



Report No.:SZ11090107E01



FCC TEST REPORT

Issued to

3M Cogent, Inc

For

Mobile Ident IIIc

Model Name: Mi3c
Trade Name: 3M
Brand Name: N/A
FCC ID: ZYFMI3C
Test Rule: 47 CFR Part 15 Subpart B
Test date: September 2, 2011 – December 2, 2011
Issue date: December 8, 2011

By

Shenzhen Morlab Communications Technology Co., Ltd.

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Li Liang

Date 2011.12.8

Approved by [Signature]

Huang Pulong

Date

Review by Tu Lang

Tu Lang

Date

2011.12.8



CTIA Authorized Test Lab
LAB CODE 20081223-00

IEEE 1725

OTA

OFTA
電訊管理局



TAF
Testing Laboratory

GCF
Official Observer of
Global Certification Forum

Bluetooth
BQTF

FCC
Reg. No.
741109

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Change History		
Issue	Date	Reason for change
1.0	December 2, 2011	First edition
2.0	December 2, 2011	Second edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type..... Mobile Ident IIIc
 Serial No. (n.a., marked #1 by test site)
 Hardware Version V5.1
 Software Version..... V2.1.6
 Applicant..... 3M Cogent, Inc
 639N.Rosemead Blvd. Pasadena.CA 91170, USA
 Manufacturer..... 3M Cogent, Inc
 639N.Rosemead Blvd. Pasadena.CA 91170, USA
 Modulation Type..... FHSS, DSSS, ASK, GPRS/GSM Mode with GMSK Modulation,
 WCDMA , HSDPA, HSUPA Mode with QPSK Modulation
 Power supply Battery
 Brand Name: Boston
 Model No.: SONATA 4400
 Serial No.: (n.a. marked #1 by test site)
 Capacitance: 4400mAh
 Rated Voltage: 3.7V
 Charge Limit: 4.2V
 Ancillary Equipment 1.... AC Adapter (Charger for Battery)
 Brand Name: PLPU
 Model No.: GFP241DA-0540-1
 Serial No.: (n.a. marked #1 by test site)
 Rated Input: ~ 100-240V, 550mA, 50/60Hz
 Rated Output: = 5V, 4000mA

NOTE:

1. The EUT is a handheld multifunction device that integrates with face / fingerprint image capture and identification, it supports GSM 850MHz, 900MHz, 1800MHz, 1900MHz, GPRS, WCDMA 2100MHz, 1900MHz, 850MHz, HSUPA, HSDPA, GPS, NFC, ISM 2.4GHz Bluetooth module and ISM 2.4GHz WiFi module.
2. The EUT is equipped with a T-Flash card slot; equipped with a special port which can be connected to the ancillary equipments supplied by the manufacturer e.g. the AC Adapter and the USB Adapter Cable.
3. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-09 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC and IC rules and results are as below:

No.	Section	Description	Result
1	15.109	Radiated Emission	PASS
2	15.107	Conducted Emission	PASS

NOTE:

The tests were performed according to the method of measurements prescribed in ANSI C63.4 2009.

1.3 Facilities and Accreditations

1.3.1 Facilities

Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L3572.

All measurement facilities used to collect the measurement data are located at 3/F, Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, 518055 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22; the FCC registration number is 741109.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	$\pm 1.8\text{dB}$
Uncertainty of Radiated Emission:	$\pm 3.1\text{dB}$

2. TEST CONDITIONS SETTING

2.1 Test Mode

- (1) The first test mode (Idle)
The EUT configuration of the emission tests is EUT + Battery.
During the measurement, The EUT was powered by a PC and maintained until test end.
No communication link was established between the EUT and the System Simulator (SS).
- (2) The second test mode (USB)
The EUT configuration of the emission tests is TransFlash Card + EUT + Battery + PC.
In this test mode, the EUT with a TransFlash Card embedded is connected with a PC via a special USB cable supplied by applicant. the data is transmitting between the PC and the TransFlash Card of the EUT.
- (3) The third test mode
The EUT configuration of the emission tests is EUT + Battery.
In this test mode, the fingerprint image capture and identification was active.
- (4) The fourth test mode
The EUT configuration of the emission tests is EUT + Battery.
In this test mode, the image capture and identification was active.
- (5) The fifth test mode
The EUT configuration of the emission tests is EUT + Battery.
During the test, the NFC function was active.

NOTE: All test modes are performed, only the worst cases are recorded in this report.

2.2 Test Setup and Equipments List

2.2.1 Conducted Emission

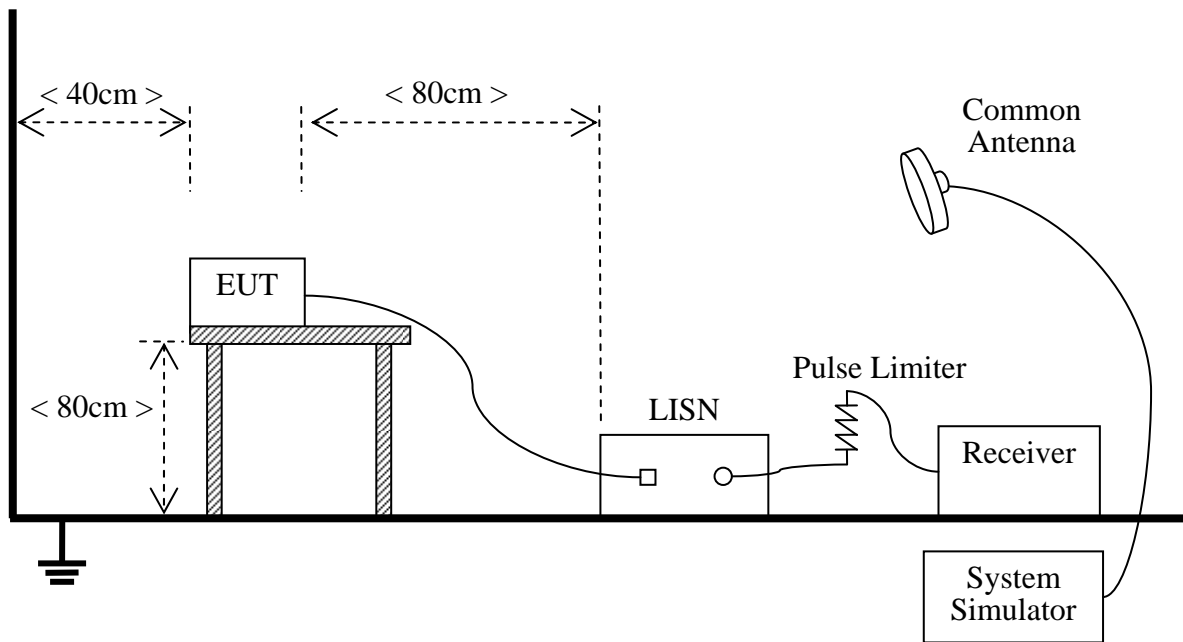
A. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2009 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

B. Test Setup:



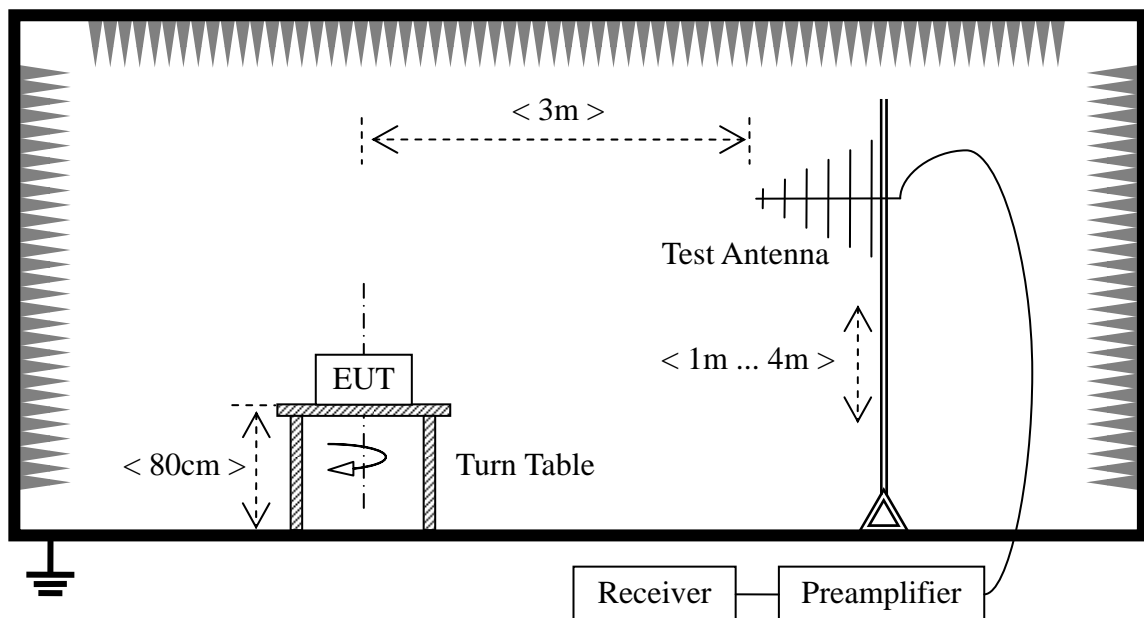
The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50Ω/50μH of coupling impedance for the measuring instrument. The Common Antenna is used for the call between the EUT and the System Simulator (SS). A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.

C. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Receiver	Agilent	E7405A	US44210471	2011.05
LISN	Schwarzbeck	NSLK 8127	812744	2011.05
Pulse Limiter (20dB)	Schwarzbeck	VTSD 9561-D	9391	(n.a.)
Personal Computer	IBM	IBM_T20	(n.a.)	(n.a.)
Bluetooth-Headset	Nokia	HS-36W	(n.a.)	(n.a.)
T-Flash Card	SanDisk	256MB	(n.a.)	(n.a.)

2.2.2 Radiated Emission

A. Test Setup:



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower. The Common Antenna is used for the call between the EUT and the System Simulator (SS).

B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date
Receiver	Agilent	E7405A	US44210471	2011.05
Semi-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2011.05
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2011.05
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2011.05



Description	Manufacturer	Model	Serial No.	Cal. Date
Test Antenna -Loop	R&S	HFH2-Z6	100231	2011.05
Personal Computer	IBM	IBM_T20	(n.a)	(n.a.)

3. 47 CFR PART 15B REQUIREMENTS

3.1 Conducted Emission

3.1.1 Requirement

According to FCC section 15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- a) The limit subjects to the Class B digital device.
- b) The lower limit shall apply at the band edges.
- c) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2 Test Description

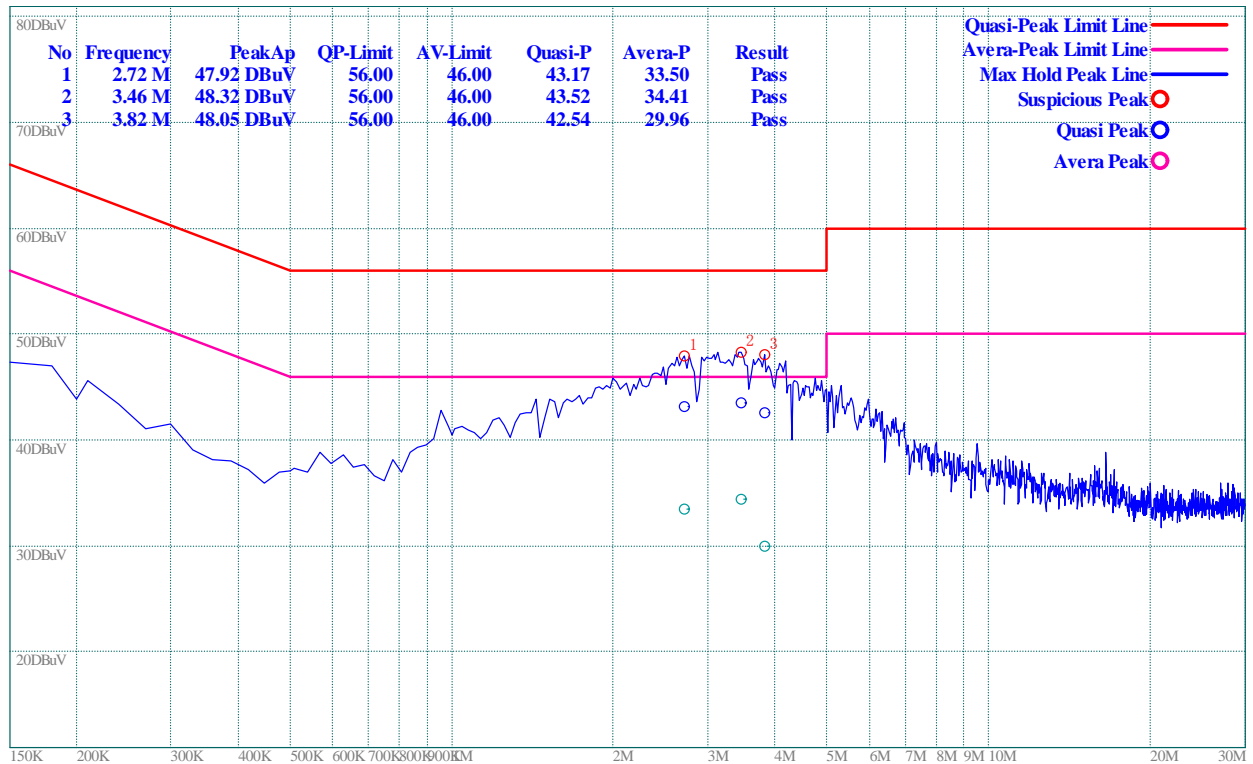
See section 2.2.1 of this report.

3.1.3 Test Result

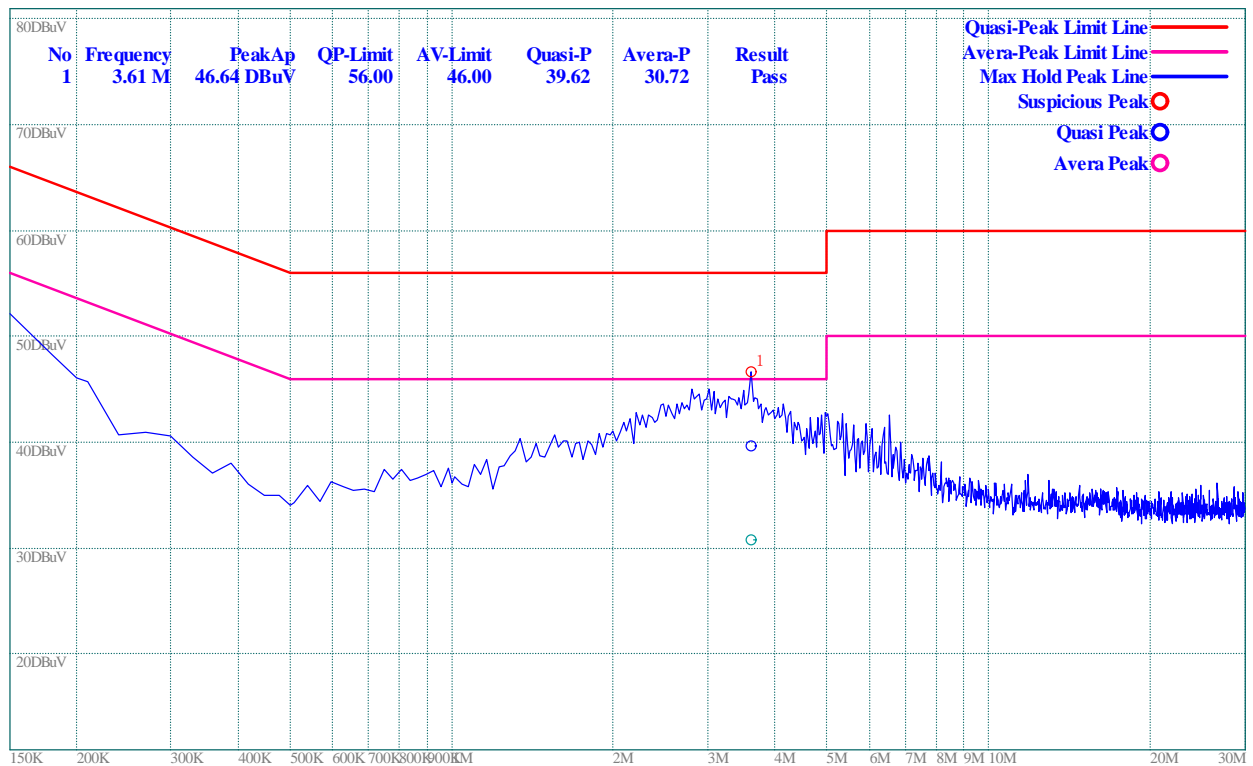
The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. All test modes are considered, refer to recorded points and plots below.

3.1.3.1 Test Mode

A. Test Plot and Suspicious Points:



(Plot A: L Phase)



(Plot B: N Phase)

Test Result: PASS

3.2 Radiated Emission

3.2.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength		Field Strength Limitation at 3m Measurement Dist	
	$\mu\text{V/m}$	Dist	($\mu\text{V/m}$)	(dBuV/m)
0.009 - 0.490	$2400/F(\text{KHz})$	300m	$10000 * 2400/F(\text{KHz})$	$20\log 2400/F(\text{KHz}) + 80$
0.490 - 1.705	$2400/F(\text{KHz})$	30m	$100 * 2400/F(\text{KHz})$	$20\log 2400/F(\text{KHz}) + 40$
1.705 - 30.00	30	30m	$100 * 30$	$20\log 30 + 40$
30.0 - 88.0	100	3m	100	$20\log 100$
88.0 - 216.0	150	3m	150	$20\log 150$
216.0 - 960.0	200	3m	200	$20\log 200$
Above 960.0	500	3m	500	$20\log 500$

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in dBuV/m is calculated by $20\log \text{Emission Level}(\mu\text{V/m})$.
- 3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $L_{d1} = L_{d2} * (d_2/d_1)^2$.

Example:

F.S Limit at 30m distance is $30\mu\text{V/m}$, then F.S Limitation at 3m distance is adjusted as

$$L_{d1} = L_1 = 30\mu\text{V/m} * (10)^2 = 100 * 30\mu\text{V/m}$$

3.2.2 Test Description

See section 2.2.1 of this report.

3.2.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to

perform the tests. All test modes are considered, refer to recorded points and plots below.

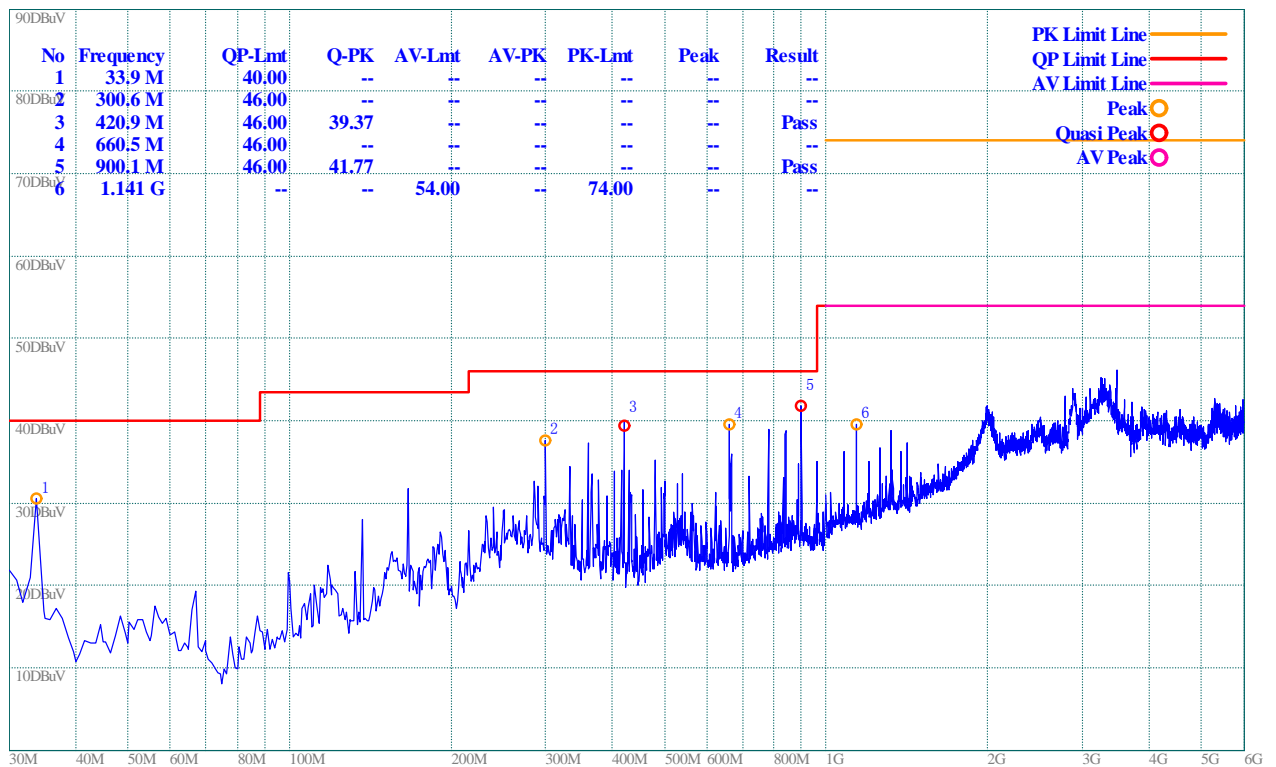
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

B. Test Plots and Suspicious Points:

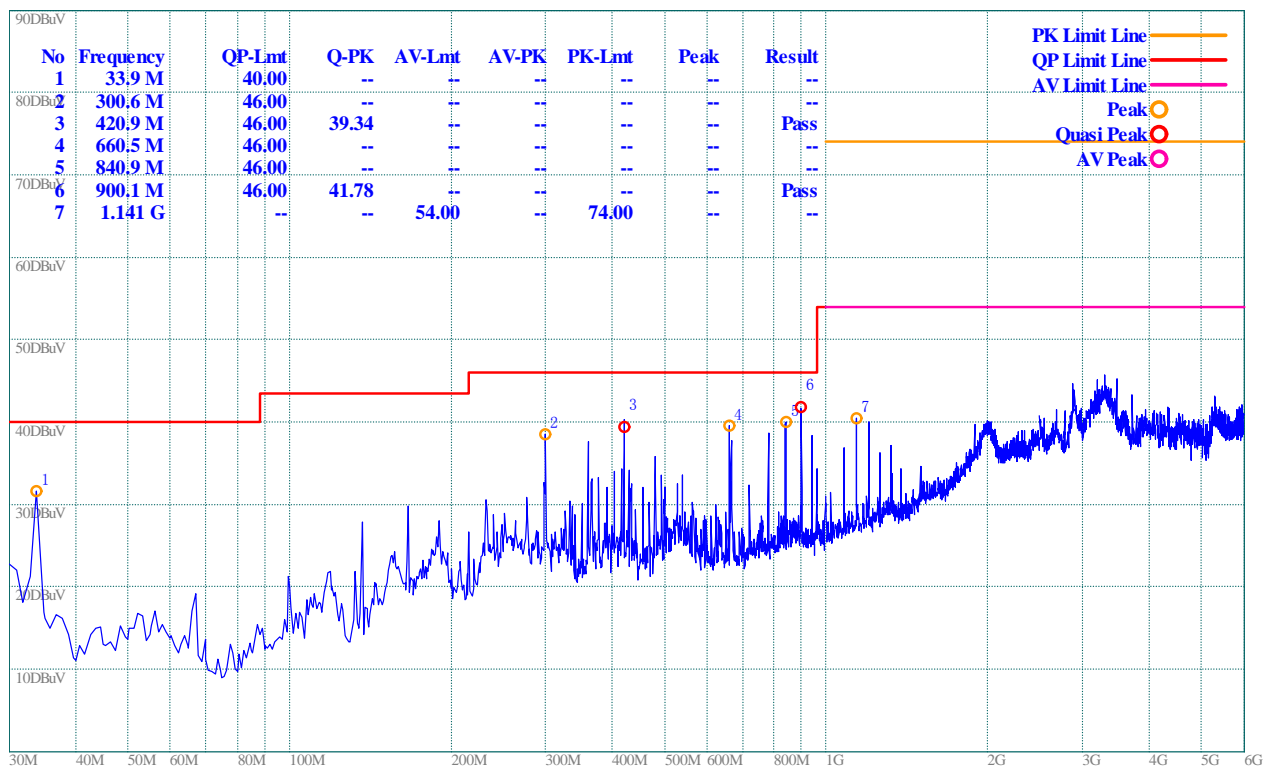
NOTE: The emissions are too small to be measured and are at least 6 dB below the limit, So all the data of marked are pass.



(Plot A: 9K – 30M)



(Plot A: Test Antenna Vertical)



(Plot B: Test Antenna Horizontal)

Test Result: PASS

**** END OF REPORT ****