



FCC PART 15 B TEST REPORT

For

Quanzhou Wouxun Electronics Co., Ltd.

Jiangnan High Technology Industry Park, No.928 Nanhuan Road, Quanzhou, Fujian, China

FCC ID: WVTWOUXUN12

Report Type: Original Report	Product Name: Two-Way Radio
Test Engineer: <u>Kevin Hu</u>	<i>Kevin hu</i>
Report Number: <u>RXM170418050A</u>	
Report Date: <u>2017-06-29</u>	
Reviewed By: <u>Henry Ding EMC Leader</u>	<i>Henry Ding</i>
Test Laboratory: Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com	

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **Quanzhou Wouxun Electronics Co., Ltd.**'s product, model number: **KG-UV9D (FCC ID: WVTWOUXUN12)** (the "EUT") in this report was a **Two-Way Radio**, which was measured approximately: 6.15 cm (L) x 3.39 cm (W) x 12.5 cm (H), rated input voltage: DC7.4V from Li-ion battery or DC 12V from adapter.

Adapter Information:

Model: CA-001

Input: AC 100-240V 50/60Hz 0.3A

Output: DC12V 500Ma

Note: The series product, models KG-UV9D, KG-UV8D, KG-UV8D(Plus), KG-UV7D, KG-UV9D(Plus), KG-UV83, KG-UV86, KG-UV66, KG-UV899, KG-UV8A, KG-UV8E, KG-UV8F, KG-UV8G, KG-UV8H, KG-UV8T are electrically identical, we selected KG-UV9D for fully testing, and the details of the differences between them were explained in the attached declaration letter.

**All measurement and test data in this report was gathered from final production sample, serial number: 170418050 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-04-18, and EUT conformed to test requirement.*

Objective

This test report is prepared on behalf of **Quanzhou Wouxun Electronics Co., Ltd.** in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 B Class B.

Related Submittal(s)/Grant(s)

NO Related Submittal(s)/Grant(s)

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

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 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: ± 5.13 dB; and,

6 GHz to 40 GHz: ± 5.47 dB.

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 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, 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.: 910975. 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 typical fashion (as normally used by a typical user).

EUT Exercise Software

No software was used during test.

Equipment Modifications

No modification was made to the EUT tested.

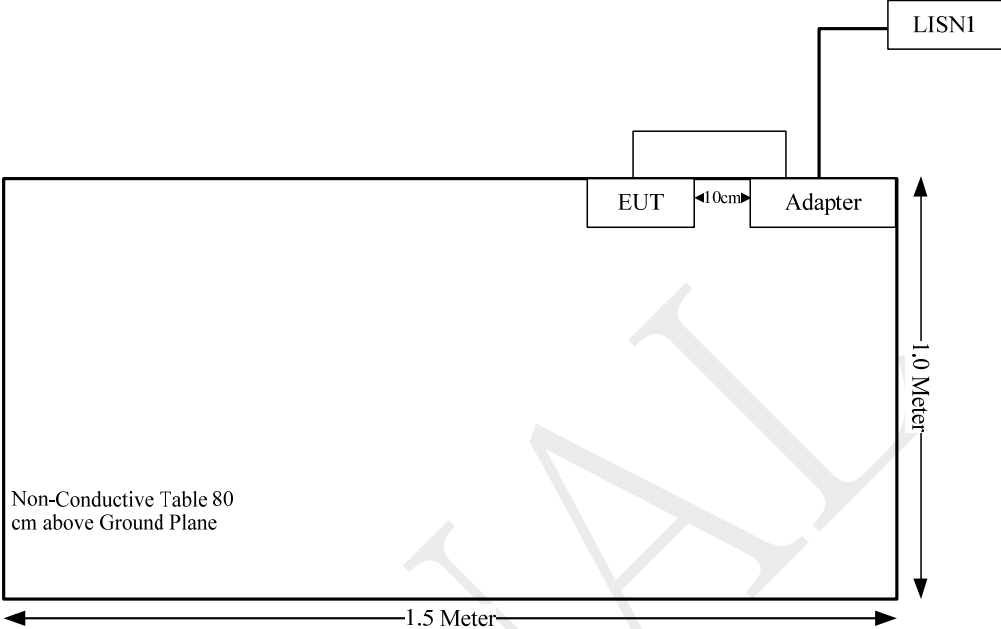
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
HP	Signal Generator	1026	320408

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power line	No	No	1.5	LISN	EUT

Configuration of Test Setup



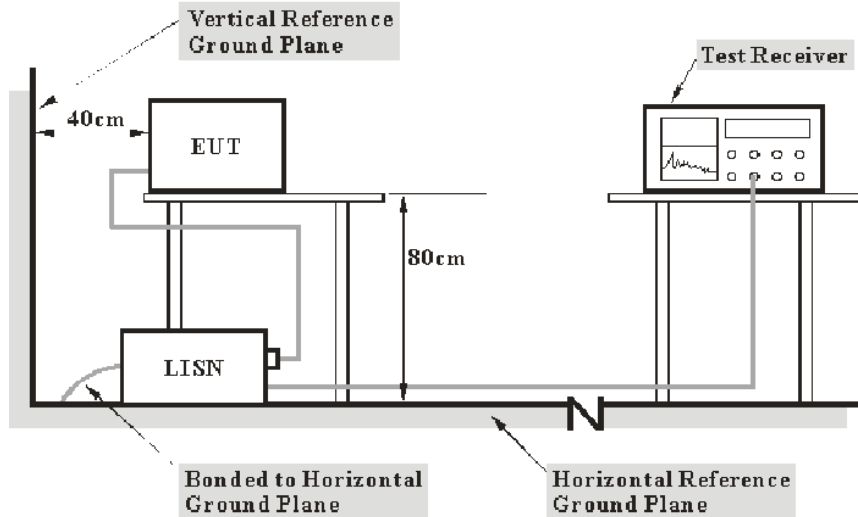
SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance
§15.121	Compliance for Scanning Receiver	Compliance

F I N A L

FCC§15.107 - CONDUCTED EMISSIONS

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The Adapter was connected to the main LISN with a 120V/60Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	100018	2016-12-02	2017-12-01
SOLAR ELECTRONICS	L.I.S.N.	9252-50-24 -BNC	984413	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	DE14781	2016-10-31	2017-10-30
Unknown	Conducted Cable	Unknown	NO.5	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** BA CL(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

During the conducted emission test, the Adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

V_C : corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF : voltage division factor of AMN or ISN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

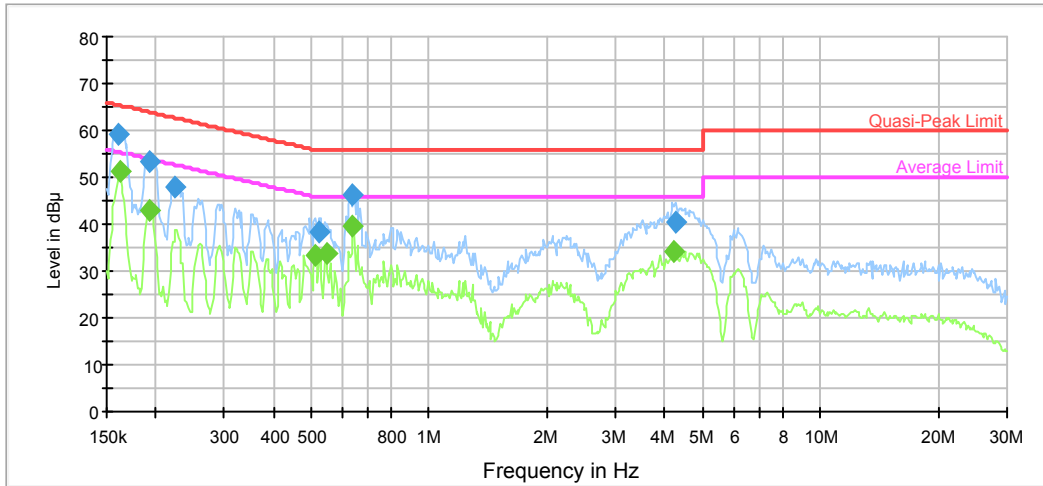
Environmental Conditions

Temperature:	26.2 °C
Relative Humidity:	56 %
ATM Pressure:	99.7 kPa

The testing was performed by Kevin Hu on 2017-06-17.

Test Mode: Downloading

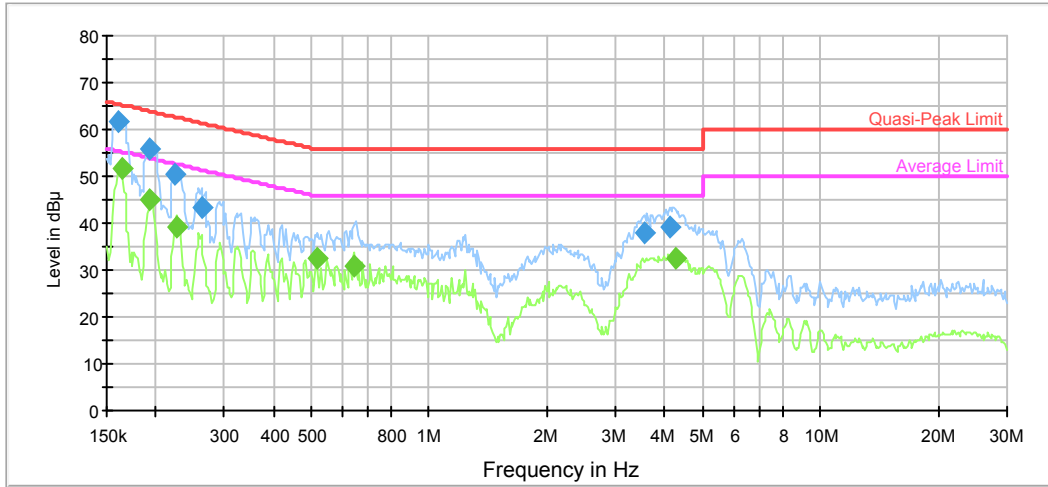
AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.161152	59.1	9.000	L1	19.7	6.3	65.4	Compliance
0.192030	53.4	9.000	L1	19.7	10.5	63.9	Compliance
0.223418	47.9	9.000	L1	19.7	14.8	62.7	Compliance
0.524077	38.5	9.000	L1	19.7	17.5	56.0	Compliance
0.639600	46.3	9.000	L1	19.7	9.7	56.0	Compliance
4.261034	40.3	9.000	L1	19.7	15.7	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.162441	51.1	9.000	L1	19.7	4.2	55.3	Compliance
0.193566	43.0	9.000	L1	19.7	10.9	53.9	Compliance
0.511698	33.4	9.000	L1	19.7	12.6	46.0	Compliance
0.545378	33.8	9.000	L1	19.7	12.2	46.0	Compliance
0.639600	39.6	9.000	L1	19.7	6.4	46.0	Compliance
4.227217	34.2	9.000	L1	19.7	11.8	46.0	Compliance

AC120V, 60Hz, Neutral:



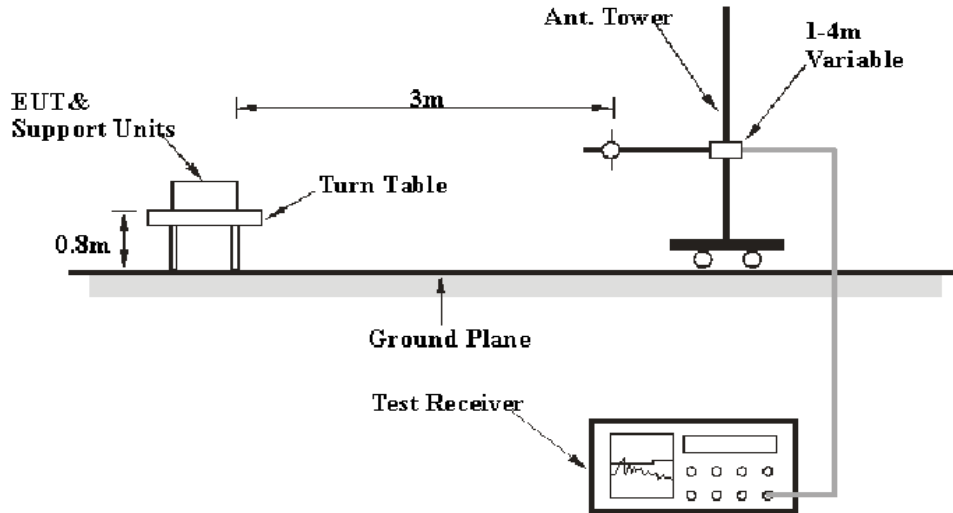
Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.161152	61.7	9.000	N	19.7	3.7	65.4	Compliance
0.193566	55.7	9.000	N	19.6	8.2	63.9	Compliance
0.225205	50.2	9.000	N	19.6	12.4	62.6	Compliance
0.262017	43.5	9.000	N	19.6	17.9	61.4	Compliance
3.547503	37.7	9.000	N	19.7	18.3	56.0	Compliance
4.127365	39.3	9.000	N	19.7	16.7	56.0	Compliance

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)	Comment
0.163741	51.6	9.000	N	19.7	3.7	55.3	Compliance
0.193566	45.2	9.000	N	19.6	8.7	53.9	Compliance
0.227007	39.3	9.000	N	19.6	13.3	52.6	Compliance
0.515791	32.6	9.000	N	19.6	13.4	46.0	Compliance
0.644717	31.0	9.000	N	19.6	15.0	46.0	Compliance
4.261034	32.7	9.000	N	19.7	13.3	46.0	Compliance

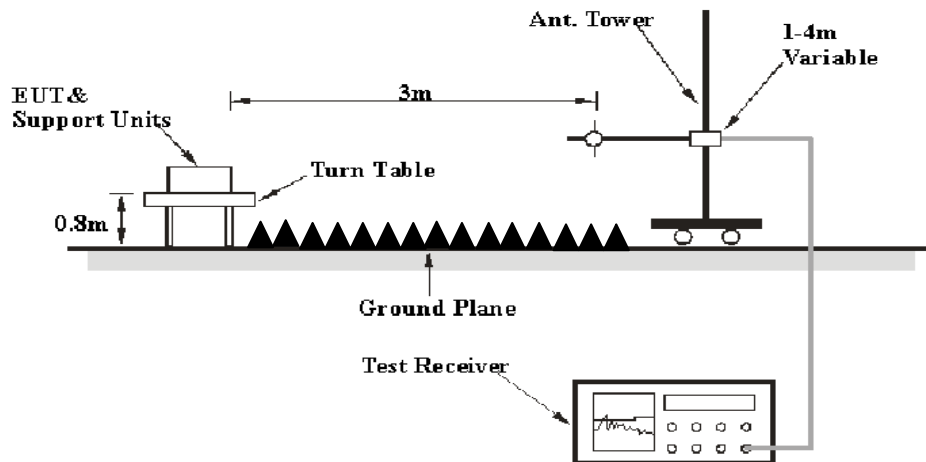
FCC §15.109 - RADIATED SPURIOUS EMISSIONS

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed at the 3 meters distance in chamber, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6.0 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	AVG

Test Procedure

During the radiated emissions, the Adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

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
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".

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	38 %
ATM Pressure:	102kPa

** The testing was performed by Kevin Hu on 2017-06-16.*

Test Result: Compliance

Test Mode: Receiver

30MHz-5GHz:

SG Frequency: 145MHz

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB(1/m))					
77.53	51.33	QP	H	7.88	0.45	28.41	31.25	40.00	8.75
113.42	39.94	QP	H	13.97	0.56	28.21	26.26	43.50	17.24
175.5	48.15	QP	H	11.43	0.93	27.95	32.56	43.50	10.94
238.55	42.74	QP	H	12.24	1.08	27.55	28.51	46.00	17.49
332.64	28.34	QP	H	14.73	1.17	27.68	16.56	46.00	29.44
361.74	32.08	QP	H	15.70	1.49	27.93	21.34	46.00	24.66
38.73	48.59	QP	V	16.30	0.38	28.52	36.75	40.00	3.25
76.56	55.72	QP	V	7.83	0.46	28.41	35.60	40.00	4.40
130.88	42.12	QP	V	14.66	0.71	28.15	29.34	43.50	14.16
173.56	49.49	QP	V	11.52	0.92	27.96	33.97	43.50	9.53
237.58	40.6	QP	V	12.20	1.09	27.56	26.33	46.00	19.67
336.52	27.15	QP	V	14.77	1.15	27.70	15.37	46.00	30.63
1245	45.68	PK	H	23.44	2.32	26.57	44.87	74.00	29.13
1245	35.1	AV	H	23.44	2.32	26.57	34.29	54.00	19.71
1130.261	51.39	PK	V	23.14	2.16	26.68	50.01	74.00	23.99
1130.261	40.6	AV	V	23.14	2.16	26.68	39.22	54.00	14.78
1350.701	52.57	PK	V	23.71	2.46	26.47	52.27	74.00	21.73
1350.701	41.66	AV	V	23.71	2.46	26.47	41.36	54.00	12.64
2452.906	50.98	PK	V	23.36	3.00	26.88	50.46	74.00	23.54
2452.906	40.18	AV	V	23.36	3.00	26.88	39.66	54.00	14.34

SG Frequency: 435 MHz

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB(1/m))					
77.53	52.36	QP	H	7.88	0.45	28.41	32.28	40.00	7.72
113.42	40.21	QP	H	13.97	0.56	28.21	26.53	43.50	16.97
175.5	46.26	QP	H	11.43	0.93	27.95	30.67	43.50	12.83
238.55	44.36	QP	H	12.24	1.08	27.55	30.13	46.00	15.87
332.64	34.26	QP	H	14.73	1.17	27.68	22.48	46.00	23.52
361.74	33.69	QP	H	15.70	1.49	27.93	22.95	46.00	23.05
38.73	47.84	QP	V	16.30	0.38	28.52	36.00	40.00	4.00
76.56	55.64	QP	V	7.83	0.46	28.41	35.52	40.00	4.48
130.88	43.21	QP	V	14.66	0.71	28.15	30.43	43.50	13.07
173.56	48.74	QP	V	11.52	0.92	27.96	33.22	43.50	10.28
237.58	42.65	QP	V	12.20	1.09	27.56	28.38	46.00	17.62
1350.701	53.69	PK	V	23.71	2.46	26.47	53.39	74.00	20.61
1350.701	42.36	AV	V	23.71	2.46	26.47	42.06	54.00	11.94
2452.906	51.44	PK	V	23.36	3.00	26.88	50.92	74.00	23.08
2452.906	42.69	AV	V	23.36	3.00	26.88	42.17	54.00	11.83

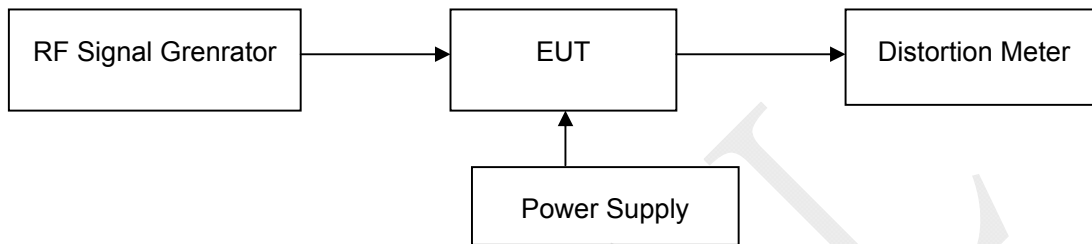
FCC §15.121 – COMPLIANCE FOR SCANNING RECEIVER

Applicable Standard

FCC §15.121

EUT Setup

For FCC §15.121 (b) Scanning Receiver Cellular Band Rejection Test



Test Procedure

- 1) Connected the EUT as shown in the above block diagram.
- 2) Apply a RF signal to the receiver input port at lowest, middle and highest channel frequencies of receiver operation band.
- 3) Adjust the audio output level of the receiver to it's rated value with the distortion less than 10%.
- 4) Adjust the RF Signal Generator Output Power to produce 12 dB SINAD without the audio output power dropping by more than 3 dB. This output level of the RF SG at each channel frequency is the sensitivity of the receiver.
- 5) Select the lowest or worse-case sensitivity level for all of the bands as the reference sensitivity.
- 6) Adjust the RF Signal Generator output to a level of +60 dB above the reference sensitivity obtained in step 5) and its frequency to the frequency points in the cellular band.
- 7) Set the Receiver squelch to threshold, the signal required to open the squelch must be lower than the reference sensitivity level.
- 8) Set the receiver in a scanning mode and allow it to scan through it's complete receiving range.
- 9) If the receiver unsquelched or stopped on any frequency, receiving at this frequency, then adjust the signal generator output level until 12 dB SINAD is produced, this level is the spurious value and the difference between the reference sensitivity and the spurious value is the rejection ratio and must be at least 38dB.
- 10) Repeat above procedure at the frequencies 824.5, 836.0, and 848.5 MHz for the mobile band, and 869.1, 881.5, and 893.5MHz for the cellular base band.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	RF Communications Test Set	8920A	00 247	2016-08-10	2017-08-09
HEWLETT	Signal Generator	ESG-D3000A	N/A	2016-12-02	2017-12-01
FLUKE	Multimeter	1587	27870099	2016-12-30	2017-12-29

* **Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

Comply with FCC 121(a):

– Please refer to the technical informations or the attestation letter conforming compliance with this requirement.

Comply with FCC 121(b):

– Please refer to the following Scanning Receiver Cellular Band Rejection Test Result.

Comply with FCC 121(c):

– Not applicable.

Comply with FCC 121(d):

–Please refer to the User Manual.

Comply with FCC 121(e):

– This Scanning Receiver is not assembled from kits or marketed in kit form.

Comply with FCC 121(f):

–Please refer to the label of the product.

Test Data

For FCC §15.121(b) Scanning Receiver Cellular Band Rejection

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	38 %
ATM Pressure:	102kPa

* The testing was performed by Kevin Hu on 2017-06-16.

Test Result: Compliance

Scanning Receiver Cellular Band Rejection Test Data:

EUT's Scanning Frequency Band (MHz)	Test Frequencies of Cellular Band (MHz)	Spurious Value of Cellular Frequencies for 12 dB SINAD (dBm)	Reference Sensitivity for 12 dB SINAD (dBm)	Rejection Ratio (dB)	Rejection Ratio Limit (dB)
144-148 420-450	824.5, 836.0, 848.5, 869.1, 881.5, 893.5	> -51.2	-116.5	< -65.3	< -38.0

Note: Rejection Ratio = Reference Sensitivity - Spurious Value

Result

Compliance with the requirements specified in Part 15.121 for scanning receiver.

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