FCC PART 22 AND PART 90

TEST REPORT

For

Kirisun Communications Co., Ltd

3-6Flrs,ROBETA Building, No. 1, QiMin Road, Song Ping Shan Area, Science & Industry Park,Nanshan District Shenzhen 518057 P.R. China

FCC ID: Q5EDR60001

Report Type:	**Product Name:**
Original Report	DMR Repeater(DR600), Transceiver(DR600T)

Test Engineer:	Kevin Hu
Report Number:	RDG170511007A1
Report Date:	2017-06-09
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China Tel: 028-65525123, Fax: 028-65525125 www.baclcorp.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***Kirisun Communications Co., Ltd*** 's product, model: ***DR600, DR600T*** ***(FCC ID: Q5EDR60001)***, which were measured approximately:48.3 cm (H) x 45.0 cm (W) x 4.4 cm (H), rated input voltage: 13.6 VDC or 120Vac.

Note: The series product, model DR600 and DR600T are electrically identical, the differences between them are the model name and product name, we selected DR600 for testing, the details were explained in the declaration letter.

**All measurement and test data in this report was gathered from final production sample, serial number: 170511007 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-05-11, and EUT conformed to test requirement.*

Objective

This test report is prepared on behalf of ***Kirisun Communications Co., Ltd*** in accordance with Part 2, Part 22 and Part 90 of the Federal Communications Commission rules.

The model: ***DR600, DR600T*** use identical RF boards(Main Board, Transmitter Board, Receiver Board, AMP Board) with TR850(FCC ID: Q5ETR85001), only the interface board, power board and Enclosure are different.

The change made to the device affected Radiated Spurious Emissions recorded in the report.

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 22 – Public Mobile Service
Part 90 – Private Land Mobile Radio Services

Applicable Standards: TIA-603-D.

All of the measurements detailed in this Test Report were performed by Bay Area Compliance Laboratories Corp. (Chengdu).

The Bay Area Compliance Laboratories Corp. Chengdu's measurement Uncertainties (calculated for a k=2 Coverage Factor corresponding to approximately 95% Coverage) were as follows:

-For all of the AC Line Conducted Emissions Tests reported herein: ±3.17 dB.
-For of all of the Direct Antenna Conducted Emissions Tests reported herein: ±0.56 dB.

-For of all of the direct Radiated Emissions Tests reported herein are:
30 MHz to 200 MHz: ±4.7 dB;
200 MHz to 1 GHz: ±6.0 dB;
1 GHz to 6 GHz: ±5.13dB; and,
6 GHz to 40 GHz: ±5.47dB.

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Test site at BACL 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 April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
FCC §1.1310&§2.1091	Maximum Permissible Exposure (MPE)	Compliant
FCC§2.1046&§22.727 &§90.205	RF Output Power	Compliant*
FCC§2.1047&§90.207	Modulation Characteristic	Compliant*
FCC§2.1049&§22.357& §22.731&§90.209&§90.20	Occupied Bandwidth & Emission Mask	Compliant*
FCC§2.1051&§22.861& §90.210	Spurious Emission at Antenna Terminal	Compliant*
FCC§2.1053&§22.861& §90.210	Spurious Radiated Emissions	Compliant
FCC§2.1055&§22.355& §90.213	Frequency Stability	Compliant*
FCC§90.214	Transient Frequency Behavior	Compliant*

Note:
Compliant*: Please refer to the report RDG140813007-00 with FCC ID: *Q5ETR85001* for the model *TR850*, which was issued on 2014-09-15 by Bay Area Compliance Laboratories Corp. (Dongguan).

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode.

EUT Specification:

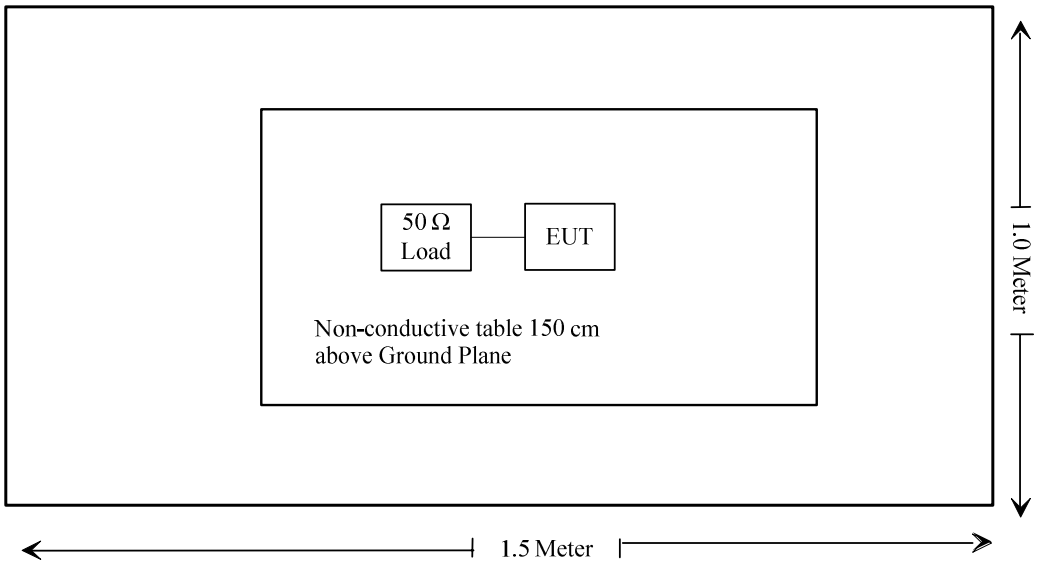
Operating Frequency Band	136-174 MHz
Modulation Mode	FM/4FSK
Channel Spacing	12.5 kHz
Rated Output Power	High:45W Low:25W

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	Terminal Load (50 Ω)	N/A	N/A

Block Diagram of Test Setup

Radiated:



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

Applicable Standard

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

Limits for Maximum Permissible Exposure (MPE)

Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time |E|, |H| or S (minutes)**
0.3- 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

f = frequency in MHz;
* = Plane-wave equivalent power density;

MPE Calculation

Prediction of power density at the distance of the applicable MPE limit

$$S = PG/4\pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

MPE Results

Frequency (MHz)	**Antenna Gain**		**Maximum output power including Tune-up Tolerance**	**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
	(dBi)	**(numeric)**	**(mW)**			
136-174	1.5	1.41	48000	100	0.539	1.0

Note: the target power is 48 W.

Result: The device meet FCC MPE at 100 cm distance

FCC §2.1053 & §22.861 & §90.210 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

FCC §2.1053, §22.861, §90.210.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A121808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	6751	2014-06-16	2017-06-15
EMCO	Adjustable Dipole Antenna	3121C	9109-258	N/A	N/A
HP	Signal Generator	8648C	3623A04150	2017-05-23	2018-05-22
WILTRON	SWEPT FREQUENCY SYNTHESIZER	6737	213001	2017-05-23	2018-05-22
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2017-05-20	2018-05-19
EMCT	Semi-Anechoic Chamber	966	966-1	2015-04-24	2018-04-23
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09
Unknown	RF Cable (above 1GHz)	Unknown	NO.2	2016-11-10	2017-11-09

*** Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

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 of 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.

For part 90:
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.

For part 22:
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

Test Data

Environmental Conditions

Temperature:	27.1~28.4 °C
Relative Humidity:	40~40.1 %
ATM Pressure:	100.1 kPa

The testing was performed by Kevin Hu from 2017-06-01 to 2017-06-04.

Test Mode: Transmitting (FM mode, High power level)

Frequency (MHz)	Polar (H/V)	S.A. Reading (dBμV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency: 155.000 MHz, for FCC Part 90								
310.000	H	27.31	-57.4	0.0	0.5	-57.9	-20.0	37.9
310.000	V	28.41	-54.5	0.0	0.5	-55.0	-20.0	35.0
465.000	H	29.50	-51.8	0.0	0.7	-52.5	-20.0	32.5
465.000	V	31.02	-47.3	0.0	0.7	-48.0	-20.0	28.0
620.000	H	26.67	-52.4	0.0	0.8	-53.2	-20.0	33.2
620.000	V	27.87	-48.7	0.0	0.8	-49.5	-20.0	29.5
775.000	H	27.04	-48.6	0.0	0.9	-49.5	-20.0	29.5
775.000	V	28.58	-44.2	0.0	0.9	-45.1	-20.0	25.1
930.000	H	27.81	-45.8	0.0	1	-46.8	-20.0	26.8
930.000	V	29.42	-40.9	0.0	1	-41.9	-20.0	21.9
1085.000	H	37.62	-62.4	7.5	1.3	-56.2	-20.0	36.2
1085.000	V	39.36	-60.9	7.5	1.3	-54.7	-20.0	34.7
1240.000	H	50.07	-50.3	7.7	1.3	-43.9	-20.0	23.9
1240.000	V	49.93	-50.5	7.7	1.3	-44.1	-20.0	24.1
1395.000	H	44.46	-56.2	8.9	1.5	-48.8	-20.0	28.8
1395.000	V	45.68	-54.7	8.9	1.5	-47.3	-20.0	27.3
1550.000	H	40.90	-60.4	9.8	1.2	-51.8	-20.0	31.8
1550.000	V	42.74	-59.2	9.8	1.2	-50.6	-20.0	30.6
Frequency: 161.650 MHz, for FCC Part 22								
323.300	H	27.55	-56.9	0.0	0.5	-57.4	-13.0	44.4
323.300	V	28.51	-54	0.0	0.5	-54.5	-13.0	41.5
484.950	H	29.84	-50.9	0.0	0.7	-51.6	-13.0	38.6
484.950	V	31.28	-46.4	0.0	0.7	-47.1	-13.0	34.1
646.600	H	26.87	-51.5	0.0	0.8	-52.3	-13.0	39.3
646.600	V	28.11	-47.8	0.0	0.8	-48.6	-13.0	35.6
808.250	H	27.26	-47.9	0.0	0.9	-48.8	-13.0	35.8
808.250	V	28.85	-43.2	0.0	0.9	-44.1	-13.0	31.1
969.900	H	28.08	-44.4	0.0	1	-45.4	-13.0	32.4
969.900	V	29.63	-39.5	0.0	1	-40.5	-13.0	27.5
1131.550	H	35.13	-65	7.4	1.4	-59.0	-13.0	46.0
1131.550	V	38.27	-62	7.4	1.4	-56.0	-13.0	43.0
1293.200	H	49.33	-50.5	8.2	1.3	-43.6	-13.0	30.6
1293.200	V	51.89	-48.5	8.2	1.3	-41.6	-13.0	28.6
1454.850	H	49.62	-51.5	9.3	1.3	-43.5	-13.0	30.5
1454.850	V	53.18	-48	9.3	1.3	-40.0	-13.0	27.0
1616.500	H	38.76	-62.4	10.3	1.2	-53.3	-13.0	40.3
1616.500	V	42.97	-58.9	10.3	1.2	-49.8	-13.0	36.8

Test Mode: Transmitting (4FSK mode, High power level)

Frequency (MHz)	Polar (H/V)	S.A. Reading (dBμV)	Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
Frequency: 155.000 MHz, for FCC Part 90								
310.000	H	26.79	-57.9	0.0	0.5	-58.4	-20.0	38.4
310.000	V	27.79	-55.1	0.0	0.5	-55.6	-20.0	35.6
465.000	H	29.03	-52.2	0.0	0.7	-52.9	-20.0	32.9
465.000	V	30.54	-47.8	0.0	0.7	-48.5	-20.0	28.5
620.000	H	26.21	-52.9	0.0	0.8	-53.7	-20.0	33.7
620.000	V	27.27	-49.3	0.0	0.8	-50.1	-20.0	30.1
775.000	H	26.46	-49.2	0.0	0.9	-50.1	-20.0	30.1
775.000	V	28.06	-44.7	0.0	0.9	-45.6	-20.0	25.6
930.000	H	27.27	-46.3	0.0	1	-47.3	-20.0	27.3
930.000	V	28.92	-41.4	0.0	1	-42.4	-20.0	22.4
1085.000	H	37.28	-62.7	7.5	1.3	-56.5	-20.0	36.5
1085.000	V	38.95	-61.4	7.5	1.3	-55.2	-20.0	35.2
1240.000	H	49.68	-50.6	7.7	1.3	-44.2	-20.0	24.2
1240.000	V	49.52	-50.9	7.7	1.3	-44.5	-20.0	24.5
1395.000	H	44.17	-56.5	8.9	1.5	-49.1	-20.0	29.1
1395.000	V	45.46	-54.9	8.9	1.5	-47.5	-20.0	27.5
1550.000	H	40.75	-60.6	9.8	1.2	-52.0	-20.0	32.0
1550.000	V	42.56	-59.4	9.8	1.2	-50.8	-20.0	30.8
Frequency: 161.650 MHz, for FCC Part 22								
323.300	H	27.19	-57.2	0.0	0.5	-57.7	-13.0	44.7
323.300	V	28.13	-54.4	0.0	0.5	-54.9	-13.0	41.9
484.950	H	29.35	-51.4	0.0	0.7	-52.1	-13.0	39.1
484.950	V	30.83	-46.9	0.0	0.7	-47.6	-13.0	34.6
646.600	H	26.52	-51.9	0.0	0.8	-52.7	-13.0	39.7
646.600	V	27.61	-48.3	0.0	0.8	-49.1	-13.0	36.1
808.250	H	26.73	-48.4	0.0	0.9	-49.3	-13.0	36.3
808.250	V	28.37	-43.7	0.0	0.9	-44.6	-13.0	31.6
969.900	H	27.55	-44.9	0.0	1	-45.9	-13.0	32.9
969.900	V	29.20	-39.9	0.0	1	-40.9	-13.0	27.9
1131.550	H	34.66	-65.5	7.4	1.4	-59.5	-13.0	46.5
1131.550	V	37.70	-62.6	7.4	1.4	-56.6	-13.0	43.6
1293.200	H	48.99	-50.9	8.2	1.3	-44.0	-13.0	31.0
1293.200	V	51.24	-49.1	8.2	1.3	-42.2	-13.0	29.2
1454.850	H	49.05	-52.1	9.3	1.3	-44.1	-13.0	31.1
1454.850	V	52.55	-48.6	9.3	1.3	-40.6	-13.0	27.6
1616.500	H	38.22	-63	10.3	1.2	-53.9	-13.0	40.9
1616.500	V	42.52	-59.3	10.3	1.2	-50.2	-13.0	37.2

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 = Substituted Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

BELOW IS THE TEST REPORT FOR MODEL TR850

FCC PART 22 and 90
TEST REPORT

For

Kirisun Communications Co., Ltd.

3-6Flrs,ROBETA Building, No. 1, QiMin Road, Song Ping Shan Area, Science & Industry Park,Nanshan District Shenzhen 518057 P.R. China

FCC ID: Q5ETR85001

Report Type:	**Product Type:**
Original Report	DMR Repeater

Test Engineer:	Dean Liu
Report Number:	RDG140813007-00
Report Date:	2014-09-15
Reviewed By:	Leon Chen RF Engineer
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)

The *Kirisun Communications Co., Ltd.*'s product, model: *TR850* (*FCC ID: Q5ETR85001)* (the "EUT") in this report is a *DMR Repeater*, which was measured approximately: 48.5 cm (L) x 33.5 cm (H) x 14.0 cm (T), rated input voltage: 13.6 VDC or 120Vac.

** All measurement and test data in this report was gathered from production sample serial number: 140813007 (Assigned by the BACL, Dongguan). The EUT was received on 2014-08-18.*

Objective

This test report is prepared on behalf of *Kirisun Communications Co., Ltd.* in accordance with Part 2, Part22 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 22 – Public Mobile Service
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.

SYSTEM TEST CONFIGURATION

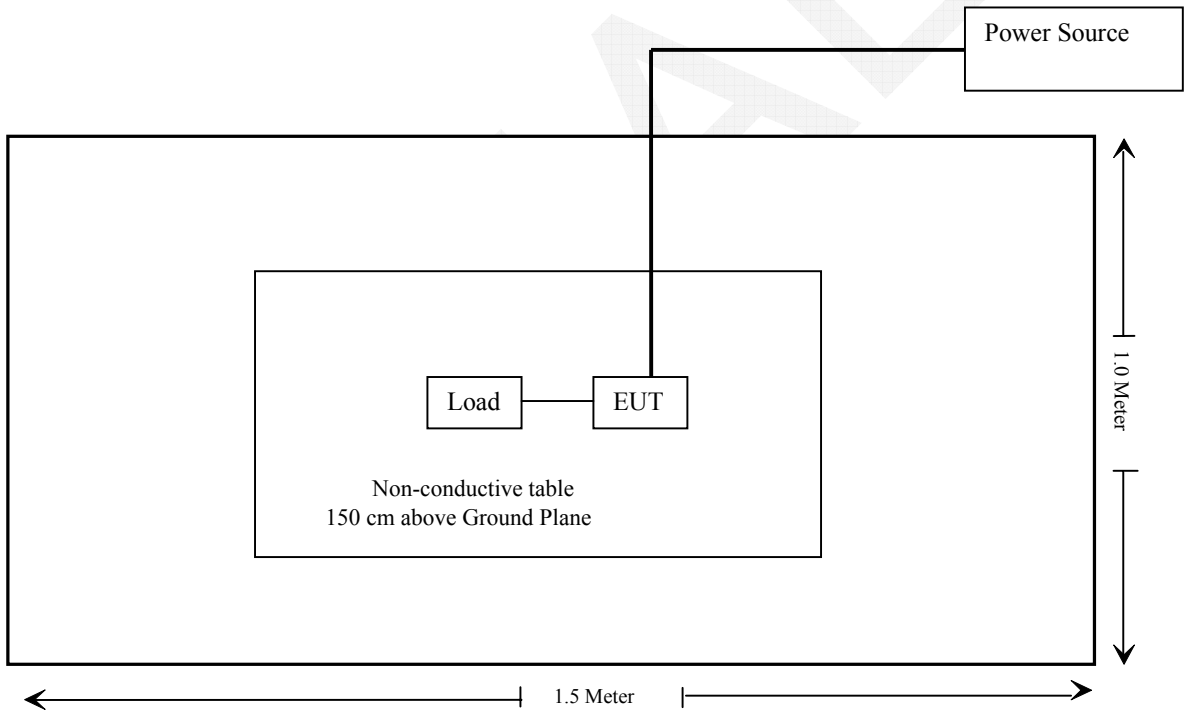
Description of Test Configuration

The system was configured for testing in a test mode.

EUT Specfication:

Operating Frequency Band	136-174 MHz
Modulation Mode	FM/4FSK
Channel Separation	12.5 kHz
Modulation Type	Analog(FM); Digital(4FSK)
Rated Output Power	45W(High); 25W(Low)

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§2.1091	Maximum Permissible 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 §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to 1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for Occupational/Controlled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time |E|, |H| or S (minutes)**
0.3- 3.0	614	1.63	(100)*	6
3.0 - 30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

f = frequency in MHz
* = Plane-wave equivalent power density

MPE Calculation

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency	**Conducted Output Power**	**Typical Antenna Gain**		**Distance**	**Power Density**	**Limit**
MHz	**mW**	**dBi**	**numeric**	**cm**	**mW/cm^2**	**mW/cm^2**
155	48000	1.5	1.41	100	0.539	1.0

Note: the target power is 48 W.

Result: The device meet FCC MPE at 100 cm distance

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

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

Spectrum Analyzer setting:

RBW	VBW
100 kHz	300 kHz

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	2015-05-09

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

Test Data

Environmental Conditions

Temperature:	29.9 °C
Relative Humidity:	65 %
ATM Pressure:	100.3 kPa

The testing was performed by Dean Liu on 2014-09-10.

Test Mode: Transmitting

Test Result: Compliance.

Please refer to following table.

Modulation mode	Channel Separation	f_c	Conducted Output Power(W)		Note
		MHz	High	Low	
FM	12.5 kHz	136.025	45.13	24.92	**Not for FCC Review**
		155	44.82	24.87	**FCC Part 90**
		173.975	44.69	24.84	
4FSK		136.025	45.20	25.03	**Not for FCC Review**
		155	44.91	24.85	**FCC Part 90**
		173.975	44.74	25.00	
FM	12.5 kHz	161.65	45.13	24.92	**FCC Part 22**
4FSK		161.65	45.20	25.03	

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	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

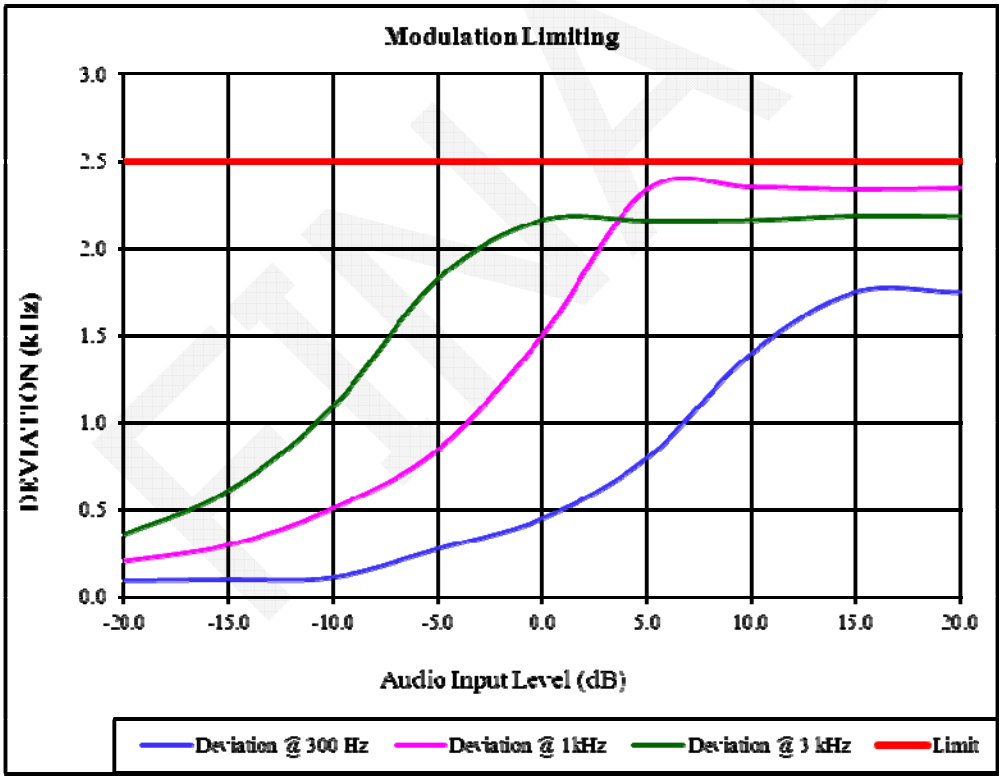
Temperature:	29.9 °C
Relative Humidity:	65 %
ATM Pressure:	100.3 kPa

The testing was performed by Dean Liu on 2014-09-10.

MODULATION LIMITING

Carrier Frequency: 155 MHz, Channel Separation = 12.5 kHz

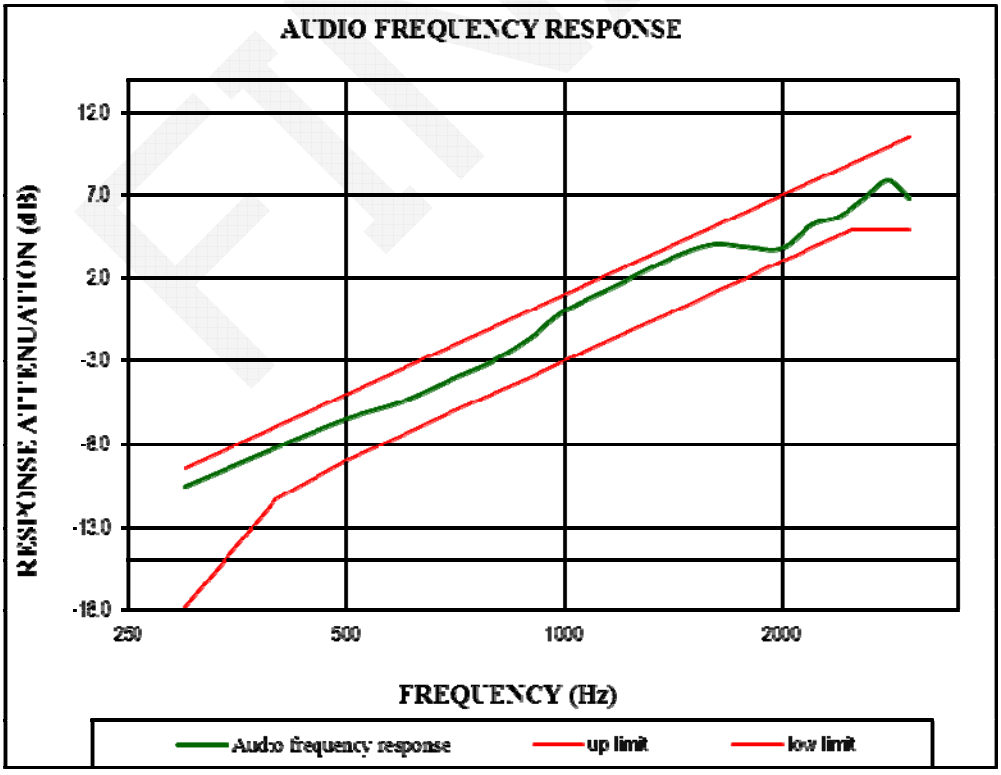
Audio Input Level [dB]	Frequency Deviation (kHz)			FCC Limit [kHz]
	@ 300 Hz	@ 1kHz	@ 3 kHz	
20.0	1.748	2.344	2.184	2.5
15.0	1.750	2.337	2.187	2.5
10.0	1.399	2.351	2.162	2.5
5.0	0.797	2.336	2.159	2.5
0.0	0.452	1.500	2.162	2.5
-5.0	0.279	0.847	1.825	2.5
-10.0	0.117	0.511	1.095	2.5
-15.0	0.105	0.301	0.612	2.5
-20.0	0.099	0.208	0.362	2.5



Audio Frequency Response

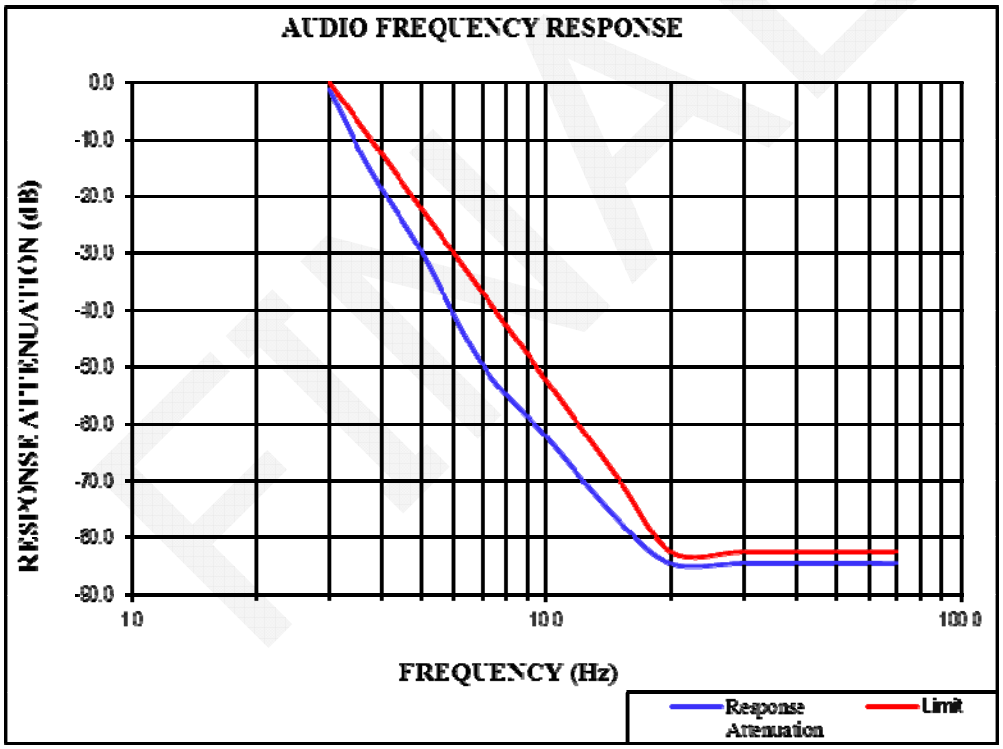
Carrier Frequency: 155MHz, Channel Separation = 12.5 kHz

Audio Frequency (Hz)	Response Attenuation (dB)
300	-10.54
400	-8.21
500	-6.48
600	-5.41
700	-4.09
800	-2.98
900	-1.58
1000	0.00
1200	1.70
1400	3.16
1600	4.03
1800	3.87
2000	3.80
2200	5.22
2400	5.74
2600	6.84
2800	7.88
3000	6.80



Audio Frequency Low Pass Filter Response

Audio Frequency	Response Attenuation	Limit
kHz	dB	dB
3.0	-1.2	0.0
3.5	-11.2	-6.7
4.0	-18.6	-12.5
5.0	-29.7	-22.2
7.0	-49.5	-36.8
10.0	-62.3	-52.3
15.0	-77.1	-69.9
20.0	-84.5	-82.5
30.0	-84.4	-82.5
50.0	-84.4	-82.5
70.0	-84.5	-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 f0 to 5.625 kHz removed from f0: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd−2.88 kHz) dB.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd 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.

§22.357 Emission types.

Any authorized station in the Public Mobile Services may transmit emissions of any type(s) that comply with the applicable emission rule, i.e. §22.359, §22.861 or §22.917

§22.731 Emission limitations.

Upon application for multichannel operation, the FCC may authorize emission bandwidths wider than those specified in §22.357, provided that spectrum utilization is equal to or better than that achieved by single channel operation.

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 Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 235	2014-05-09	2015-05-09
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

Temperature:	29.1~29.9 °C
Relative Humidity:	62~68 %
ATM Pressure:	100.1~100.3 kPa

The testing was performed by Dean Liu from 2014-09-10 to 2014-09-12.

Test Mode: Transmitting

Test Result: Compliance.

Please refer to following tables.

FCC Part 90:

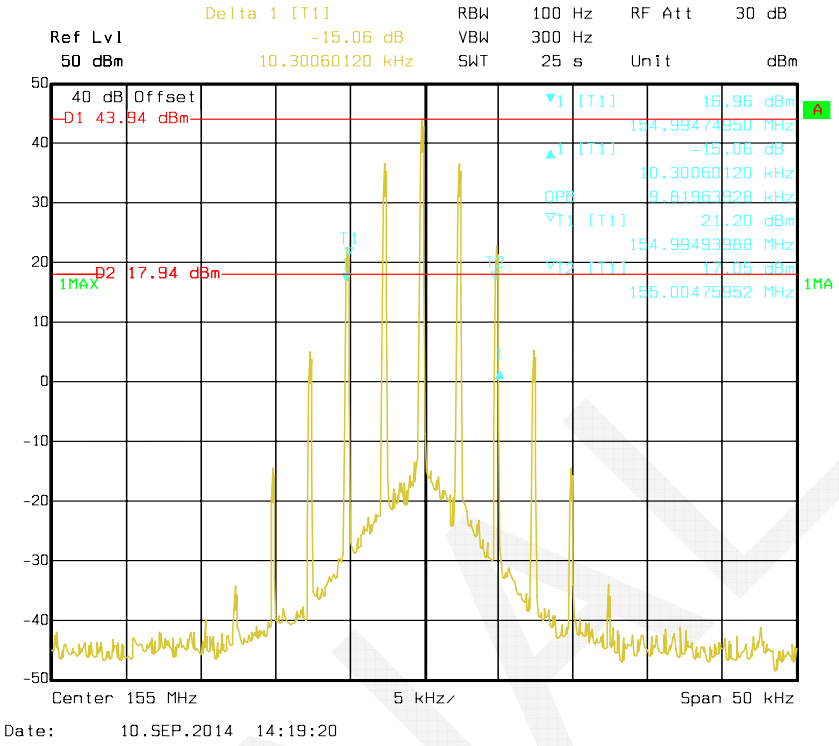
Modulation Mode	Channel Separation	f_c	26 dB Bandwidth	Power Level
	kHz	MHz	kHz	
FM	12.5	155	10.30	High
4FSK			9.90	
FM			10.30	Low
4FSK			9.99	

FCC Part 22:

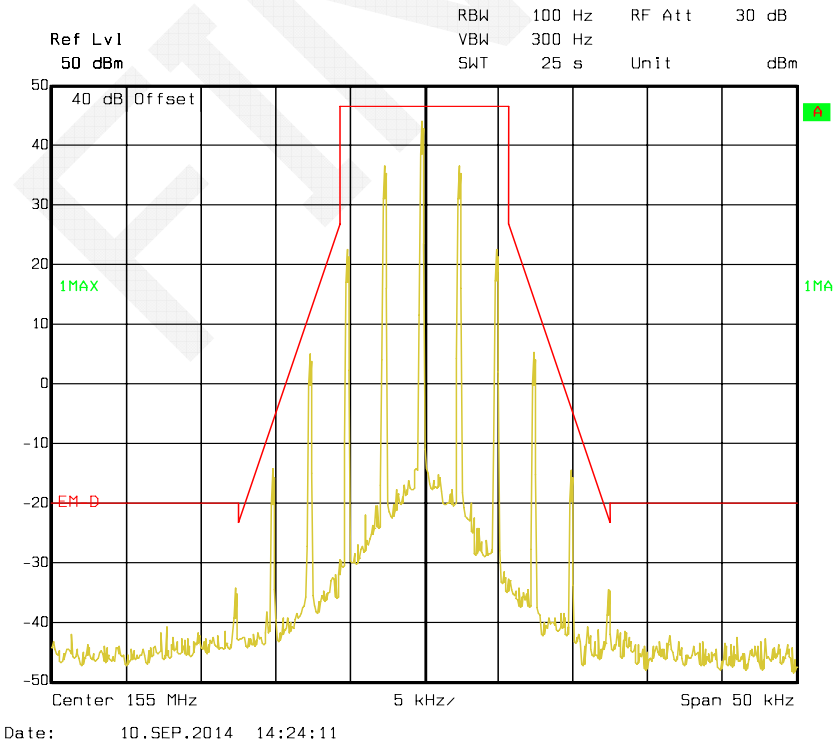
Modulation Mode	Channel Separation	f_c	26 dB Bandwidth	Power Level
	kHz	MHz	kHz	
FM	12.5	161.65	10.40	High
4FSK			10.00	
FM			10.40	Low
4FSK			10.00	

Part 90:

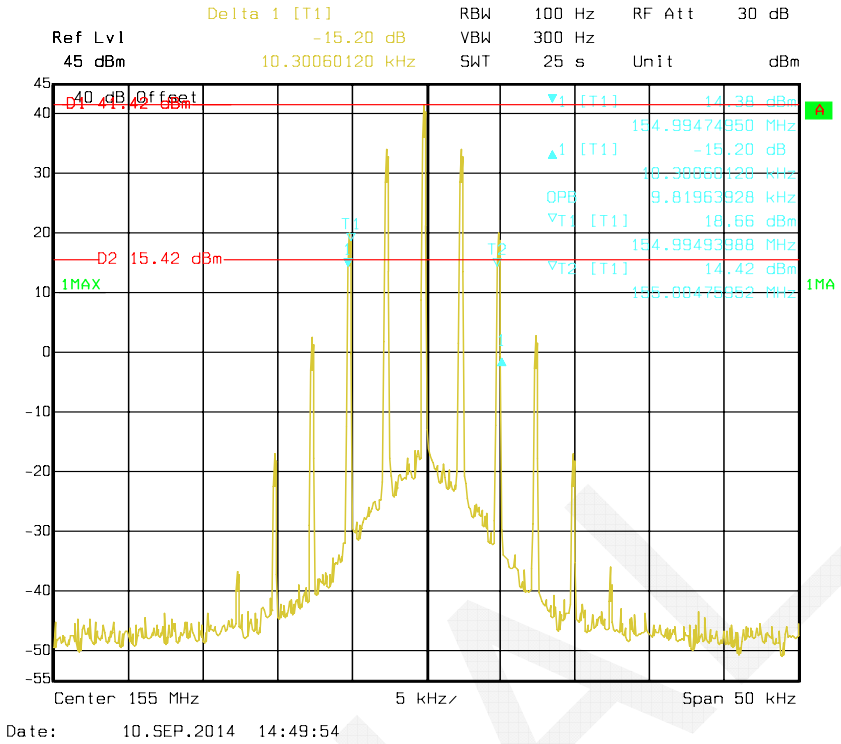
Occupied Bandwidth – FM, 155 MHz, High Power Level



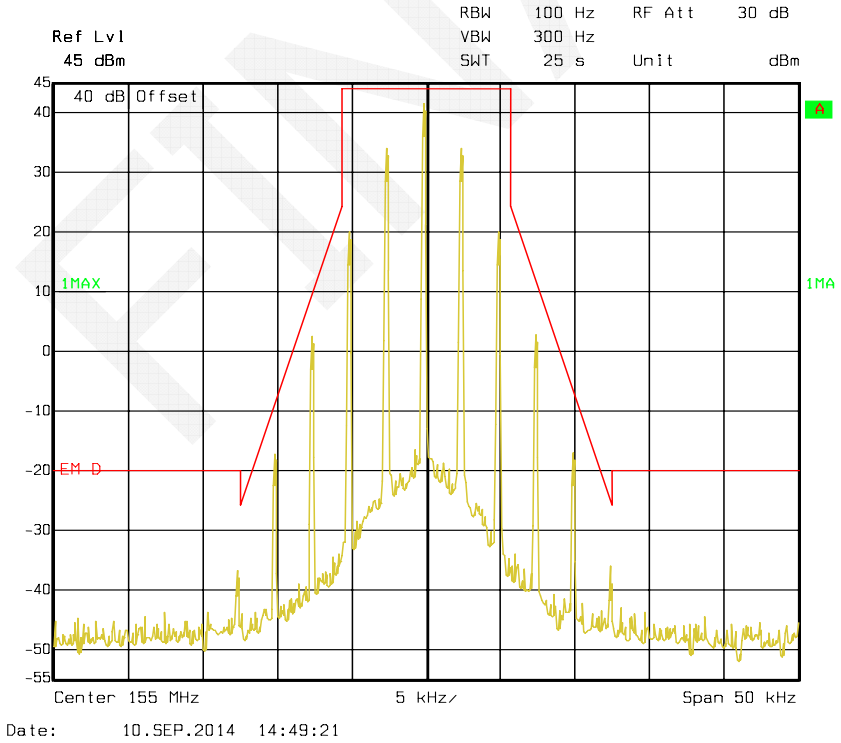
Emission Mask - Type D



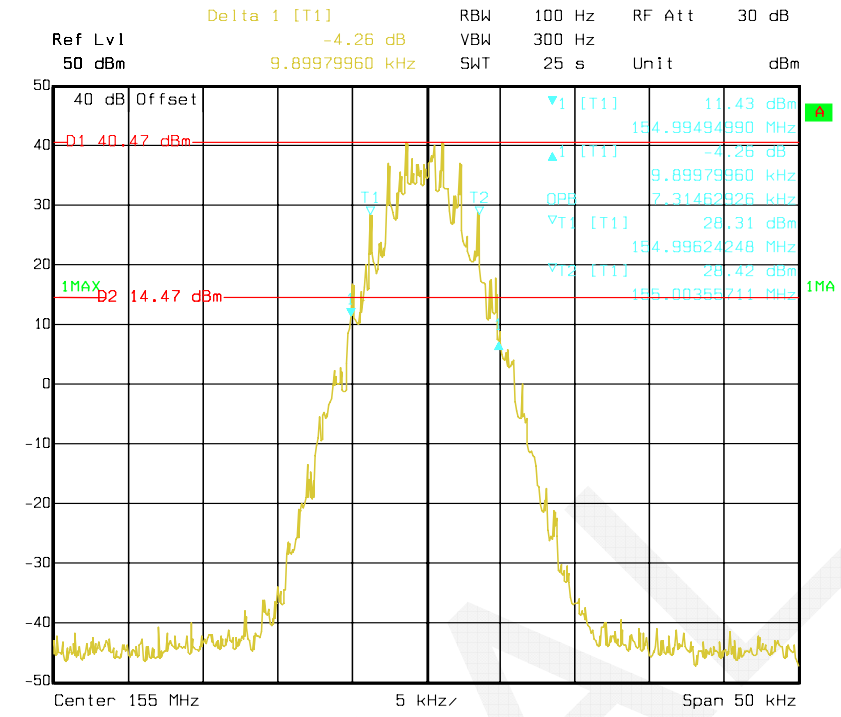
Occupied Bandwidth – FM, 155 MHz, Low Power Level



Emission Mask - Type D



Occupied Bandwidth –4FSK, 155 MHz, High Power Level



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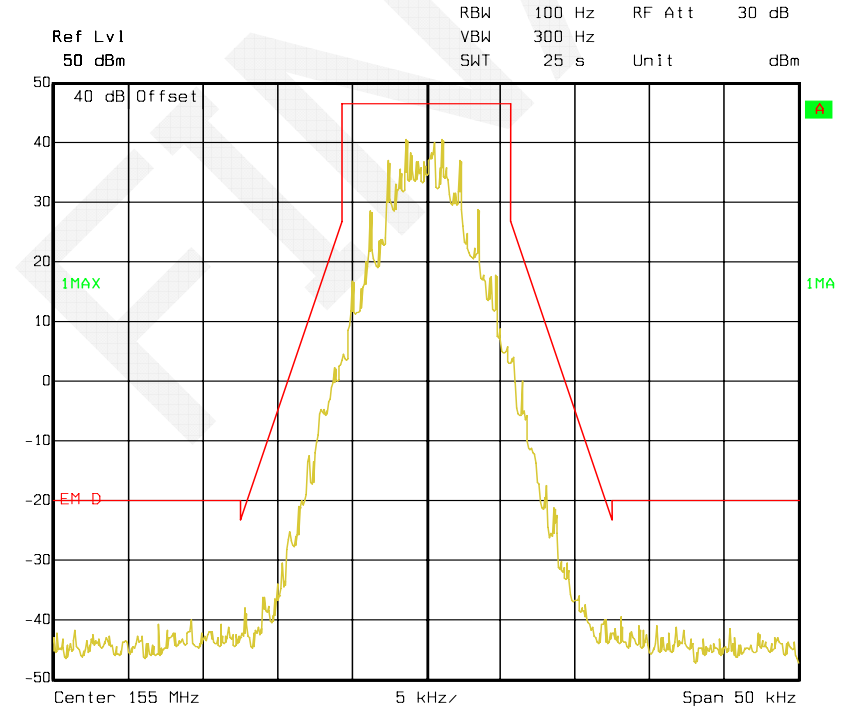
Emission Mask - Type D



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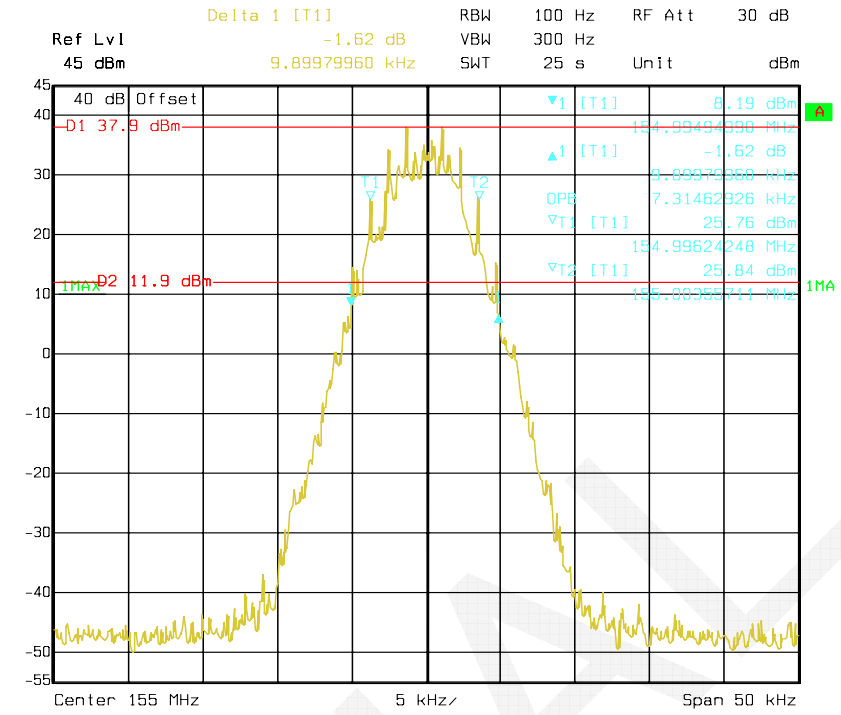
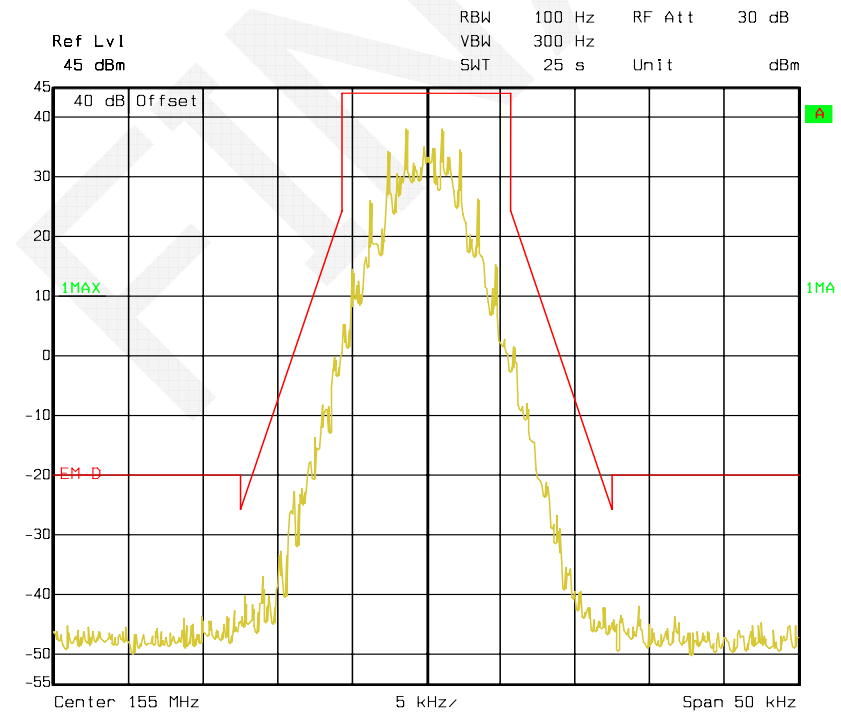
Occupied Bandwidth – 4FSK, 155 MHz, Low Power Level

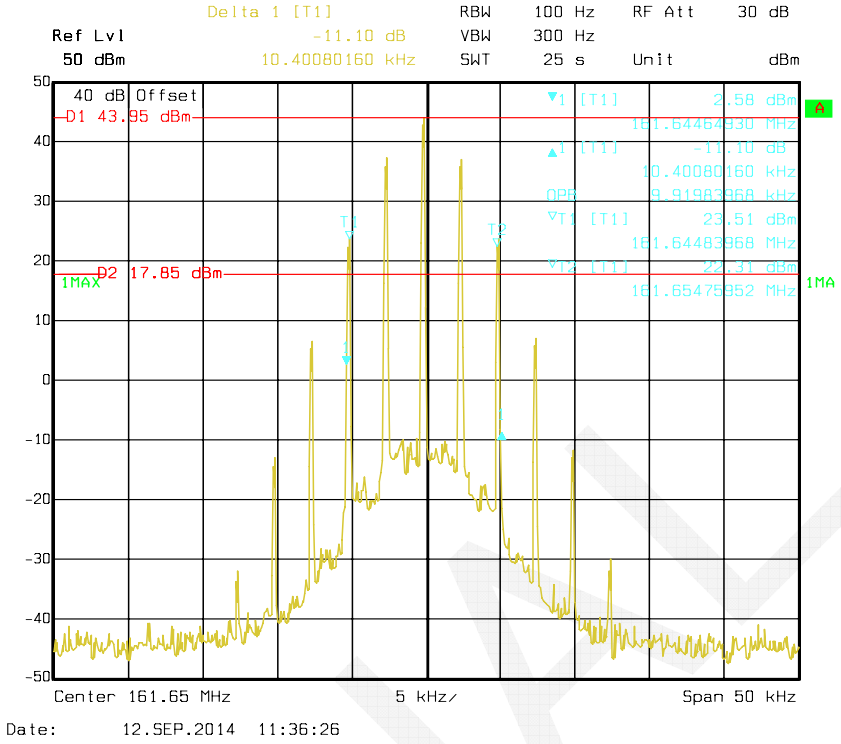


Emission Mask - Type D

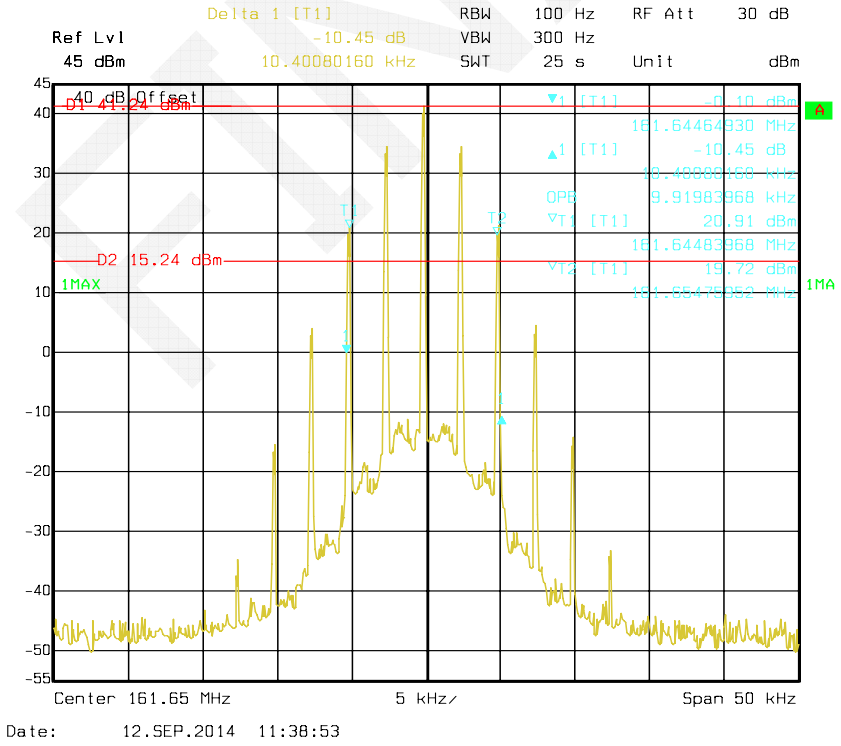


Part 22:

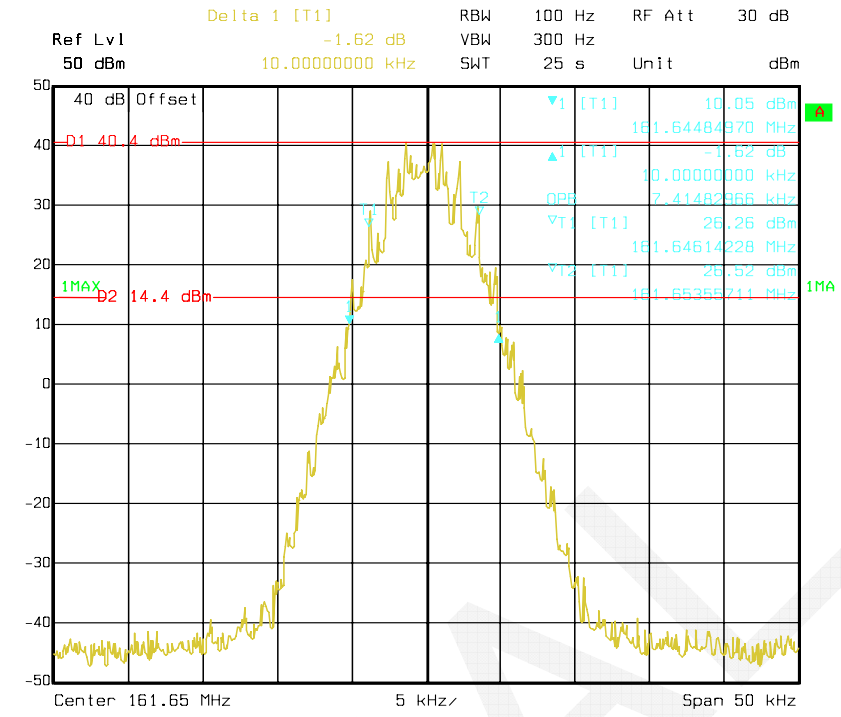
Occupied Bandwidth – FM, 161.65 MHz, High Power Level



Occupied Bandwidth – FM, 161.65 MHz, Low Power Level



Occupied Bandwidth –4FSK, 161.65 MHz, High Power Level



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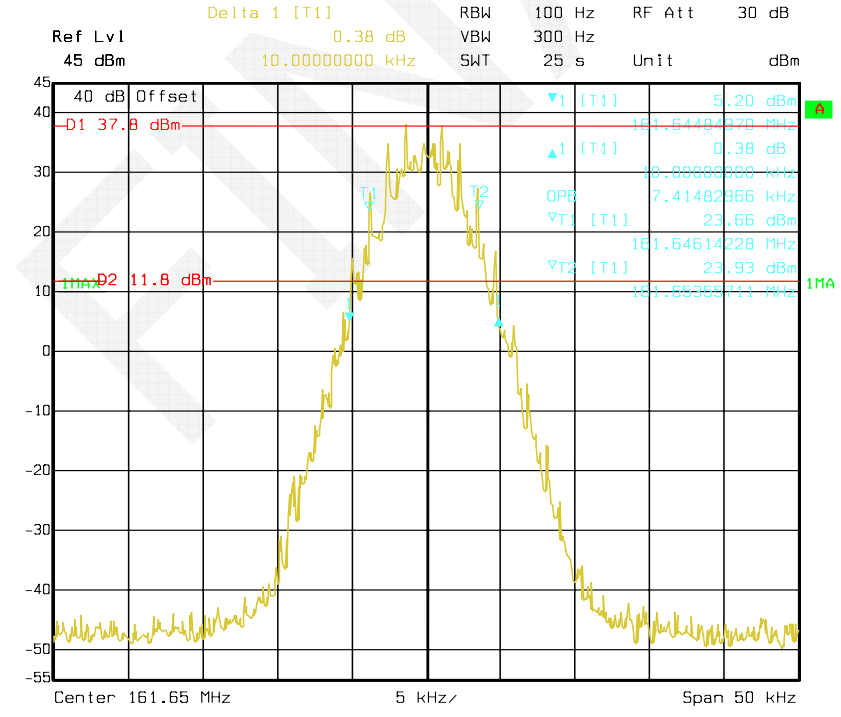
Occupied Bandwidth – 4FSK, 161.65 MHz, Low Power Level



Date: 12.SEP.2014 11:44:42

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 f0 to 5.625 kHz removed from f0: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least 7.27(fd−2.88 kHz) dB.

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd 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
HP	RF Communications Test Set	8920A	00 235	2014-05-09	2015-05-09
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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 = RMS.

Test Data

Environmental Conditions

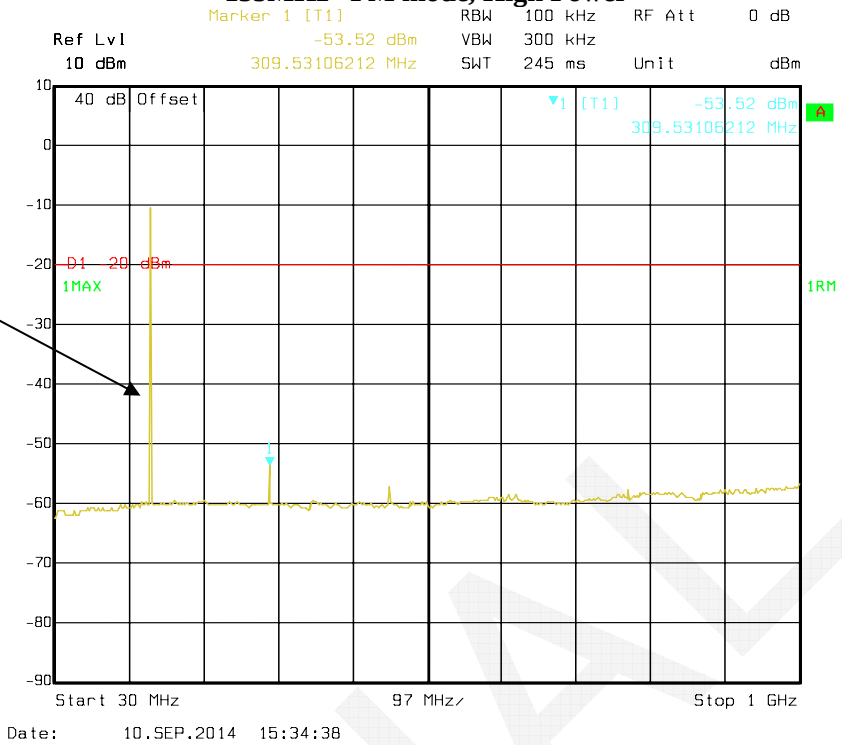
Temperature:	29.1~29.9 °C
Relative Humidity:	62~68 %
ATM Pressure:	100.1~100.3 kPa

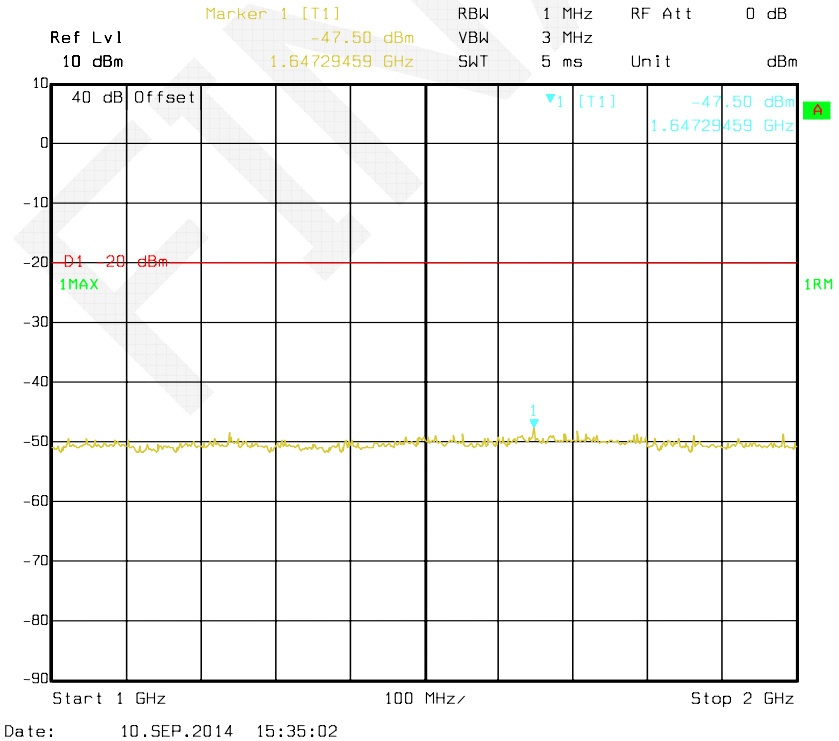
The testing was performed by Dean Liu from 2014-09-10 to 2014-09-12.

Please refer to the following plots.

FCC PART 90
155MHz –FM mode, High Power

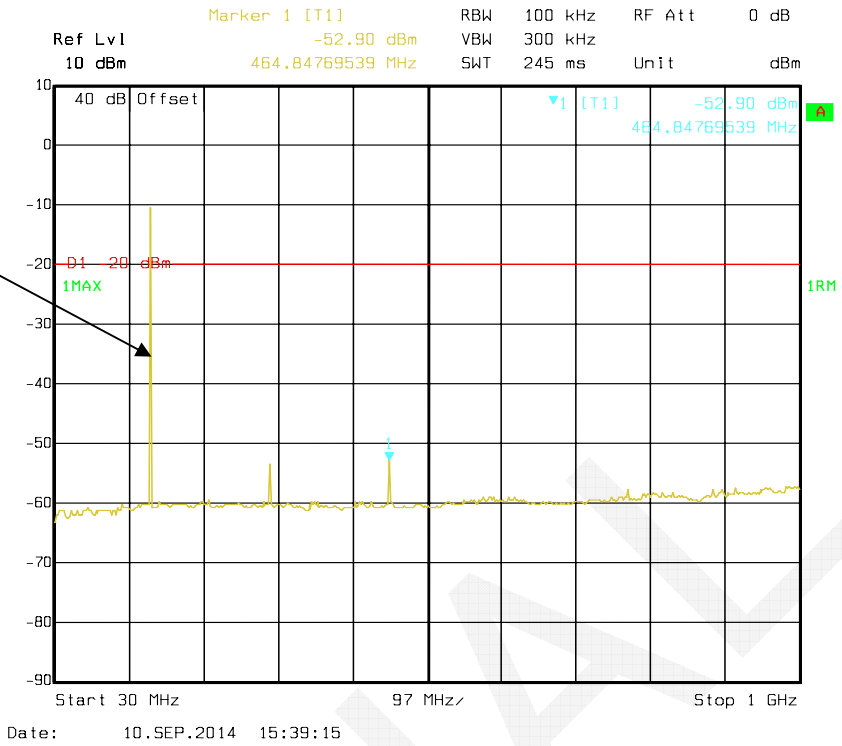
Fundamental test with Band Reject Filter

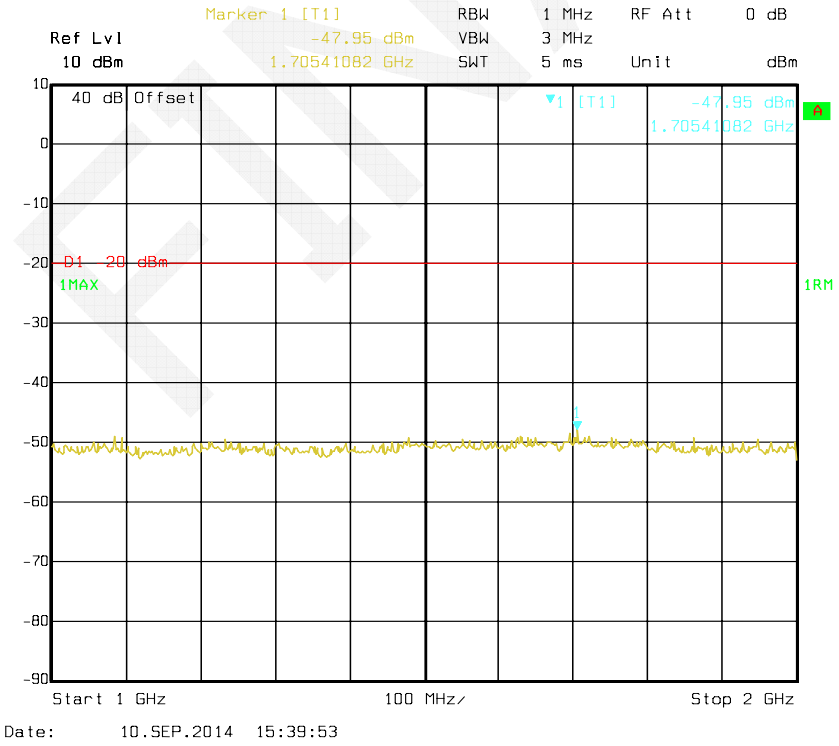




155 MHz – 4FSK mode, High Power

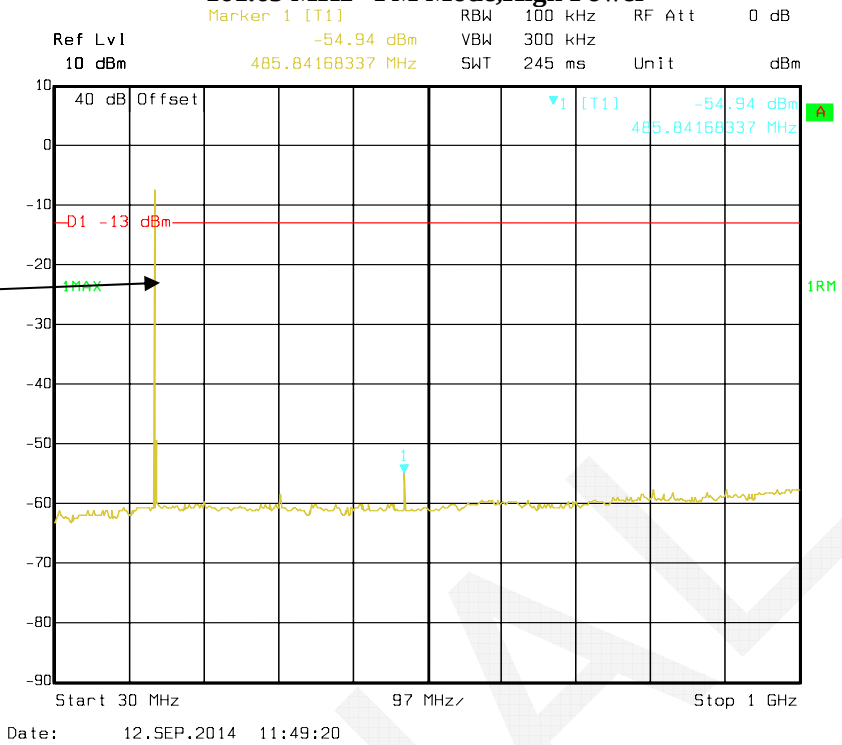
Fundamental test with Band Reject Filter

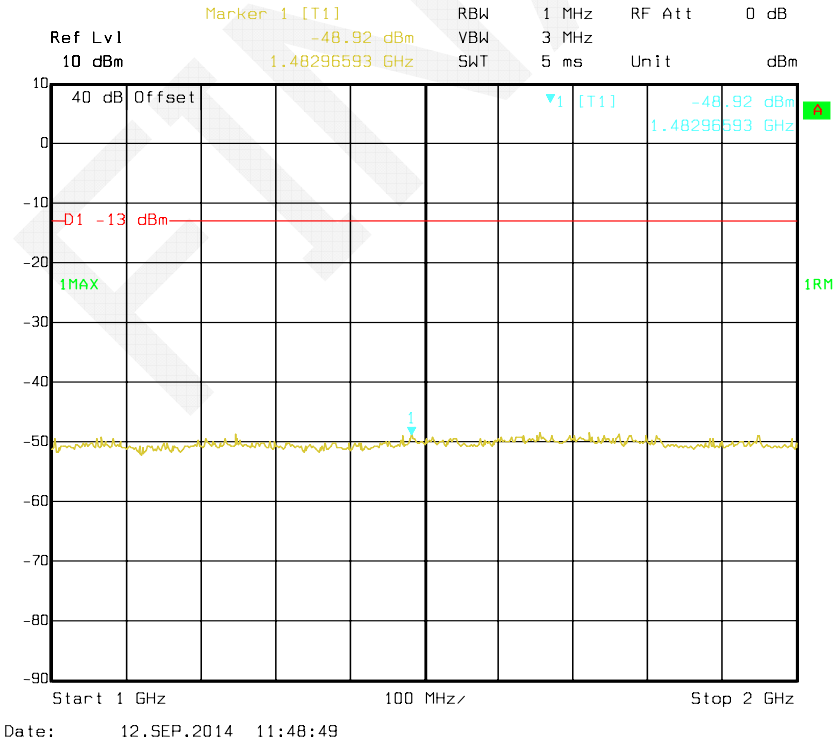




FCC PART 22
161.65 MHz –FM Mode,High Power

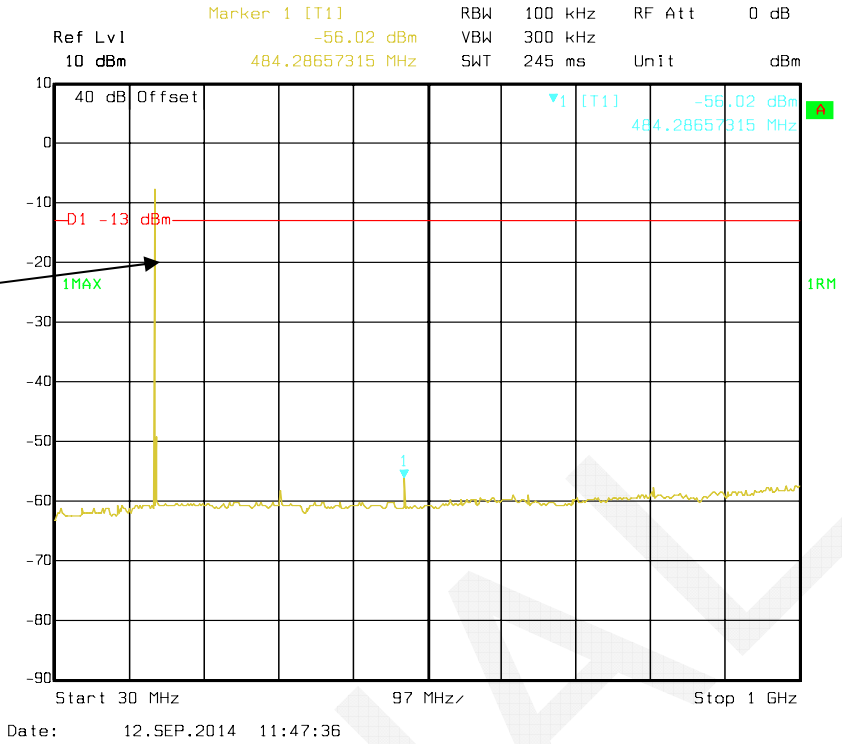
Fundamental test with Band Reject Filter

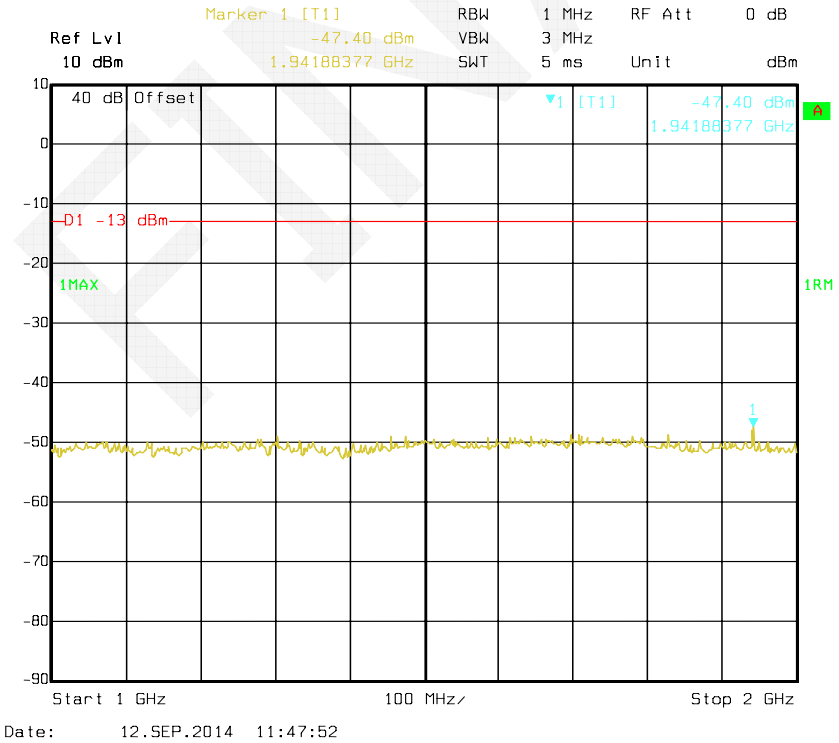




161.65 MHz –4FSK Mode,High Power

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
HP	Signal Generator	8648A	3426A00831	2013-11-06	2014-11-06
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-06
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Agilent	Signal Generator	E8247C	MY43321350	2012-10-15	2014-10-15
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
TDK RF	Horn Antenna	HRN-0118	130 084	2012-09-06	2015-09-06
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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:	29.1 °C
Relative Humidity:	62 %
ATM Pressure:	100.1 kPa

The testing was performed by Dean Liu on 2014-09-14.

Test Mode: Transmitting (FM mode, high power level)

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
Frequency:155MHz, for FCC PART 90								
310.000	V	60.21	-43.5	0.0	0.5	-44.0	-20.0	24.0
465.000	V	46.22	-42.8	0.0	0.7	-43.5	-20.0	23.5
775.000	V	44.48	-44.3	0.0	0.9	-45.2	-20.0	25.2
310.000	H	59.77	-46.5	0.0	0.5	-47.0	-20.0	27.0
465.000	H	49.03	-41.8	0.0	0.7	-42.5	-20.0	22.5
775.000	H	48.61	-42.5	0.0	0.9	-43.4	-20.0	23.4
1085.000	V	41.81	-58.5	7.5	1.1	-52.1	-20.0	32.1
1085.000	H	40.32	-59.7	7.5	1.1	-53.3	-20.0	33.3
Frequency:161.65MHz, for FCC PART 22								
323.300	V	58.87	-43.2	0.0	0.5	-43.7	-13.0	30.7
484.950	V	48.07	-39.8	0.0	0.7	-40.5	-13.0	27.5
808.250	V	42.68	-46.6	0.0	0.9	-47.5	-13.0	34.5
323.300	H	58.72	-45.9	0.0	0.5	-46.4	-13.0	33.4
484.950	H	50.27	-39.1	0.0	0.7	-39.8	-13.0	26.8
808.250	H	49.42	-42.4	0.0	0.9	-43.3	-13.0	30.3
1131.550	V	40.55	-59.8	7.4	1.1	-53.5	-13.0	40.5
1131.550	H	40.37	-59.7	7.4	1.1	-53.4	-13.0	40.4

Test Mode: Transmitting (4FSK mode, high power level)

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
Frequency:155MHz, for FCC PART 90								
310.000	V	58.88	-44.9	0.0	0.5	-45.4	-20.0	25.4
465.000	V	44.79	-44.2	0.0	0.7	-44.9	-20.0	24.9
775.000	V	42.83	-46	0.0	0.9	-46.9	-20.0	26.9
310.000	H	58.58	-47.6	0.0	0.5	-48.1	-20.0	28.1
465.000	H	47.09	-43.7	0.0	0.7	-44.4	-20.0	24.4
775.000	H	47.51	-43.6	0.0	0.9	-44.5	-20.0	24.5
1085.000	V	40.25	-60.1	7.5	1.1	-53.7	-20.0	33.7
1085.000	H	40.18	-59.8	7.5	1.1	-53.4	-20.0	33.4
Frequency:161.65MHz, for FCC PART 22								
323.300	V	57.39	-44.7	0.0	0.5	-45.2	-13.0	32.2
484.950	V	46.53	-41.3	0.0	0.7	-42.0	-13.0	29.0
808.250	V	41.07	-48.2	0.0	0.9	-49.1	-13.0	36.1
323.300	H	57.07	-47.6	0.0	0.5	-48.1	-13.0	35.1
484.950	H	48.89	-40.5	0.0	0.7	-41.2	-13.0	28.2
808.250	H	47.83	-44	0.0	0.9	-44.9	-13.0	31.9
1131.550	V	40.14	-60.2	7.4	1.1	-53.9	-13.0	40.9
1131.550	H	39.87	-60.2	7.4	1.1	-53.9	-13.0	40.9

Note1: The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
Note1: Absolute Level = SG Level - Cable loss + Antenna Gain
Margin = Limit-Absolute Level

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	2014-05-09	2015-05-09
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2014-08-01	2015-08-01

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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:	29.1~29.9 °C
Relative Humidity:	62~68 %
ATM Pressure:	100.1~100.3 kPa

The testing was performed by Dean Liu from 2014-09-10 to 2014-09-12.

Test Mode: Transmitting

FCC PART 90:

Reference Frequency: 155 MHz, Limit: 2.5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{DC}**	**MHz**	**ppm**
-30	13.6	154.999854	-0.94
-20	13.6	154.999885	-0.74
-10	13.6	154.999845	-1.00
0	13.6	154.999895	-0.68
10	13.6	154.999879	-0.78
20	13.6	154.999901	-0.64
30	13.6	154.99988	-0.77
40	13.6	154.999879	-0.78
50	13.6	154.999857	-0.92
60	13.6	154.999855	-0.94
25	10.8	154.999853	-0.95
25	15.6	154.999888	-0.72

Reference Frequency: 155 MHz, Limit: 2.5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{AC}**	**MHz**	**ppm**
-30	120	154.999877	-0.79
-20	120	154.999875	-0.81
-10	120	154.9999	-0.65
0	120	154.999835	-1.06
10	120	154.999887	-0.73
20	120	154.999883	-0.75
30	120	154.999862	-0.89
40	120	154.999836	-1.06
50	120	154.999849	-0.97
60	120	154.999932	-0.44
25	108	154.9999	-0.65
25	132	154.999852	-0.95

FCC PART 22:

Reference Frequency: 161.65 MHz, Limit: 5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{DC}**	**MHz**	**ppm**
-30	13.6	161.649903	-0.60
-20	13.6	161.649862	-0.85
-10	13.6	161.649866	-0.83
0	13.6	161.649908	-0.57
10	13.6	161.649897	-0.64
20	13.6	161.649905	-0.59
30	13.6	161.649891	-0.67
40	13.6	161.649888	-0.69
50	13.6	161.64987	-0.80
60	13.6	161.649868	-0.82
25	10.8	161.649874	-0.78
25	15.6	161.64988	-0.74

Reference Frequency: 161.65 MHz, Limit: 5 ppm			
Temerature	**Voltage**	**Reading**	**Frequency Error**
℃	**V_{AC}**	**MHz**	**ppm**
-30	120	161.649846	-0.95
-20	120	161.649861	-0.86
-10	120	161.649861	-0.86
0	120	161.649873	-0.79
10	120	161.649847	-0.95
20	120	161.649855	-0.90
30	120	161.64986	-0.87
40	120	161.649857	-0.88
50	120	161.649848	-0.94
60	120	161.649875	-0.77
25	108	161.649872	-0.79
25	132	161.649876	-0.77

Note: The EUT is a base station

FCC §90.214 - TRANSIENT FREQUENCY BEHAVIOR

Applicable Standard

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

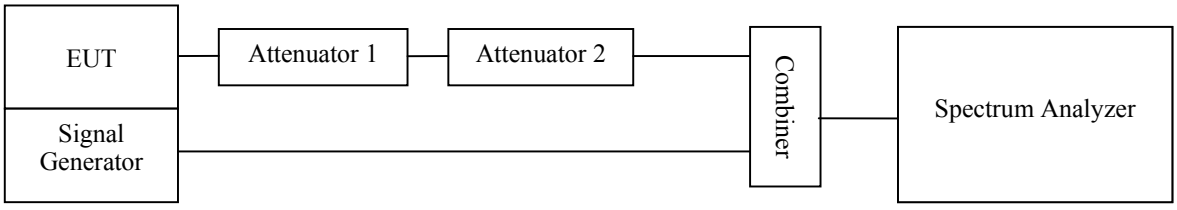
Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
HP	Signal Generator	8648A	3426A00831	2013-11-06	2014-11-06

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, 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

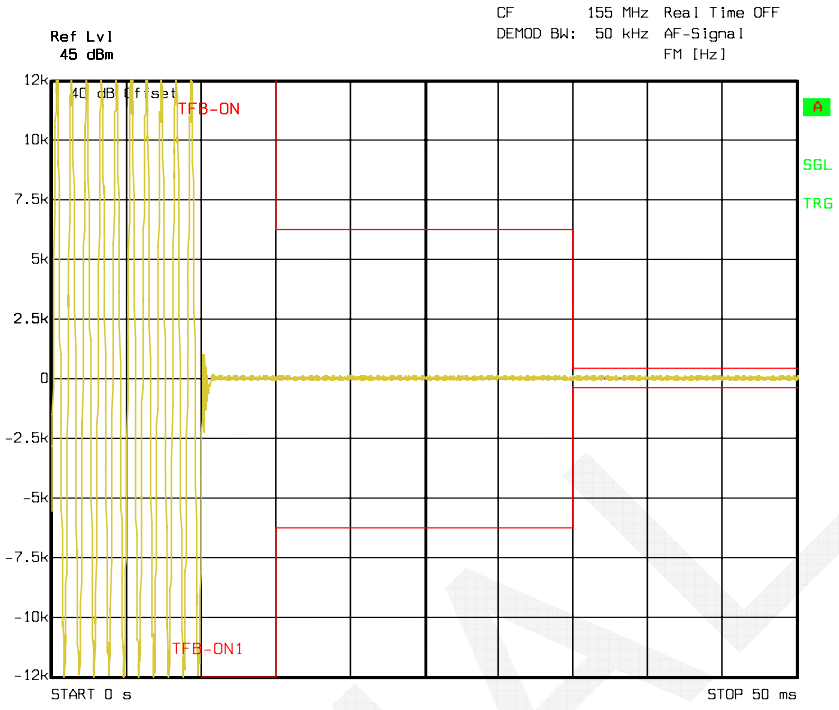
Temperature:	29.9 °C
Relative Humidity:	65 %
ATM Pressure:	100.3 kPa

The testing was performed by Dean Liu on 2014-09-10.

Channel Separation (kHz)	Period (ms)	Maximum frequency difference	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.

155MHz, Low Power, Turn On



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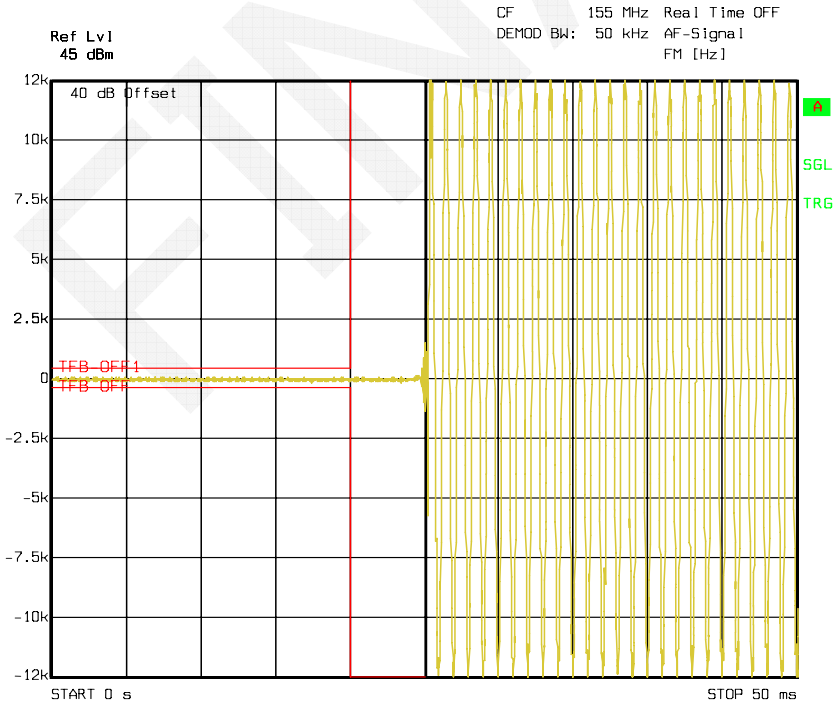
155MHz, Low Power, Turn Off



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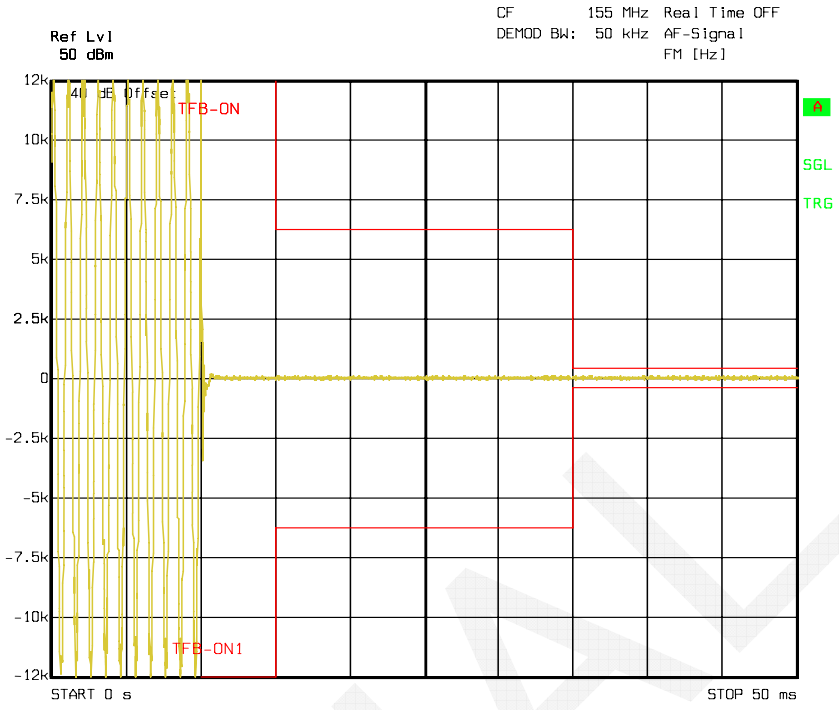
155MHz, High Power, Turn On



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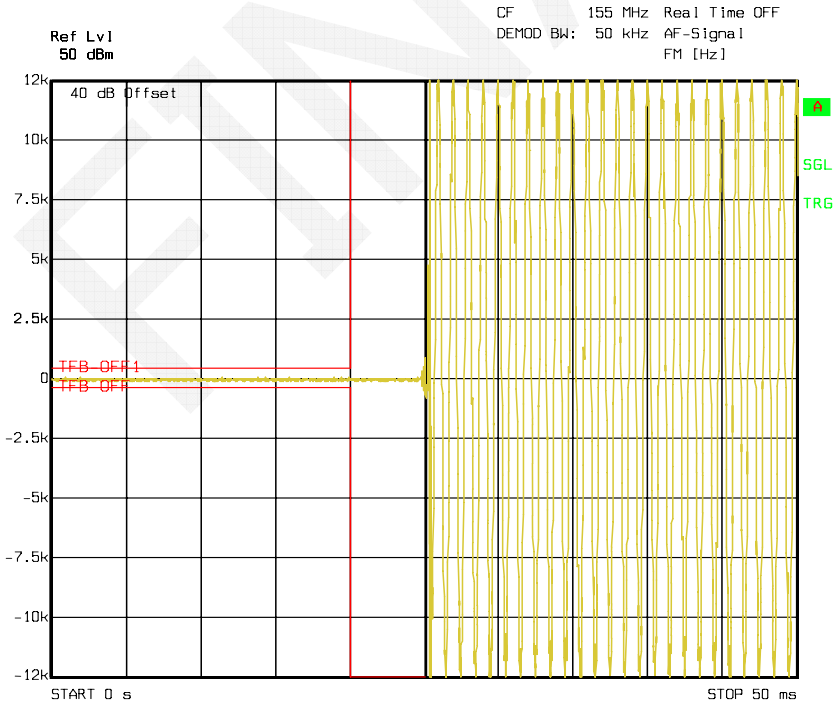
155MHz, High Power, Turn Off



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