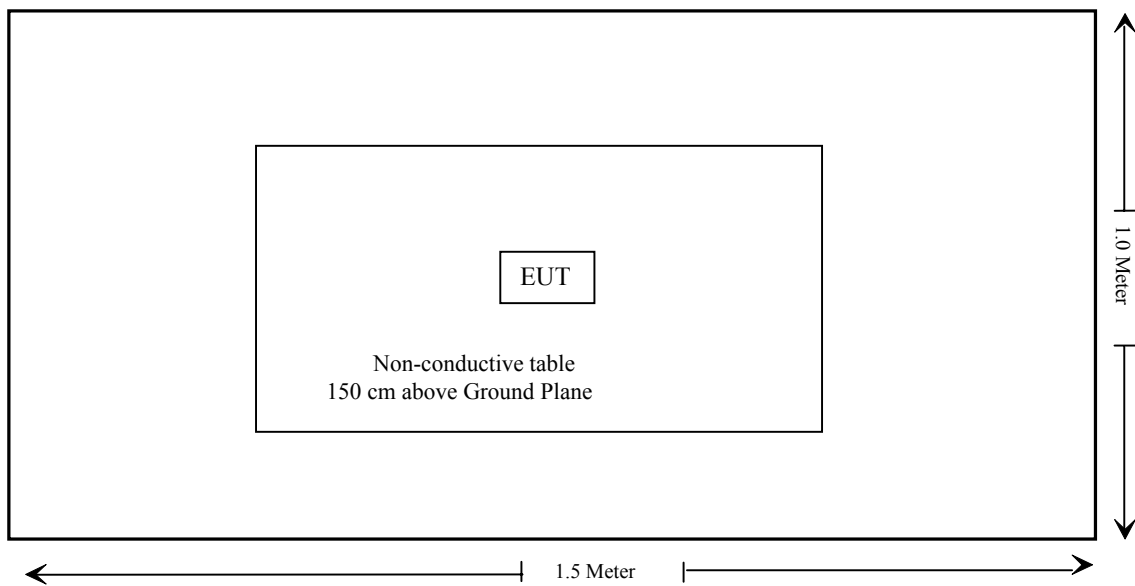
EUT Specification:

Operating Frequency Band	136-174MHz
Modulation Mode	FM, 4FSK
Channel Separation	12.5 kHz
Transmitter Power	Highest power level: 5 W Lowest power level: 1 W

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
§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	Emission 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: R1DG140126005-20A.

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	2013-06-16	2014-06-15

* **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:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-03-10.

Test Mode: Transmitting

Test Result: Compliance.

Please refer to following table.

Modulation Mode	Channel Separation	f _c (MHz)	Highest Power Level		Lowest Power Level		Note
			dBm	W	dBm	W	
4FSK	12.5 kHz	136.0125	37.03	5.05	30.51	1.12	Not For FCC Review
		155	36.96	4.97	29.87	0.97	
		173.9875	37.09	5.12	30.07	1.02	Not For FCC Review
FM		136.0125	37.12	5.15	30.44	1.11	Not For FCC Review
		155	37.03	5.05	30.16	1.04	
		173.9875	37.22	5.27	30.28	1.07	Not For FCC Review

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	RF Communications Test Set	8920A	00 235	2013-05-09	2014-05-08

* **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

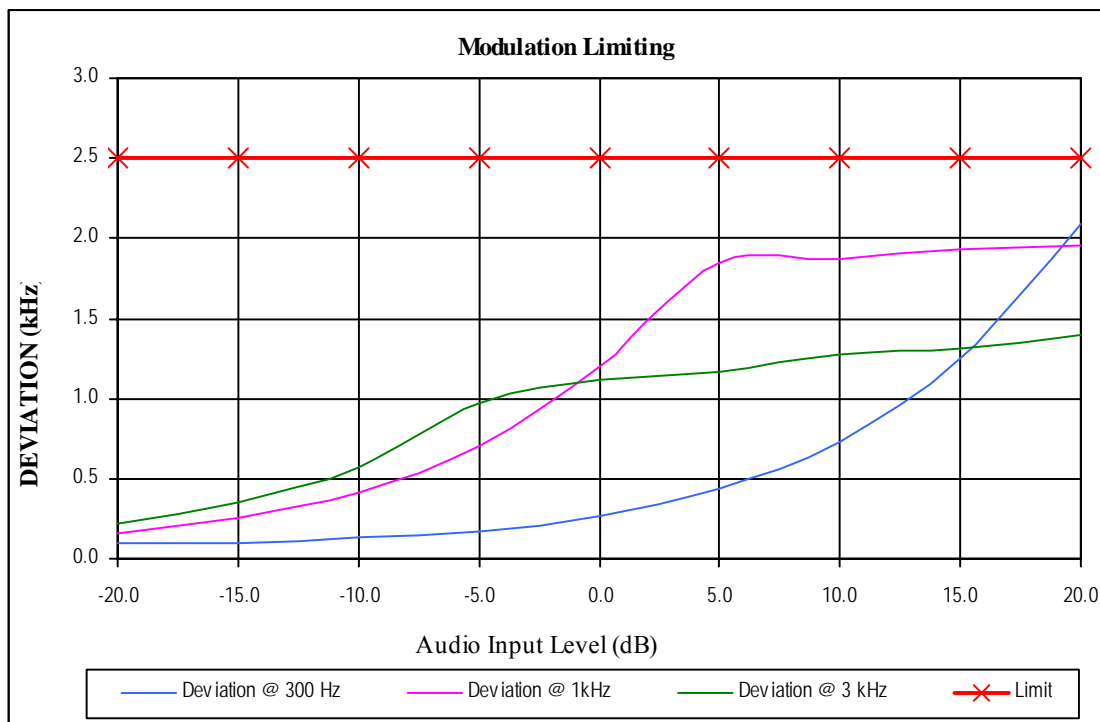
Temperature:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-03-10.

MODULATION LIMITING

Carrier Frequency: 155 MHz, Channel Separation = 12.5 kHz, high power level

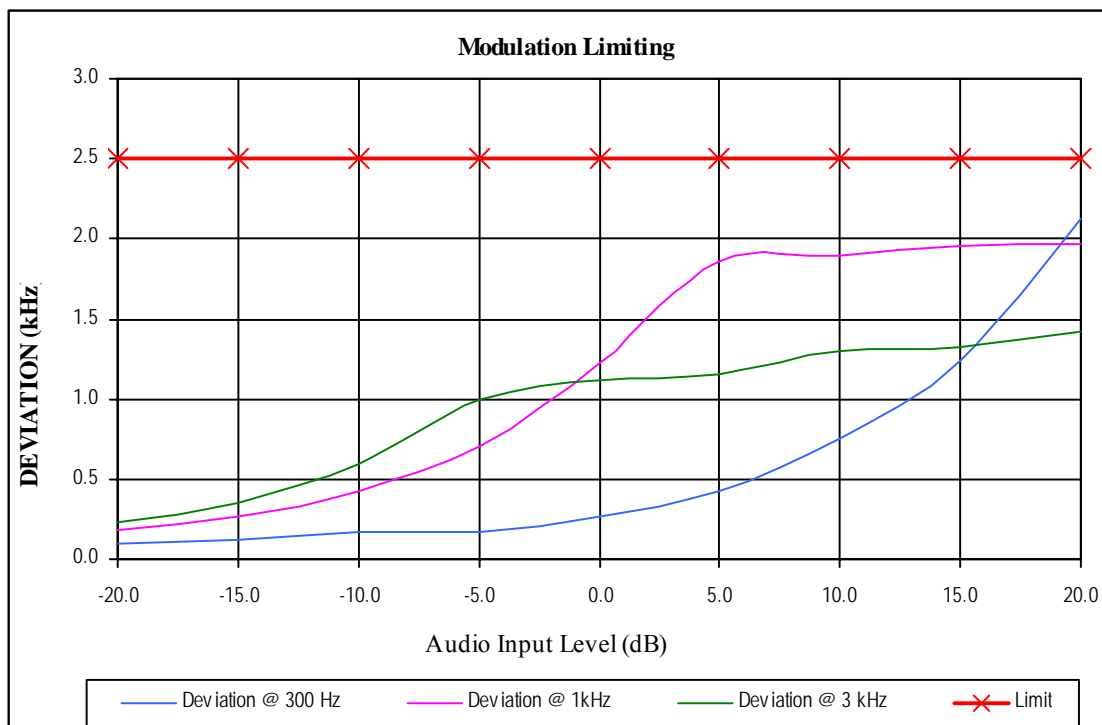
Audio Input Level [dB]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	2.007	1.959	1.402	2.5
15.0	1.246	1.927	1.313	2.5
10.0	0.731	1.875	1.278	2.5
5.0	0.435	1.842	1.167	2.5
0.0	0.268	1.204	1.121	2.5
-5.0	0.171	0.704	0.974	2.5
-10.0	0.135	0.419	0.574	2.5
-15.0	0.101	0.255	0.353	2.5
-20.0	0.098	0.163	0.213	2.5



MODULATION LIMITING

Carrier Frequency: 155 MHz, Channel Separation = 12.5 kHz, low power level

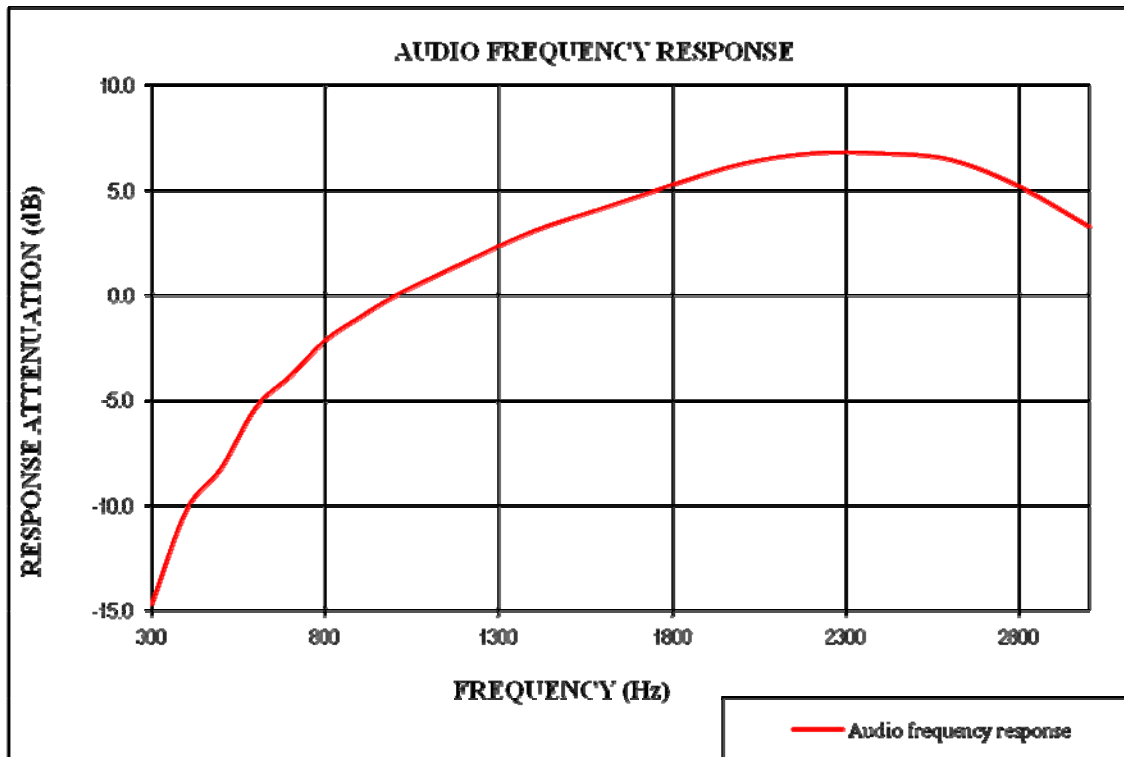
Audio Input Level [dB]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	2.024	1.970	1.421	2.5
15.0	1.244	1.957	1.326	2.5
10.0	0.747	1.894	1.295	2.5
5.0	0.424	1.863	1.158	2.5
0.0	0.269	1.228	1.120	2.5
-5.0	0.172	0.703	0.998	2.5
-10.0	0.165	0.421	0.600	2.5
-15.0	0.118	0.273	0.358	2.5
-20.0	0.093	0.185	0.230	2.5



Audio Frequency Response

Carrier Frequency: 155 MHz, Channel Separation = 12.5 kHz, high power level

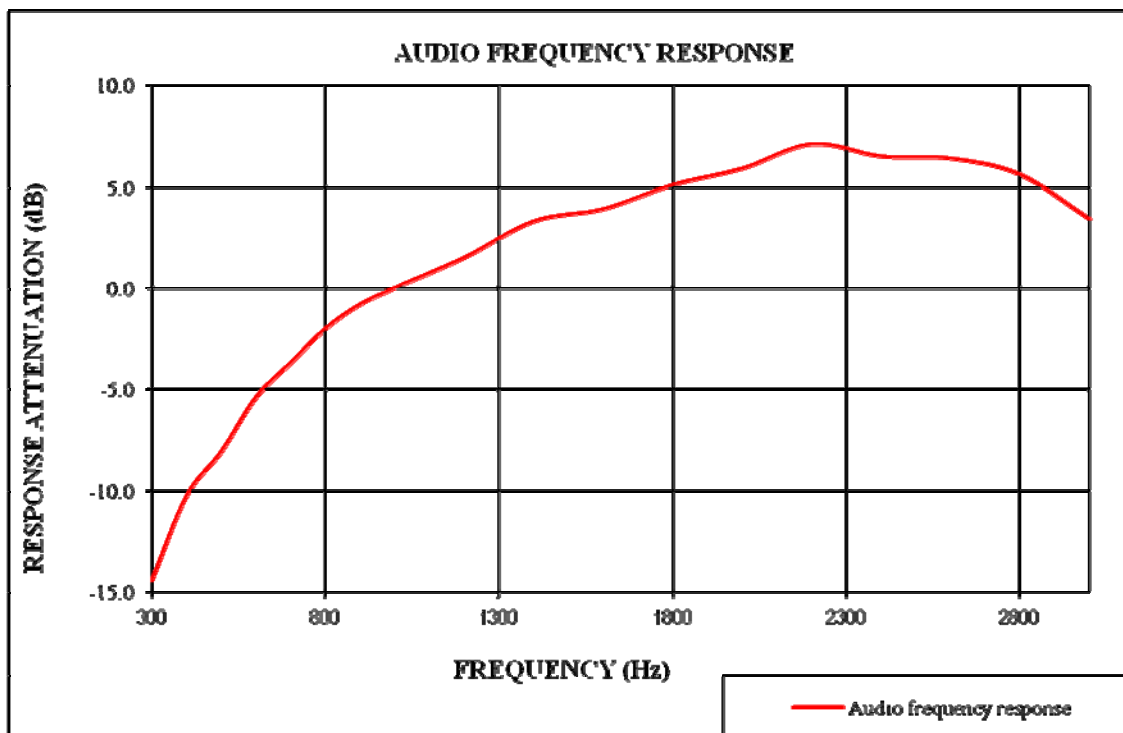
Audio Frequency (Hz)	Response Attenuation (dB)
300	-14.7
400	-10.2
500	-8.2
600	-5.3
700	-3.8
800	-2.1
900	-1.0
1000	0.0
1200	1.6
1400	3.1
1600	4.2
1800	5.3
2000	6.3
2200	6.8
2400	6.8
2600	6.5
2800	5.2
3000	3.3



Audio Frequency Response

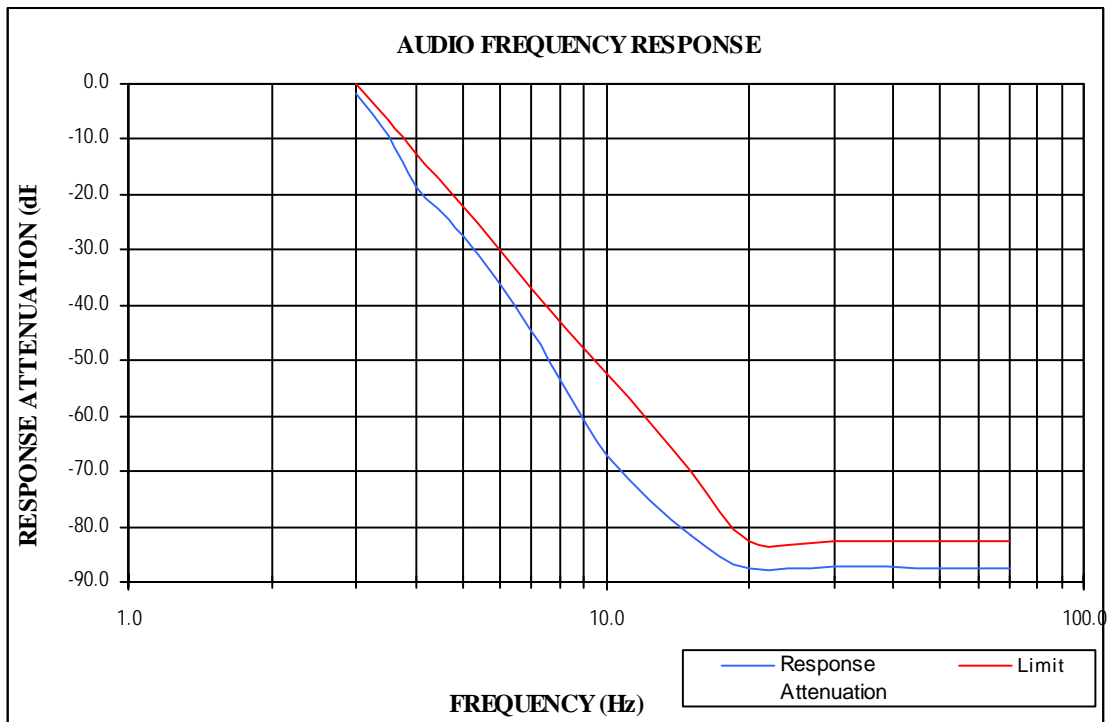
Carrier Frequency: 155 MHz, Channel Separation = 12.5 kHz, low power level

Audio Frequency (Hz)	Response Attenuation (dB)
300	-14.5
400	-10.3
500	-8.1
600	-5.4
700	-3.7
800	-2.0
900	-0.8
1000	0.0
1200	1.5
1400	3.3
1600	3.9
1800	5.1
2000	5.9
2200	7.1
2400	6.5
2600	6.4
2800	5.6
3000	3.4



Audio Frequency Low Pass Filter Response

Audio Frequency (kHz)	Response Attenuation (dB)	Limit (dB)
3.0	-1.8	0.0
3.5	-9.5	-6.7
4.0	-18.6	-12.5
5.0	-27.5	-22.2
7.0	-44.7	-36.8
10.0	-67.3	-52.3
15.0	-81.6	-69.9
20.0	-87.5	-82.5
30.0	-87.3	-82.5
50.0	-87.5	-82.5
70.0	-87.5	-82.5



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

Applicable Standard

FCC §2.1049, §90.209 and §90.210

Applicable Emission Masks

Frequency band (MHz)	Mask for equipment with audio low pass filter	Mask for equipment without audio low pass filter
Below 25	A or B	A or C
25-50	B	C
72-76	B	C
150-174	B, D, or E	C, D or E
150 paging only	B	C
220-222	F	F
421-512	B, D, or E	C, D, or E
450 paging only	B	G
806-809/851-854	B	H
809-824/854-869	B	G
896-901/935-940	I	J
902-928	K	K
929-930	B	G
4940-4990 MHz	L or M	L or M
5850-5925		
All other bands	B	C

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) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88 \text{ kHz})$ 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 $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.
- (4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 kHz from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06

* **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 approximately 1 % to 5 % of the EBW.

Test Data**Environmental Conditions**

Temperature:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-06-06.

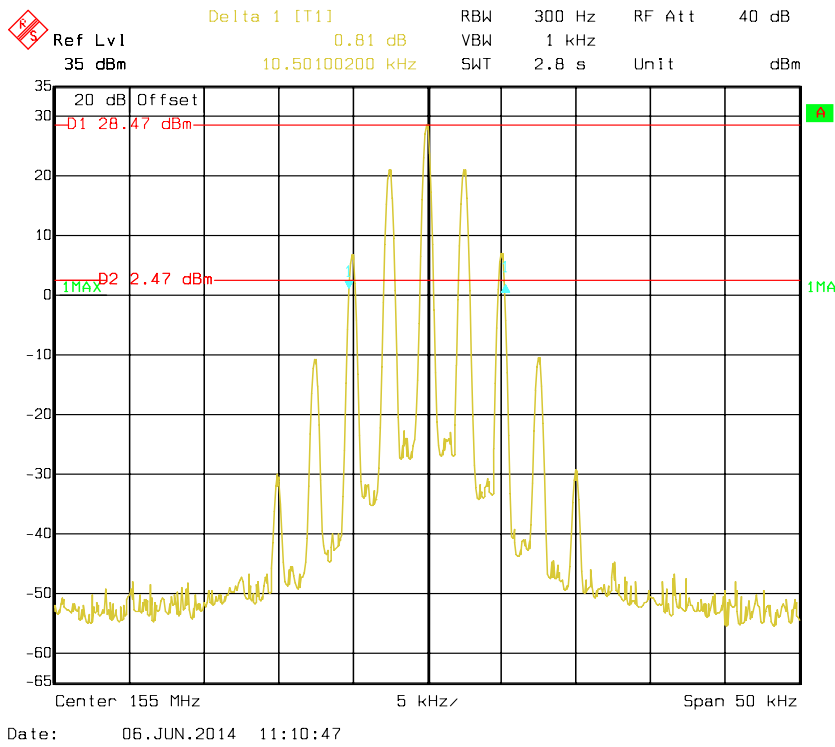
Test Mode: Transmitting

Test Result: Compliance.

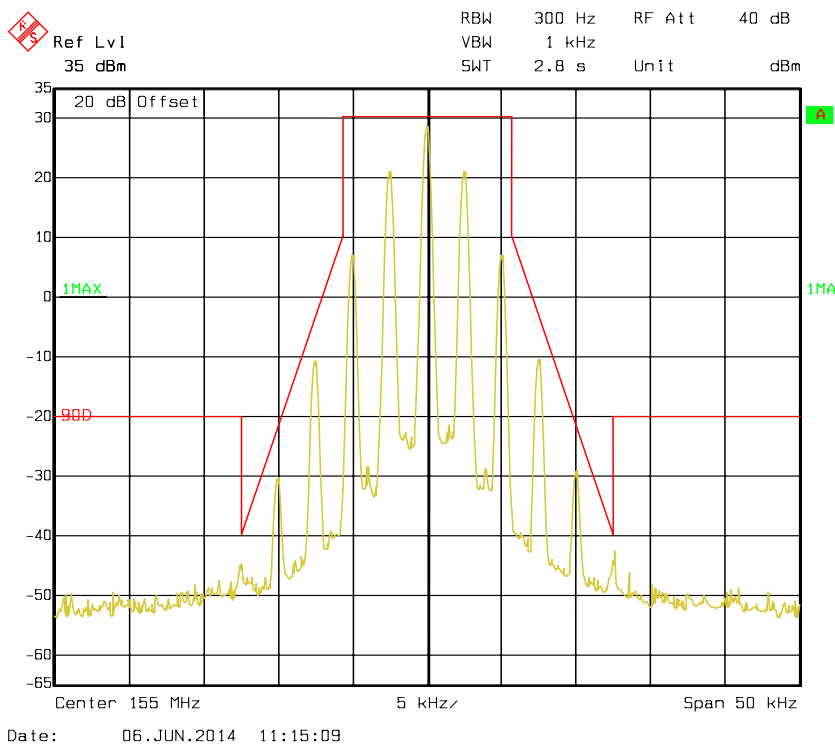
Please refer to following table.

Modulation Mode	Channel Separation	Frequency (MHz)	26 dB Bandwidth (kHz)	Output Power
FM	12.5 kHz	155	10.50	Low Power Level
		155	10.70	High Power Level
4FSK		155	9.40	Low Power Level
		155	9.40	High Power Level

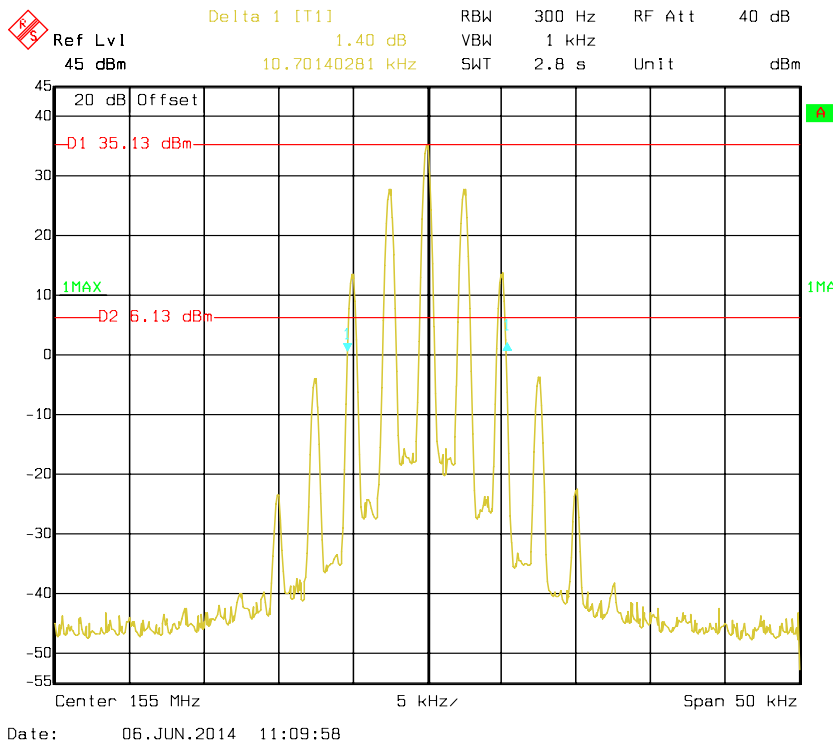
Occupied Bandwidth – FM (Low Power Level)



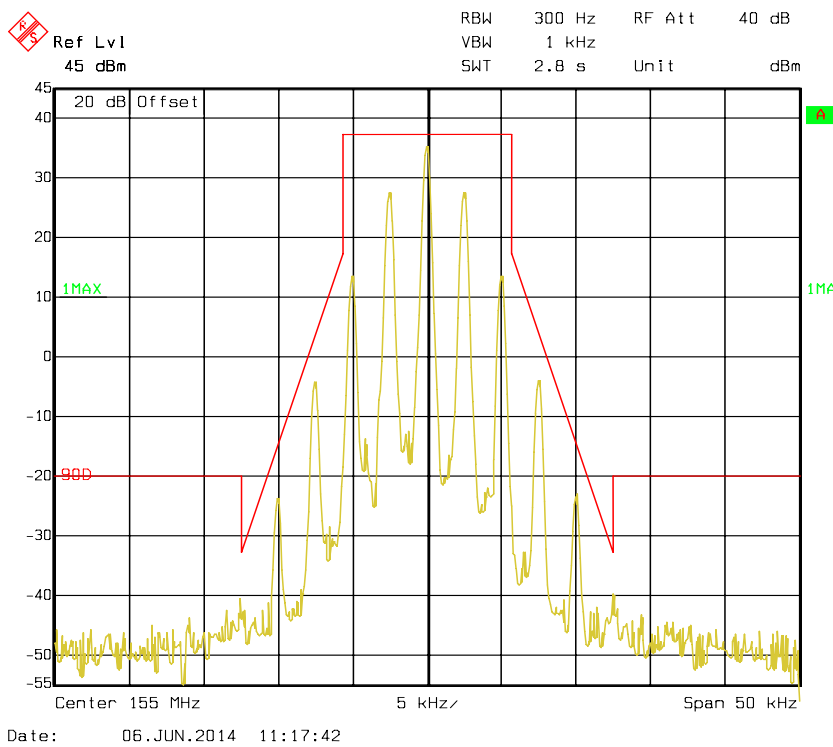
Emission Mask - Type D



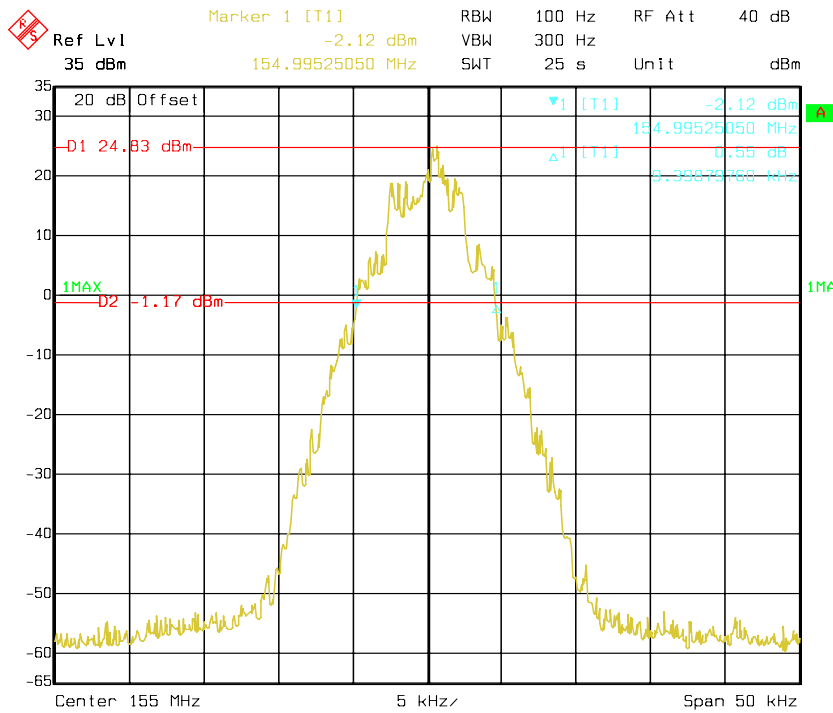
Occupied Bandwidth – FM (High Power Level)



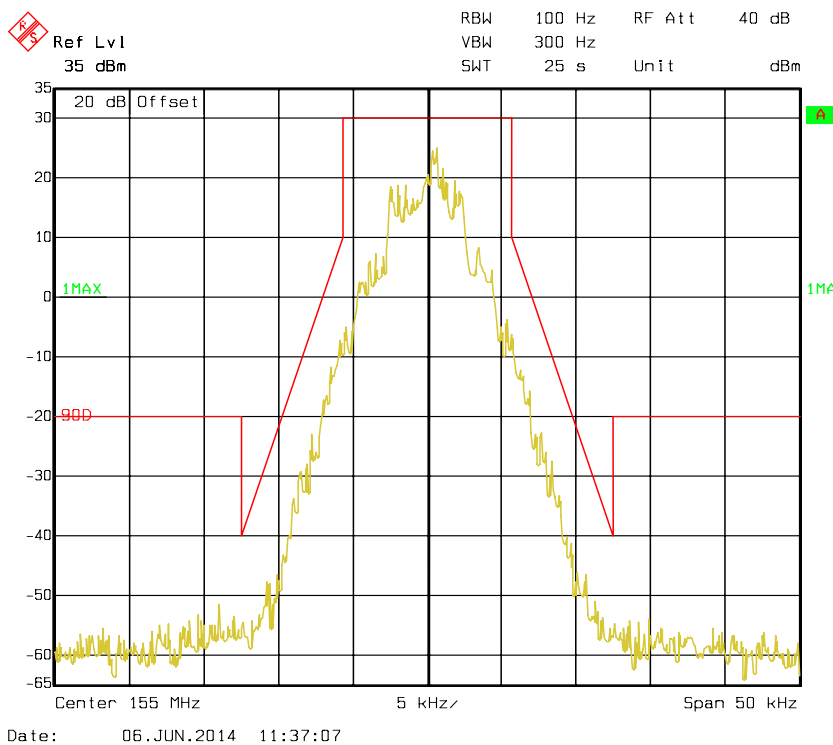
Emission Mask - Type D



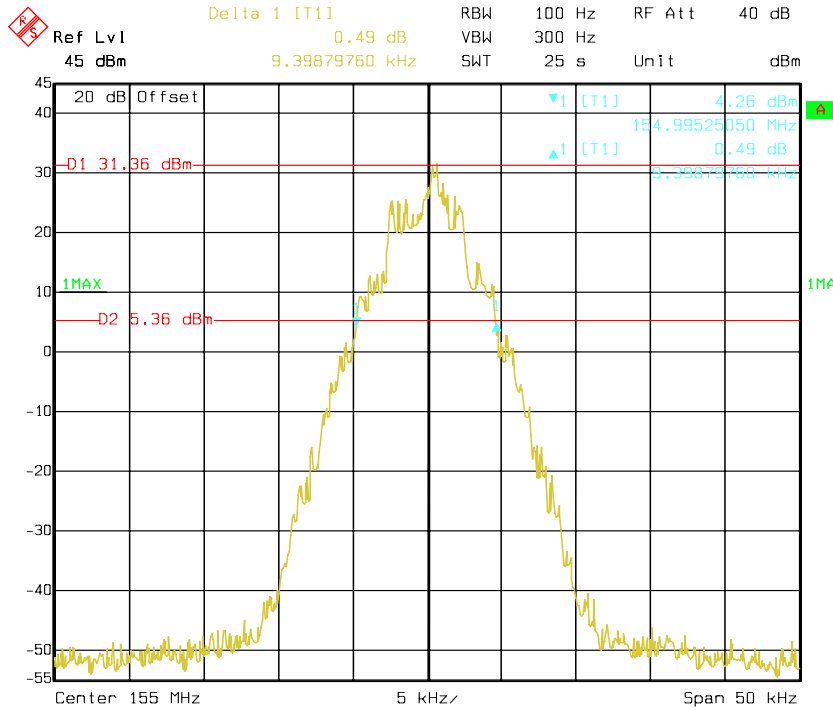
Occupied Bandwidth – 4FSK (Low Power Level)



Emission Mask - Type D

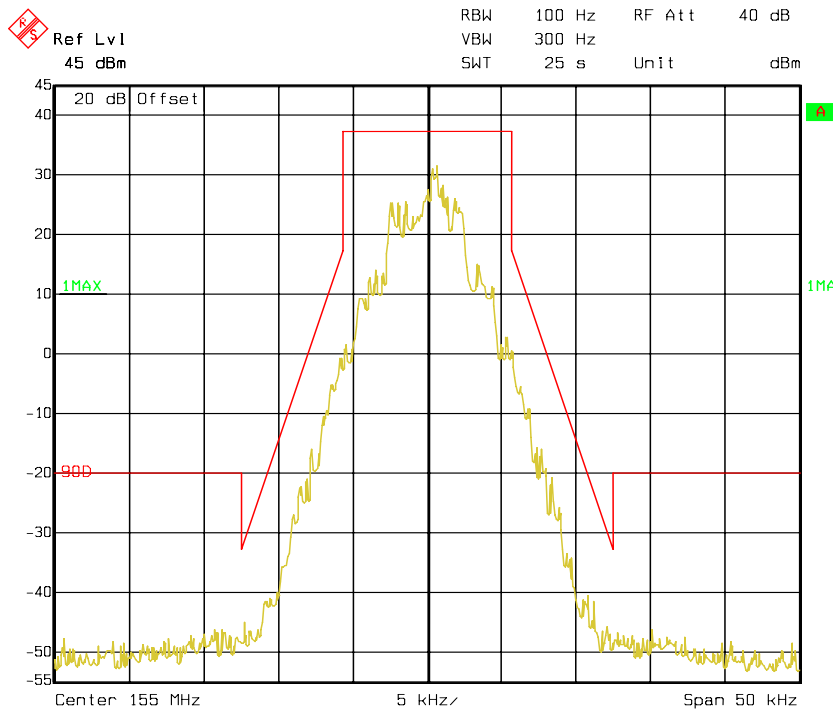


Occupied Bandwidth -4FSK (Highest Power Level)



Date: 06.JUN.2014 11:34:21

Emission Mask - Type D



Date: 06.JUN.2014 11:35:06

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) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88)$ 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 $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.
- (4) The reference level for showing compliance with the emission mask shall be established using a resolution bandwidth sufficiently wide (usually two or three times the channel bandwidth) to capture the true peak emission of the equipment under test. In order to show compliance with the emission mask up to and including 50 kHz removed from the edge of the authorized bandwidth, adjust the resolution bandwidth to 100 Hz with the measuring instrument in a peak hold mode. A sufficient number of sweeps must be measured to insure that the emission profile is developed. If video filtering is used, its bandwidth must not be less than the instrument resolution bandwidth. For emissions beyond 50 kHz from the edge of the authorized bandwidth, see paragraph (o) of this section. If it can be shown that use of the above instrumentation settings do not accurately represent the true interference potential of the equipment under test, an alternate procedure may be used provided prior Commission approval is obtained.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2013-06-16	2014-06-15

* **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 Procedure

Adjust the spectrum analyzer for the following settings:

- 1) Resolution Bandwidth = 100 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**

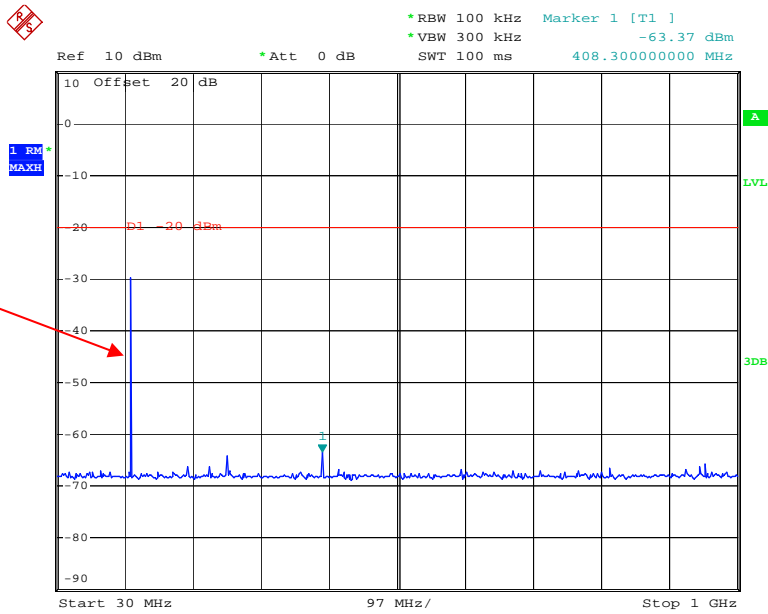
Temperature:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-03-10.

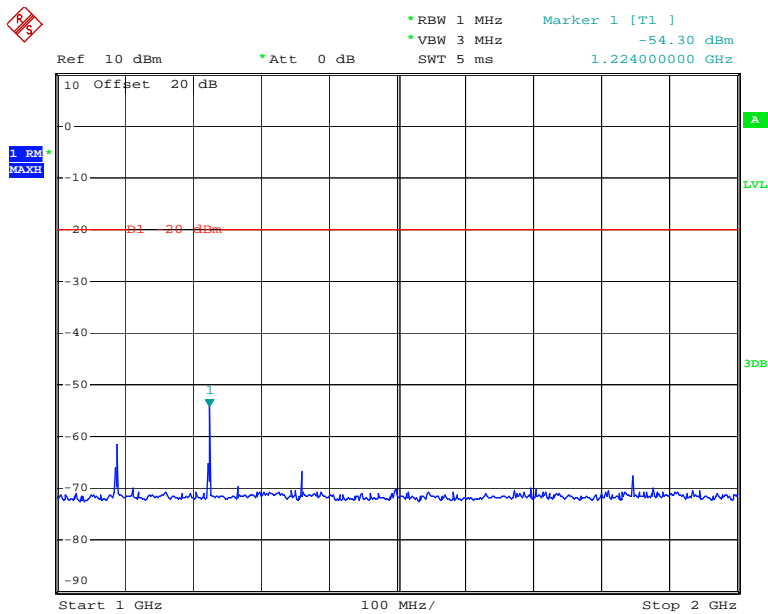
Please refer to the following plots.

136.0125 MHz – FM Mode (Not For FCC Review)

Fundamental test with Band Reject Filter

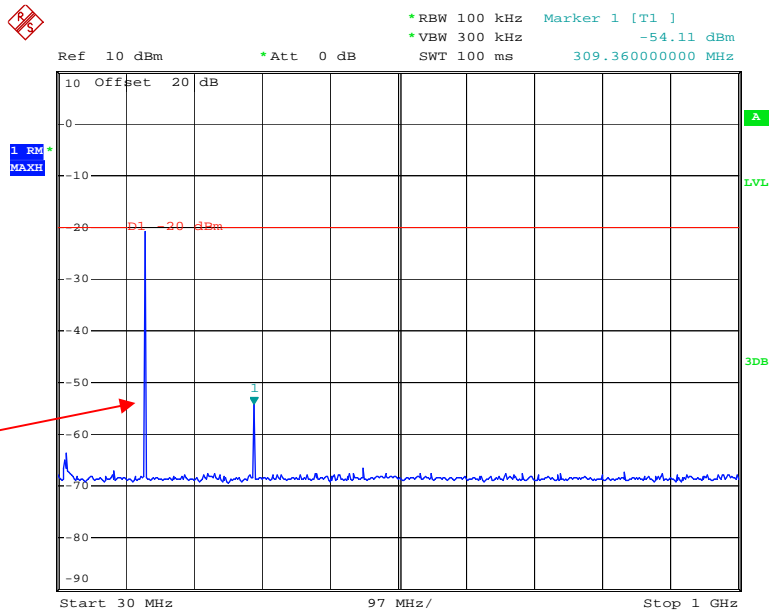


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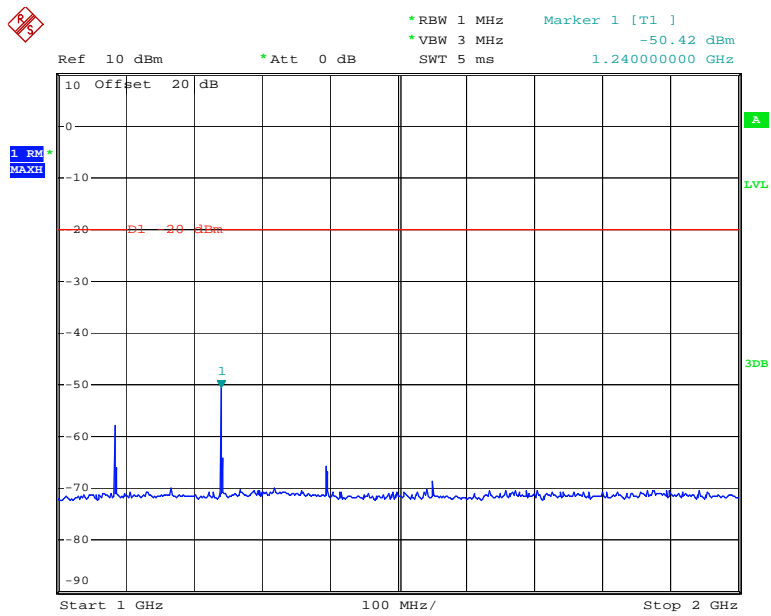


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155 MHz – FM Mode



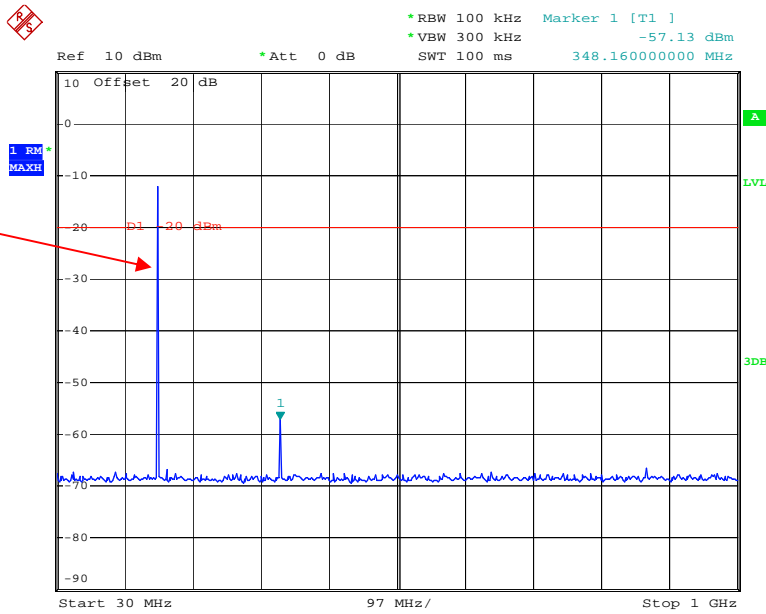
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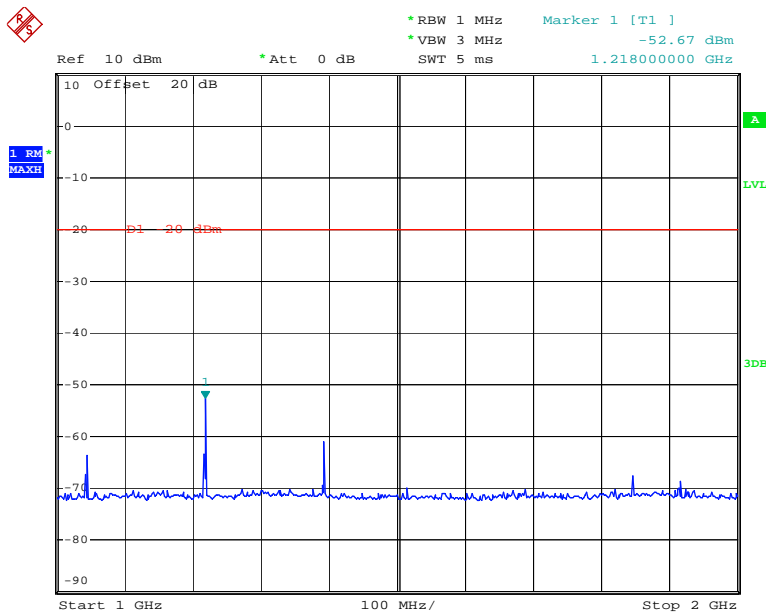
Date: 10.MAR.2014 13:08:09

173.9875 MHz – FM Mode (Not For FCC Review)

Fundamental test with Band Reject Filter



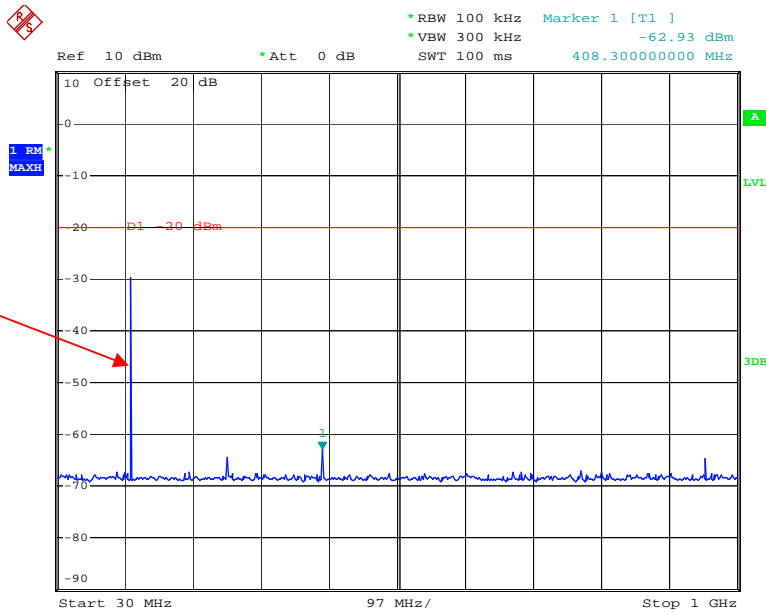
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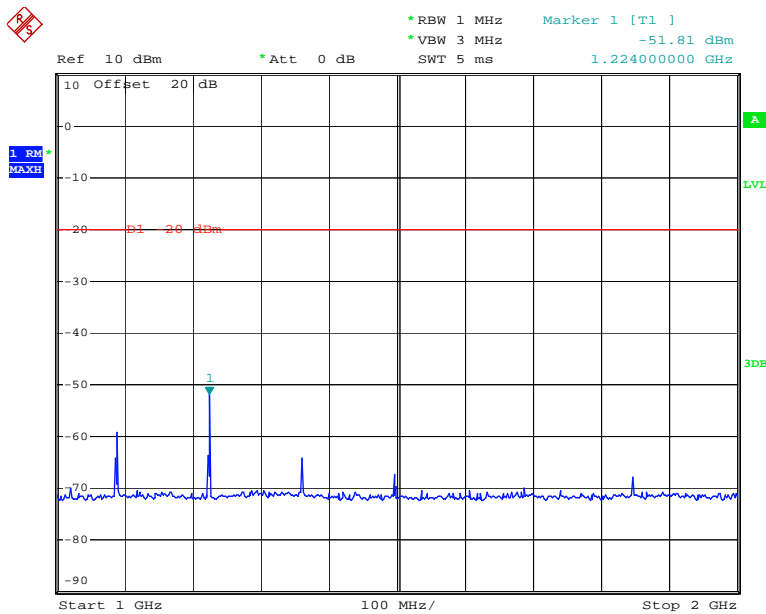
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136.0125 MHz – 4FSK Mode (Not For FCC Review)

Fundamental test with Band Reject Filter



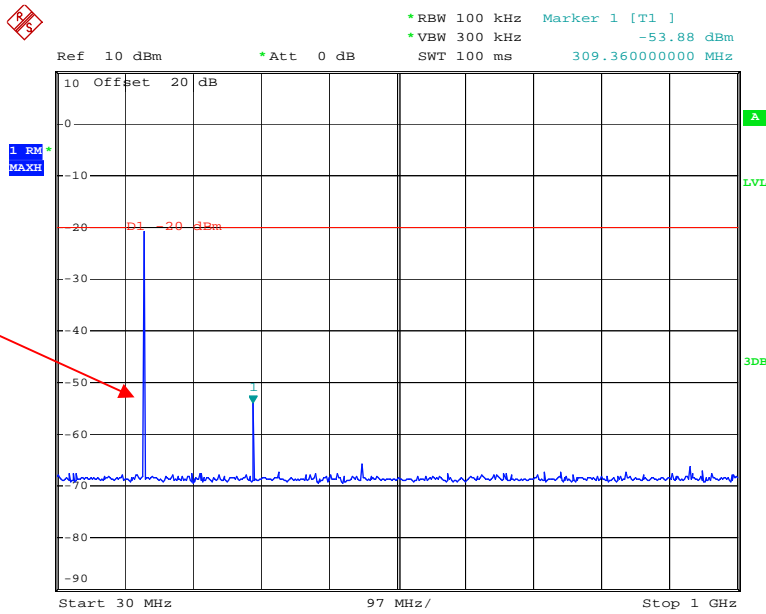
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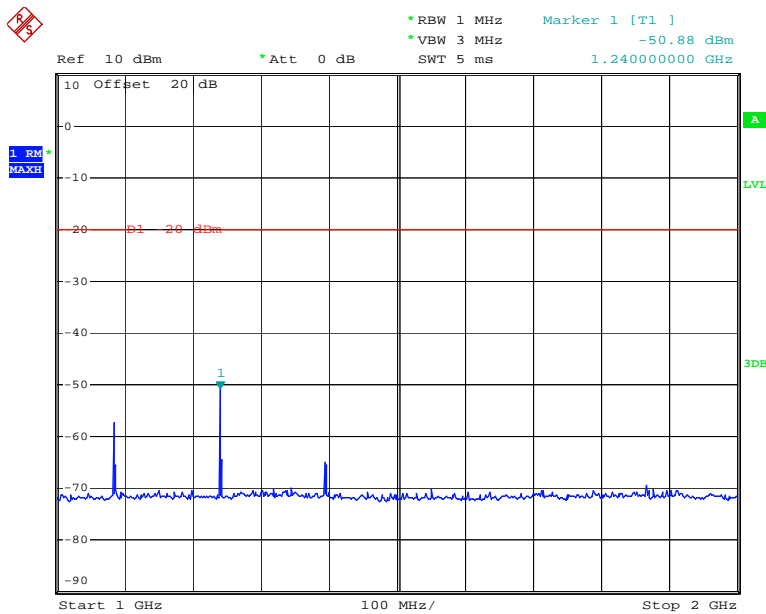
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155 MHz – 4FSK Mode

Fundamental test with Band Reject Filter



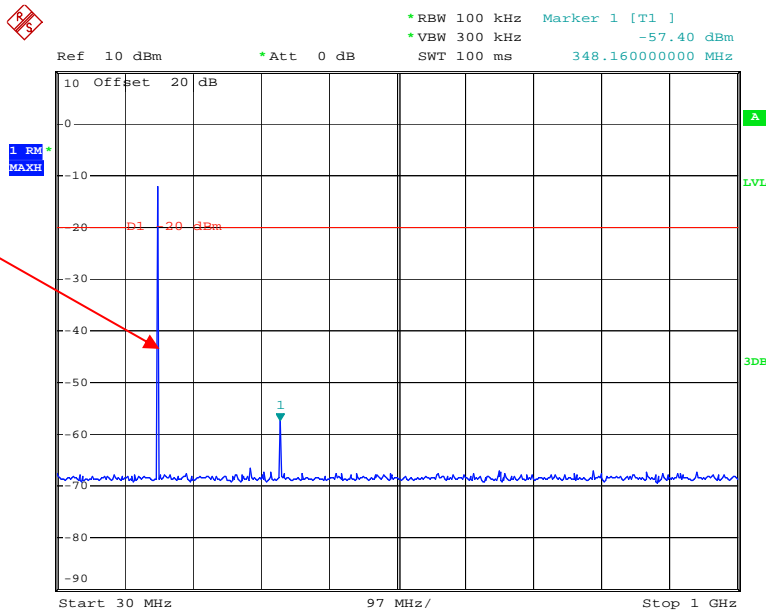
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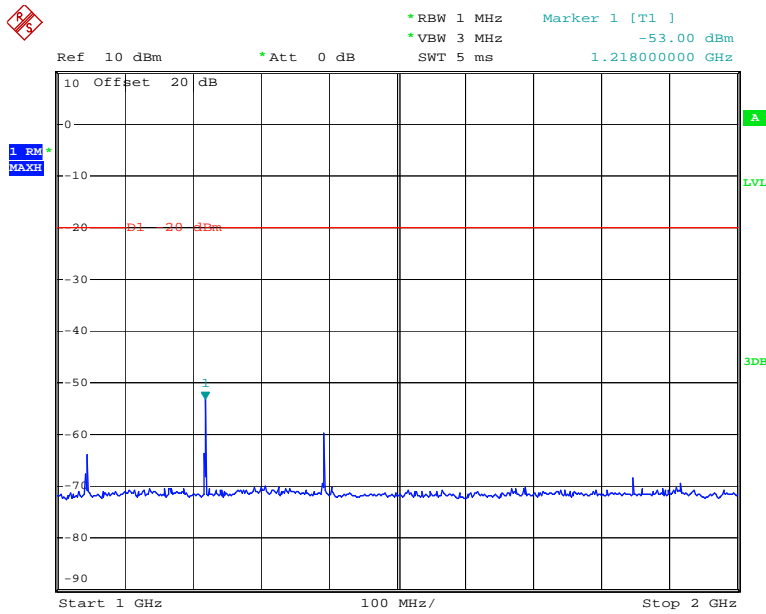
Date: 10.MAR.2014 13:10:51

173.9875 MHz – 4FSK Mode (Not For FCC Review)

Fundamental test with Band Reject Filter



Date: 10.MAR.2014 13:11:54



Date: 10.MAR.2014 13:11:07

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	2013-05-06	2014-05-05
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-05
R&S	Spectrum Analyzer	FSEM	DE31388	2013-05-07	2014-05-06
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-18
Giga	Signal Generator	1026	320408	2013-05-09	2014-05-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-05

* **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.

Test Data

Environmental Conditions

Temperature:	19.1 °C
Relative Humidity:	68 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-03-10.

Test Mode: Transmitting (FM mode for worst case)

Frequency (MHz)	Polar (H/V)	S.A. Reading (dBμV)	S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
f_c = 136.0125 MHz (Not For FCC Review)								
34.850	H	28.56	-44.7	-24.1	0.2	-69.0	-20.0	49.0
60.070	H	37.05	-60.8	-10.3	0.2	-71.3	-20.0	51.3
159.980	H	28.31	-80.6	0.0	0.4	-81.0	-20.0	61.0
271.530	H	27.65	-80.2	0.0	0.5	-80.7	-20.0	60.7
1457.680	H	30.15	-71	9.3	1.3	-63.0	-20.0	43.0
43.580	V	32.06	-50	-21.7	0.2	-71.9	-20.0	51.9
159.980	V	27.29	-77	0.0	0.4	-77.4	-20.0	57.4
408.300	V	31.90	-60.3	0.0	0.6	-60.9	-20.0	40.9
1433.820	V	29.76	-71.1	9.1	1.3	-63.3	-20.0	43.3
f_c = 155.000MHz								
30.000	H	28.78	-38.4	-26.3	0.3	-65.0	-20.0	45.0
43.580	H	28.91	-53.2	-21.7	0.2	-75.1	-20.0	55.1
54.250	H	26.52	-68	-12.9	0.2	-81.1	-20.0	61.1
310.330	H	29.89	-76.3	0.0	0.5	-76.8	-20.0	56.8
1536.710	H	30.36	-71	9.7	1.4	-62.7	-20.0	42.7
44.550	V	28.32	-55.7	-20.4	0.2	-76.3	-20.0	56.3
159.980	V	25.58	-78.7	0.0	0.4	-79.1	-20.0	59.1
310.330	V	29.34	-74.4	0.0	0.5	-74.9	-20.0	54.9
465.530	V	30.94	-58	0.0	0.7	-58.7	-20.0	38.7
1526.590	V	30.19	-71.7	9.7	1.4	-63.4	-20.0	43.4
f_c = 173.9875MHz (Not For FCC Review)								
40.670	H	25.47	-50.8	-25.5	0.2	-76.5	-20.0	56.5
54.250	H	27.36	-67.1	-12.9	0.2	-80.2	-20.0	60.2
159.980	H	27.38	-81.5	0.0	0.4	-81.9	-20.0	61.9
348.160	H	28.62	-73	0.0	0.6	-73.6	-20.0	53.6
1369.540	H	30.06	-70.4	8.7	1.2	-62.9	-20.0	42.9
53.280	V	31.02	-62.9	-13.4	0.2	-76.5	-20.0	56.5
63.950	V	28.99	-70.5	-8.2	0.2	-78.9	-20.0	58.9
348.160	V	31.29	-67.8	0.0	0.6	-68.4	-20.0	48.4
521.790	V	28.69	-58.7	0.0	0.7	-59.4	-20.0	39.4
1503.710	V	30.47	-71.4	9.5	1.3	-63.2	-20.0	43.2

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = SG Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level
- 4) The substituted antenna (dipole antenna) was the same as 80 MHz half wave length blew 80 MHz, therefor the antenna gain is negative blew 80 MHz

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	DE31388	2013-05-07	2014-05-06
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2013-08-01	2014-07-31

* **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 an external AC 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 AC 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.

Test Data

Environmental Conditions

Temperature:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-03-10

Test Mode: Transmitting

Reference Frequency: 155 MHz				
Temperature (°C)	Voltage (V _{DC})	Reading (MHz)	Frequency Error (ppm)	Limit (ppm)
-30	7.4	155.000058	0.374	5
-20	7.4	155.000061	0.394	
-10	7.4	155.000043	0.277	
0	7.4	155.000055	0.355	
10	7.4	155.000029	0.187	
20	7.4	155.000034	0.219	
30	7.4	155.000042	0.271	
40	7.4	155.000038	0.245	
50	7.4	155.000047	0.303	
60	7.4	155.000039	0.252	
25	8.88	155.000033	0.213	
25	5.92	155.000042	0.271	

FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

Regulations: FCC §90.214

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

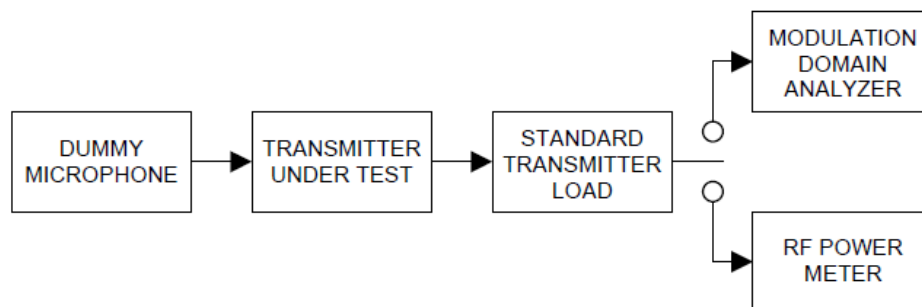
Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-08

* 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 equipment as illustrated.



b) Connect the output of the standard transmitter load to the RF power meter. Supply sufficient attenuation via the RF attenuator to provide a level that is approximately 40 dB below the maximum allowable input to the modulation domain analyzer.

c) Unkey the transmitter.

d) Disconnect the RF power meter and connect the modulation domain analyzer in its place. Set the envelope trigger of the modulation domain analyzer to the minimum level that will trigger when the transmitter is keyed.

e) Reduce the attenuation of the RF attenuator so that the input to the modulation domain analyzer is increased by 30 dB when the transmitter is keyed.

f) Set the modulation domain analyzer to trigger on the rising edge of the waveform in order to capture a single-shot turn-on of the transmitter signal.

g) Adjust the display of the modulation domain analyzer for proper viewing of the transmitter transient behavior. Set the timebase reference to the left for observing the transmitter turn-on transient.

h) Key the transmitter.

- i) Observe the stored display of the modulation domain analyzer. The signal trace shall be maintained within the allowable limits during the period's t1 and t2, and shall also remain within limits following t2.
- j) Adjust the modulation domain analyzer to trigger on the falling edge of the transmitter waveform in order to capture a single-shot turn-off transient of the transmitter signal.
- k) Adjust the display of the modulation domain analyzer for proper viewing of the transmitter transient behavior. Set the timebase reference to the right for observing the transmitter turn-off transient.
- l) Unkey the transmitter.
- m) Observe the stored display of the modulation domain analyzer. The signal trace shall be maintained within the allowable limits during the period t3.

Test Data

Environmental Conditions

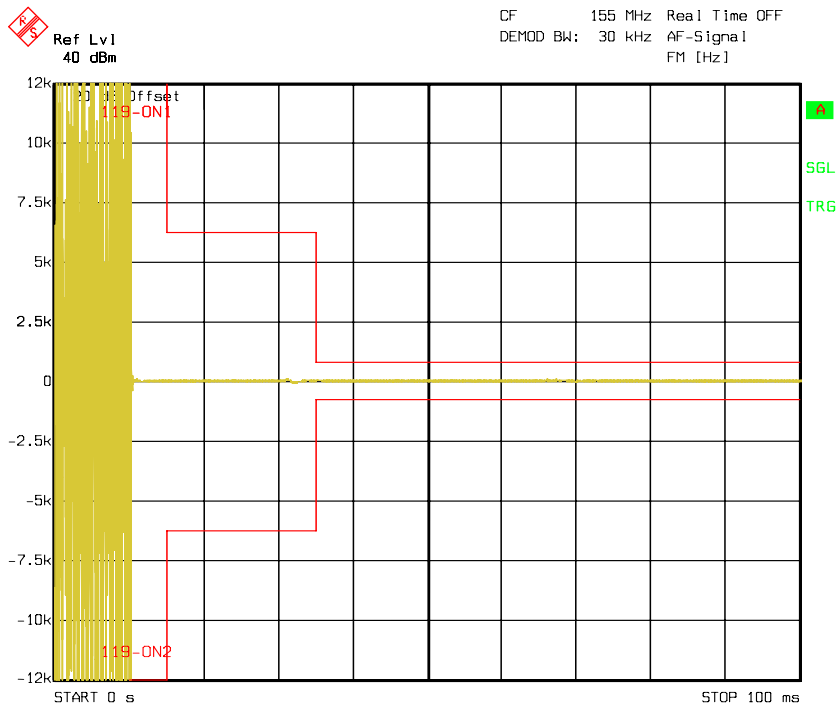
Temperature:	27.9 °C
Relative Humidity:	60 %
ATM Pressure:	101.8 kPa

The testing was performed by Leon Chen on 2014-06-06

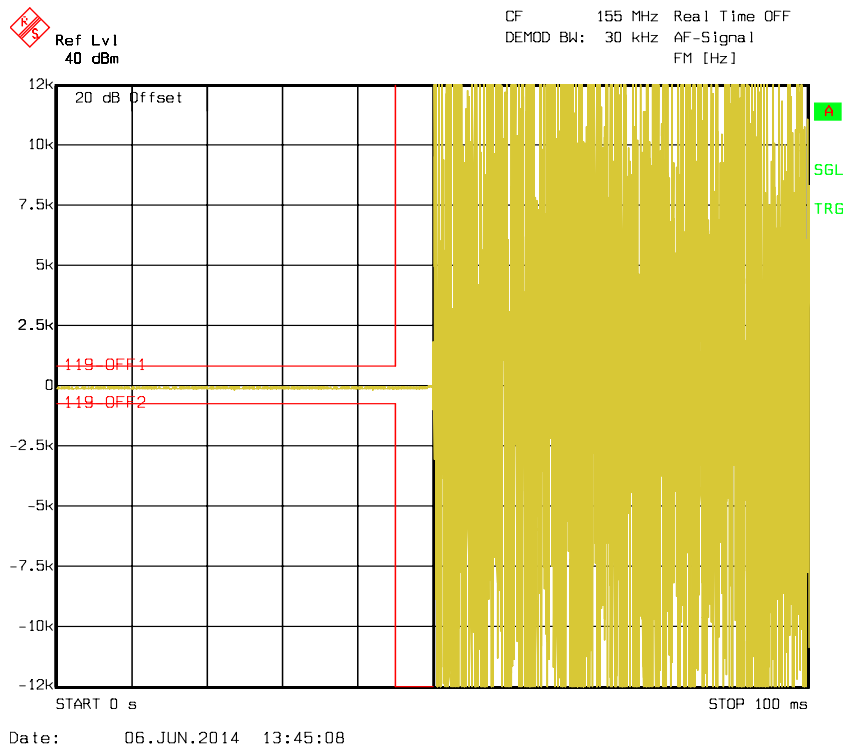
Channel Separation (kHz)	Period (ms)	Maximum frequency difference	Result
12.5	<5 (t1)	± 12.5 kHz	Pass
	<20 (t2)	± 6.25 kHz	
	<5 (t3)	± 12.5 kHz	

Please refer to the following plots.

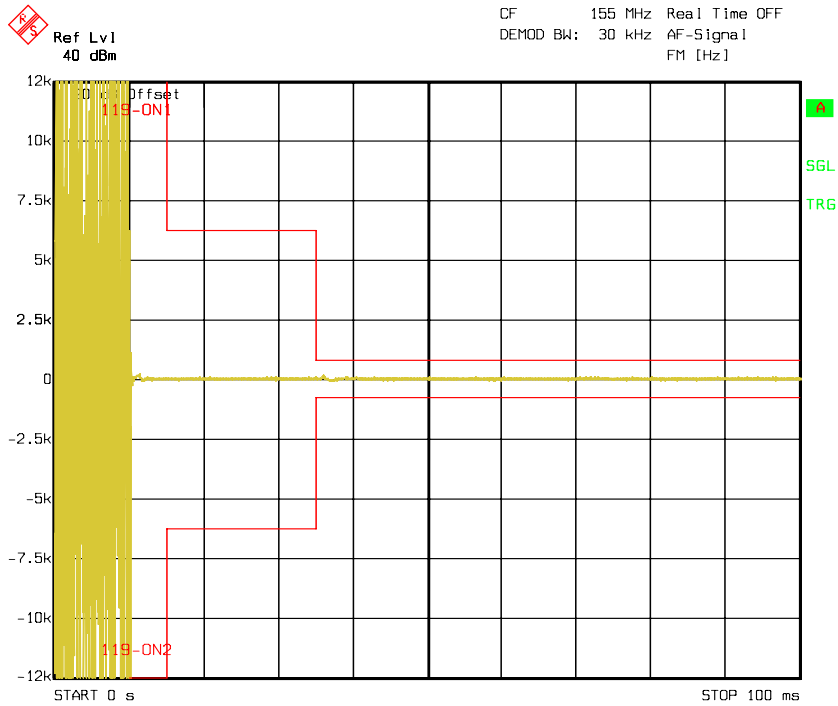
Turn on – 155 MHz, FM, high power level



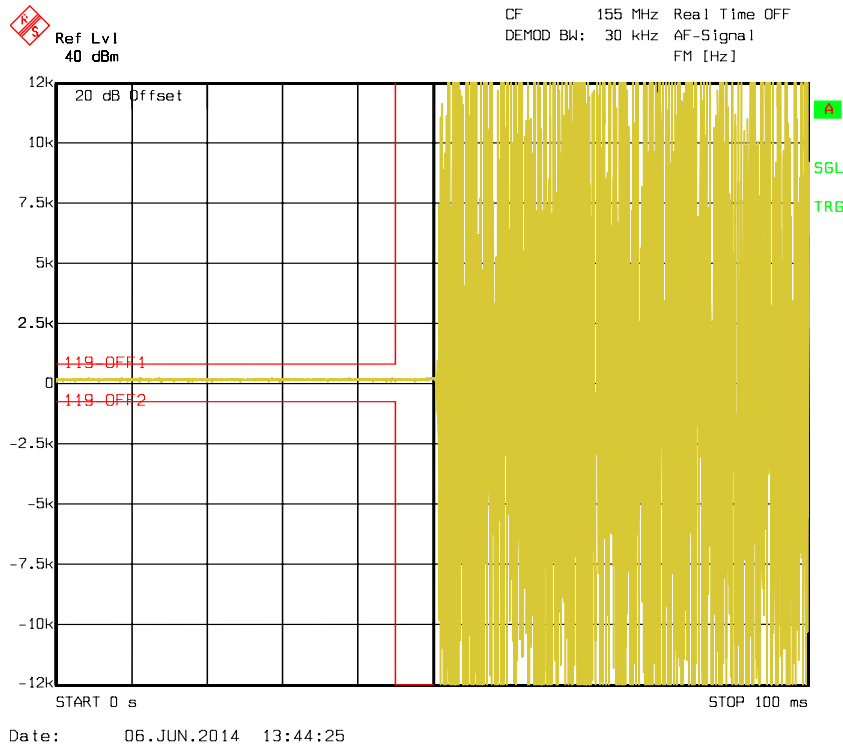
Turn off – 155 MHz, FM, high power level



Turn on – 155 MHz, FM, low power level



Turn off – 155 MHz, FM, low power level



DECLARATION OF SIMILARITY

COVALUE

SHENZHEN COVALUE COMMUNICATIONS CO., LTD.

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

Tel: 0755-86345789

Fax: 0755-86345790

DECLARATION OF SIMILARITY

Date : 2014-02-07

To:

Bay Area Compliance Laboratories Corp. (Dongguan)

No.69 Pulong Village Puxinhu Industry Zone Tangxia,

Dongguan, China

<http://www.baclcorp.com>

Dear Sir or Madam:

We, SHENZHEN COVALUE COMMUNICATIONS CO., LTD., hereby declare that product: Two way radio, model: DR6000-1, DR6100-1, DR7100-1 is electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics as model name: DR7000-1.

A description of the differences between the tested model and those that are declared similar are as follows:

DR6000-1, DR6100-1, DR7000-1, DR7100-1 are just different in model name.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Shu, Chengtao

Research & Development Department Manager



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