



47 CFR PART 15 SUBPART C

TEST REPORT

of

Capdase Joystick FM Transmitter

Model Name: FT00-1001 / FTIP-1002
Brand Name: CAPDASE
Report No.: SZ08060115E02
FCC ID: VPDUAL0809NFT

prepared for

Uniconcept Asia Limited

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TABLE OF CONTENTS

1.	TEST CERTIFICATION	3
2.	GENERAL INFORMATION	4
2.1	EUT Description	4
2.2	Test Standards and Results	5
2.3	Facilities and Accreditations	6
2.3.1	Facilities	6
2.3.2	Test Environment Conditions	6
3.	47 CFR PART 15C REQUIREMENTS	7
3.1	Conducted Emission	7
3.1.1	Limits of Mains Terminal Disturbance Voltage	7
3.1.2	Test Procedure	7
3.1.3	Test Setup	7
3.1.4	Test Result	8
3.2	Radiated Emission Measurement	10
3.2.1	Limits of Radiated Disturbance	10
3.2.2	Test Procedure	10
3.2.3	Test Setup	11
3.2.4	Equipments List:	11
3.2.5	Test Result	11
3.3	26 dB Bandwidth	16
3.3.1	Definition	16
3.3.2	Test Description	16

1. TEST CERTIFICATION

Equipment under Test: Capdase Joystick FM Transmitter

Trade Name: Uniconcept Asia Limited

Brand Name: CAPDASE

Model Name: FT00-1001 / FTIP-1002

FCC ID: VPDUAL0809NFT

Applicant: Uniconcept Asia Limited

4/F., Fook Cheong Building, 63 Hoi Yuen Road, Kwun Tong.
Kowloon, Hong Kong.

Manufacturer: Uniconcept Asia Limited

4/F., Fook Cheong Building, 63 Hoi Yuen Road, Kwun Tong.
Kowloon, Hong Kong.

Test Standards: 47 CFR Part 15 Subpart C

Test Date(s): August 7, 2008 - August 29, 2008

Test Result: PASS

* We Hereby Certify That:

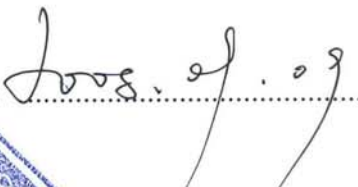
The equipment under test was tested by Shenzhen Electronic Product Quality Testing Center Morlab Laboratory. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

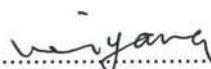
Tested by:


Luo Biao

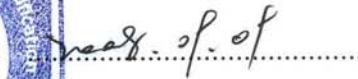
Dated:


2008.09.09

Reviewed by:


Wei Yanquan

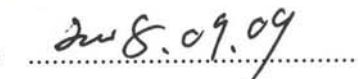
Dated:

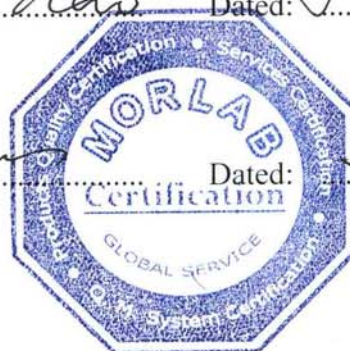

2008.09.09

Approved by:


Shu Luan

Dated:


2008.09.09



2. GENERAL INFORMATION

2.1 EUT Description

EUT Type.....: Capdase Joystick FM Transmitter
Model Name: FT00-1001 / FTIP-1002 ^{note 2}
Serial No.....: (n.a, marked #1 by test site)
IMEI: (n.a)
Hardware Version: V1.0
Software Version: V1.0
Modulation Type.....: FM
Frequency: 88.1MHz – 107.9MHz
Power Supply.....: The EUT is powered by 12-24V DC

Note 1: The EUT as a FM Transmitter; the frequencies allocated is 88.1MHz – 107.9MHz. The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 88.1MHz, 98.0MHz and 107.9MHz

Note 2: The Mode FT00-1001 is similar to the Mode FTIP-1002, only the surface has different colors. The Mode FT00-1001 has the black surface and the Mode FT0P – 1002 has the white surface.

Note 3: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

2.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

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

No.	Section	Description	Result
1	15.239	Radiated Emission	PASS
2	15.207	Conducted Emission	PASS
3	15.239	26 dB bandwidth	PASS

The tests of Conducted Emissions and Radiated Emissions were performed according to the method of measurements prescribed in ANSI C63.4 2003.

2.3 Facilities and Accreditations

2.3.1 Facilities

Shenzhen Electronic Product Quality Testing Center 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 L1659.

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen 518055 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.

2.3.2 Test Environment Conditions

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

Temperature (°C):	20 - 25
Relative Humidity (%):	40 - 60
Atmospheric Pressure (kPa):	96

3. 47 CFR PART 15C REQUIREMENTS

3.1 Conducted Emission

(FCC §15.207, RSS-210 6.6)

3.1.1 Limits of Mains Terminal Disturbance Voltage

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

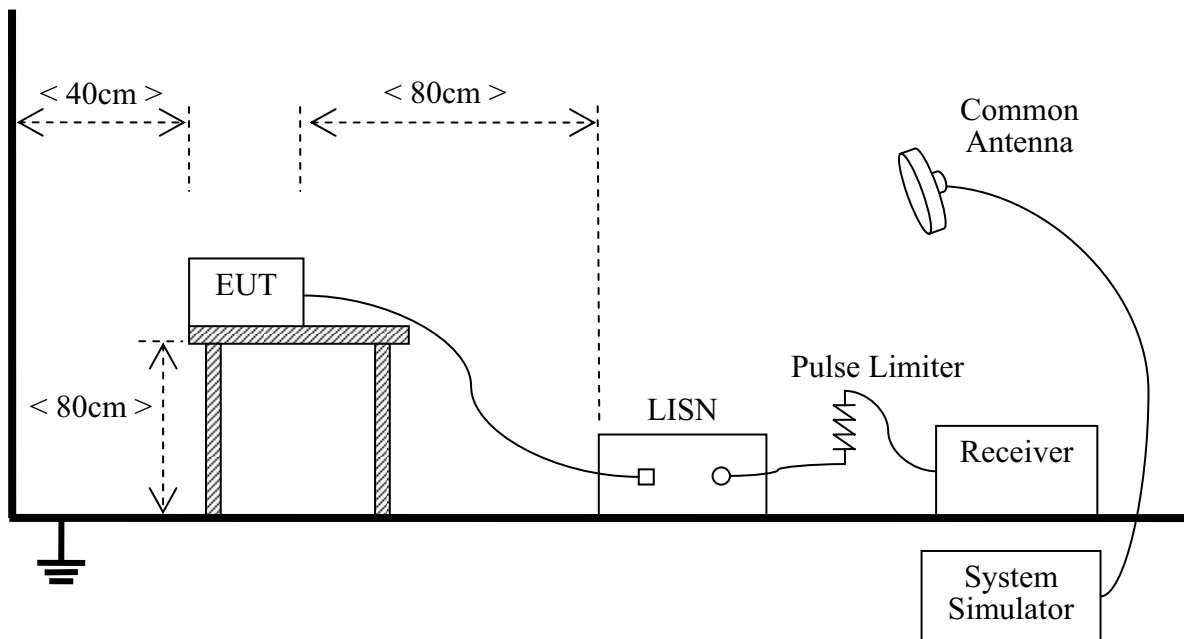
NOTE:

- The limit is applicable to Class B ITE.
- The lower limit shall apply at the band edges.
- The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

3.1.2 Test Procedure

- 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 50 Ω /50 μ H of coupling impedance for the measuring instrument.
- The test frequency range is from 150kHz to 30MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are 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.

3.1.3 Test Setup

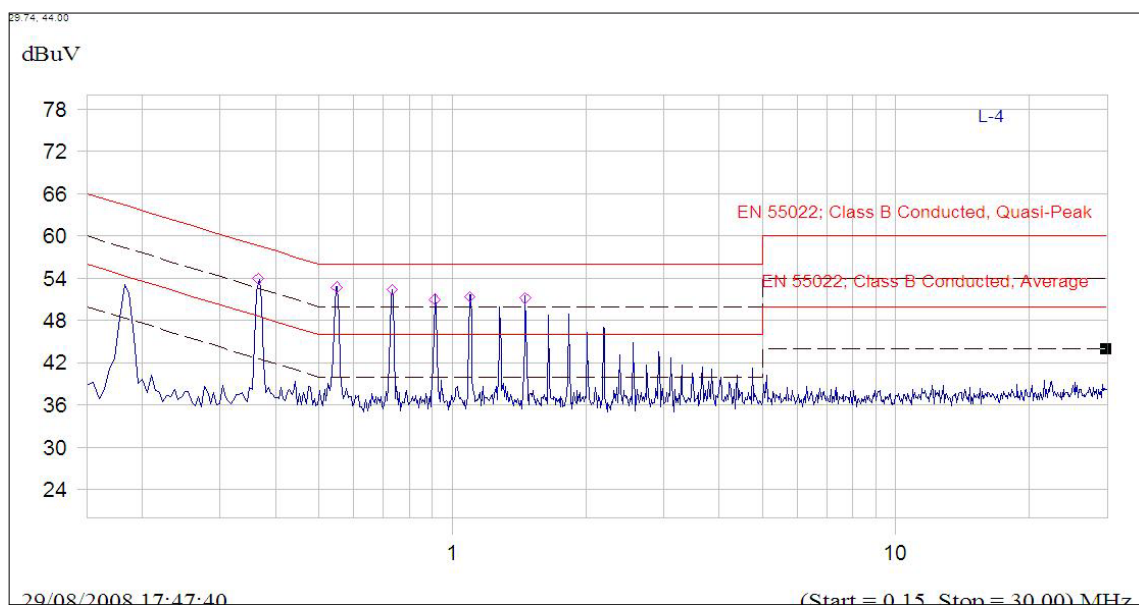


3.1.4 Test Result

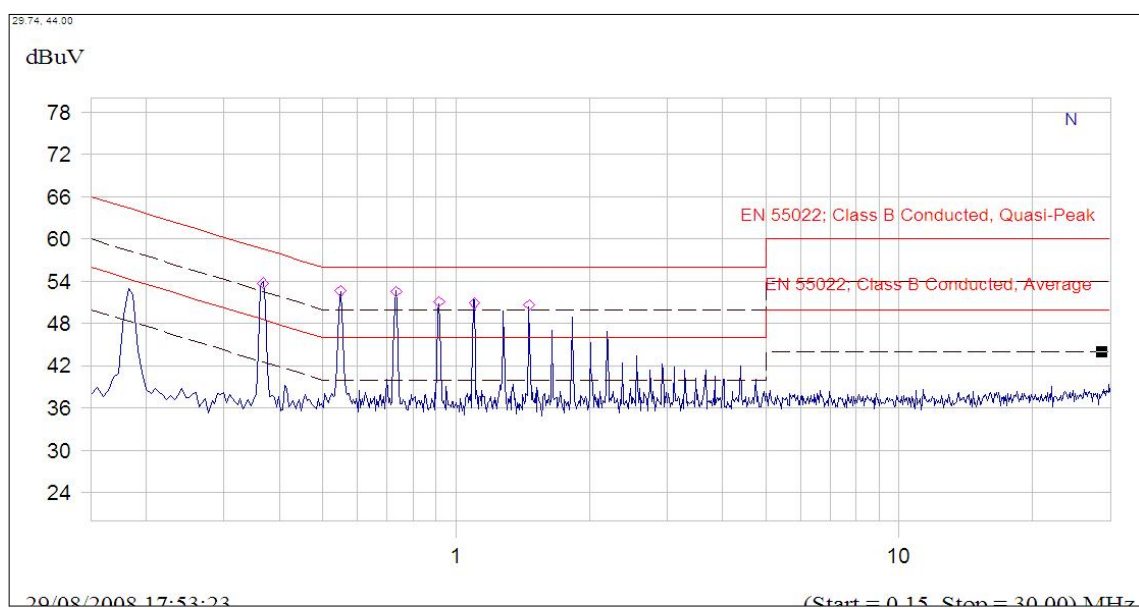
A. Test Verdict Recorded for Suspicious Points:

No.	@Frequency (MHz)	Measured Emission Level (dBμV)				Limit (dBμV)		Verdict
		PK	QP	AV	Phase	QP	AV	
1	0.366	54.0	53.2	47.7	L	58.6	48.6	PASS
2	0.549	52.7	51.9	44.1	L	56	46	PASS
3	0.732	52.4	51.4	45.8	L	56	46	PASS
4	0.915	51.0	49.9	40.1	L	56	46	PASS
5	1.095	51.4	50.5	44.0	L	56	46	PASS
6	1.461	51.2	50.2	40.3	L	56	46	PASS
7	0.367	53.7	52.9	47.5	N	58.6	48.6	PASS
8	0.550	52.7	51.9	42.7	N	56	46	PASS
9	0.733	52.5	51.4	45.7	N	56	46	PASS
10	0.917	51.1	50.0	41.2	N	56	46	PASS
11	1.101	50.9	50.0	44.1	N	56	46	PASS
12	1.463.	50.6	49.8	40.7	N	56	46	PASS

B. Test Plot:



(Plot A: L Phase)



(Plot B: N Phase)

3.2 Radiated Emission Measurement

(FCC §15.239, RSS-210 A2.8)

3.2.1 Limits of Radiated Disturbance

A: FCC Part 15 Subpart C Paragraph 15.239 Limit

Limit [$\mu\text{V/m}$]	Limit [$\text{dB}\mu\text{V/m}$]	Detector
250	48	Averag
2500	68	Peak

Note:

- RF Field Strength ($\text{dB}\mu\text{V}$) = $20\log\text{RF Voltage (}\mu\text{V)}$
- Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

B: Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency range (MHz)	Quasi-Peak Limit ($\text{dB}\mu\text{V/m}$)
30 - 88	40
88 - 216	43.5
216 - 960	46
Above 960	54

NOTE:

- The limit is applicable to Class B ITE at 3m measurement distance.
- Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

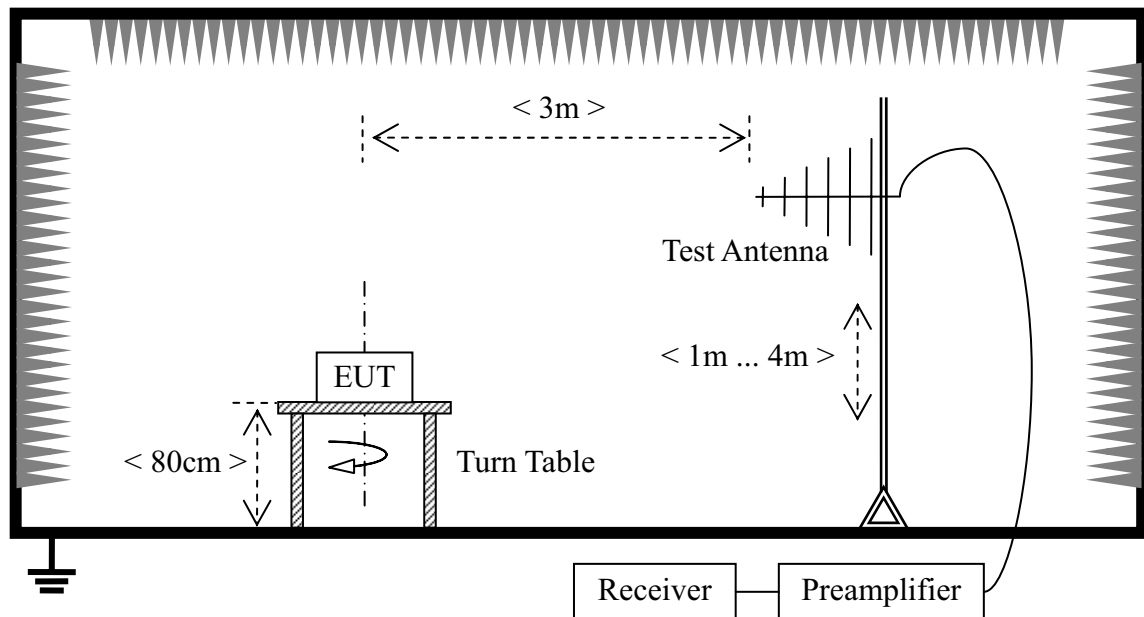
As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 Test Procedure

- The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor. 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.
- For each suspected emission, the EUT is arranged to its worst case and then the Test Antenna is tuned to the heights from 1 to 4m and the Turn Table is tuned from 0 to 360 degrees to find the maximum reading.
- The Test Antenna is a bi-log one, and its height is varied from 1 to 4m above the ground to determine the maximum value of the field strength. Both the vertical and the horizontal

polarizations of the Test Antenna are considered to perform the tests.

3.2.3 Test Setup



3.2.4 Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
System Simulator	R&S	CMU200	100448	2008.10	1year
Receiver	Agilent	E7405A	US44210471	2008.07	1year
Semi-Anechoic Chamber	Albatross	9m*6m*6m	(n.a.)	2008.08	2year
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-274	2008.07	1year
Test Antenna - Horn	Schwarzbeck	BBHA 9120C	9120C-384	2008.07	1year
Ipod	Apple	MA005TA/A	(n.a)	(n.a)	(n.a)

3.2.5 Test Result

During the test, the Ipod MP3 player will connected with the EUT via audio cable and play music under the volume setting on the player was at the maximum setting.

A: Fundamental Radiated Emission date

Peak

Frequency	Emission Level	Limit	Margin	Verdict
-----------	----------------	-------	--------	---------

(MHz)	(dB μ V/m)	(dB μ V/m)	(dB)	
88.1	50.39	68	17.61	PASS
98	55.37	68	12.63	PASS
107.9	53.97	68	14.03	PASS

Average

Frequency (MHz)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Verdict
88.1	43.09	48	4.91	PASS
98	43.19	48	4.81	PASS
107.9	44.45	48	3.55	PASS

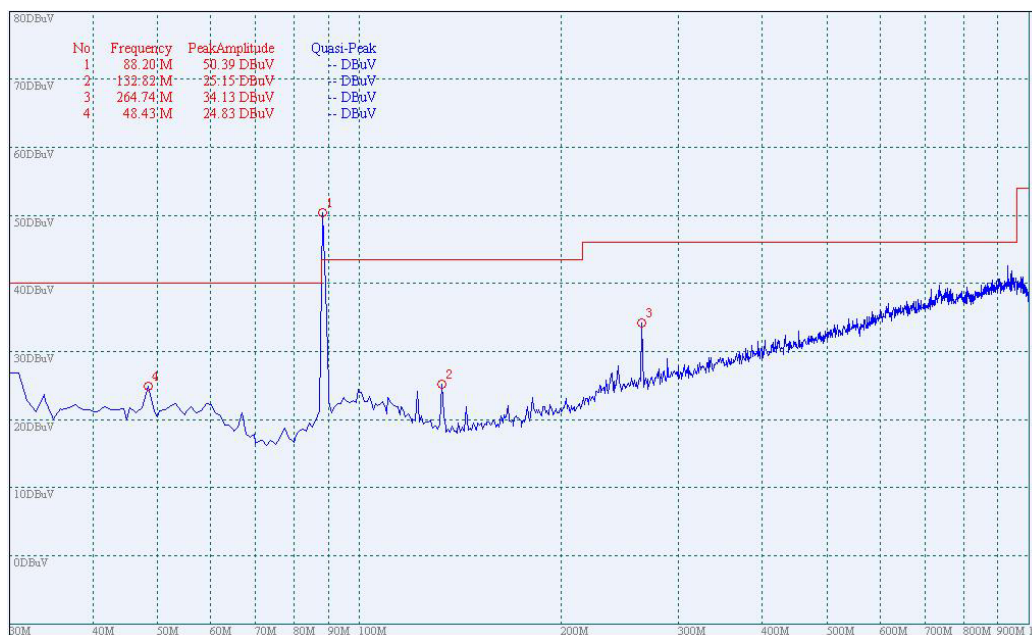
Note: Emission Level = Reading Level + Probe Factor + Cable Loss.

B: General Radiated Emission Date

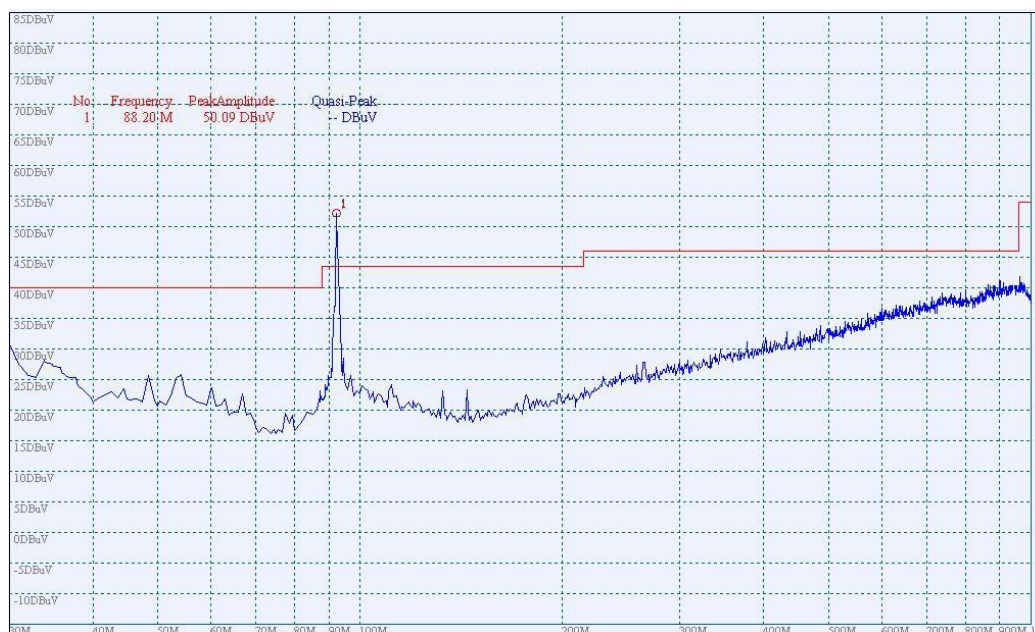
Please refer to following diagram

Low channel / 88.1 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)



(Plot A Antenna = Horizontal)

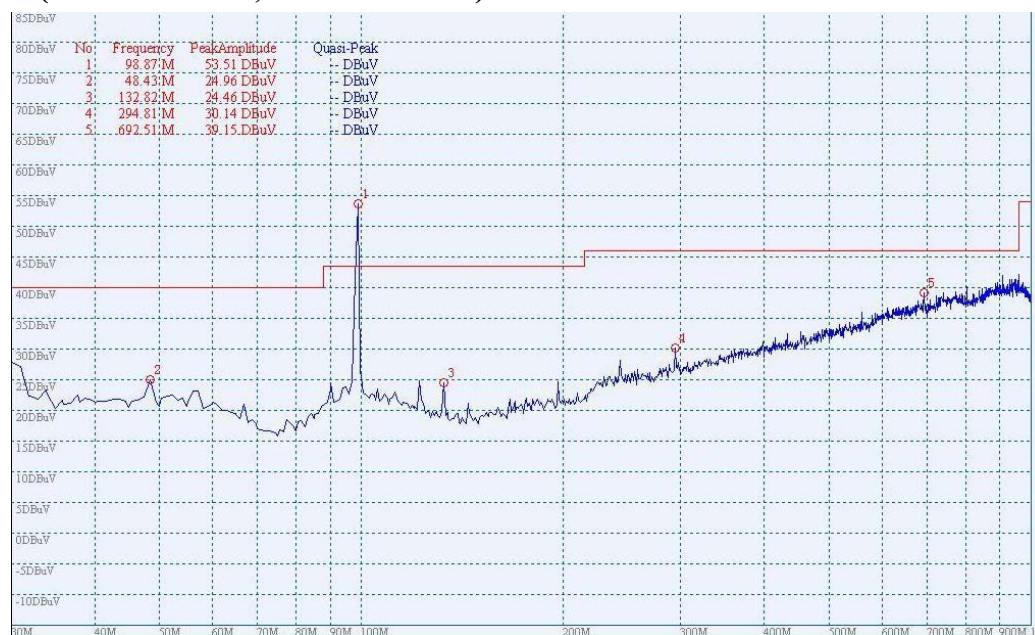


(Plot B Antenna = Vertical)

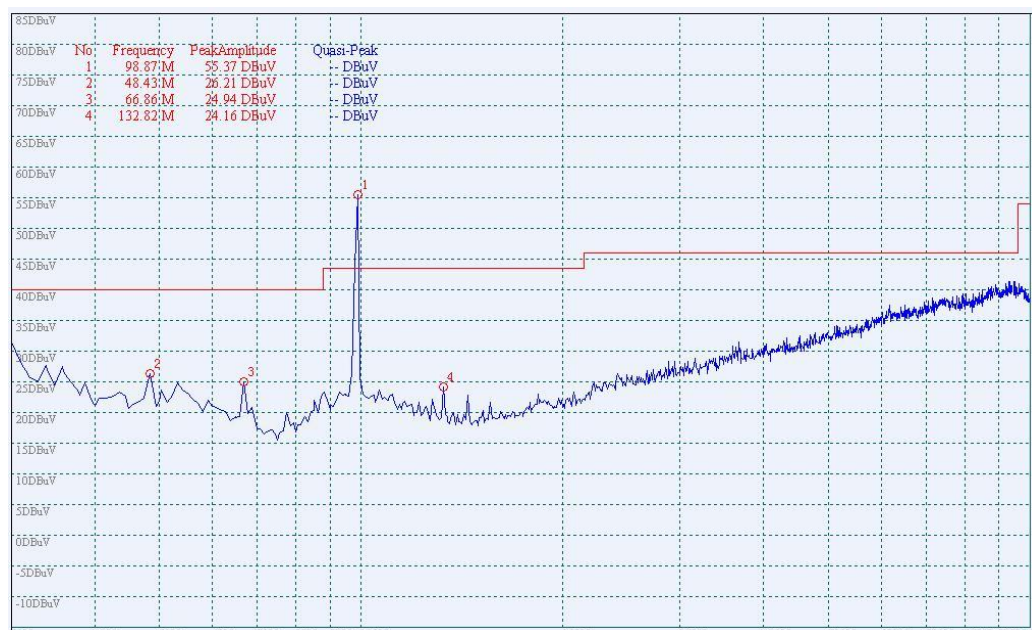
88.1 MHz	Frequency (MHz)	Emission Level [dB μ V/m]	Polarisation	Quasi-Peak Limit (dB μ V/m)	Verdict
	48.43	24.83	Horizontal	40	PASS
	264.74	34.13	Horizontal	46	PASS
	132.82	25.15	Horizontal	46	PASS

Middle channel / 98 MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)



(Plot C Antenna = Horizontal)

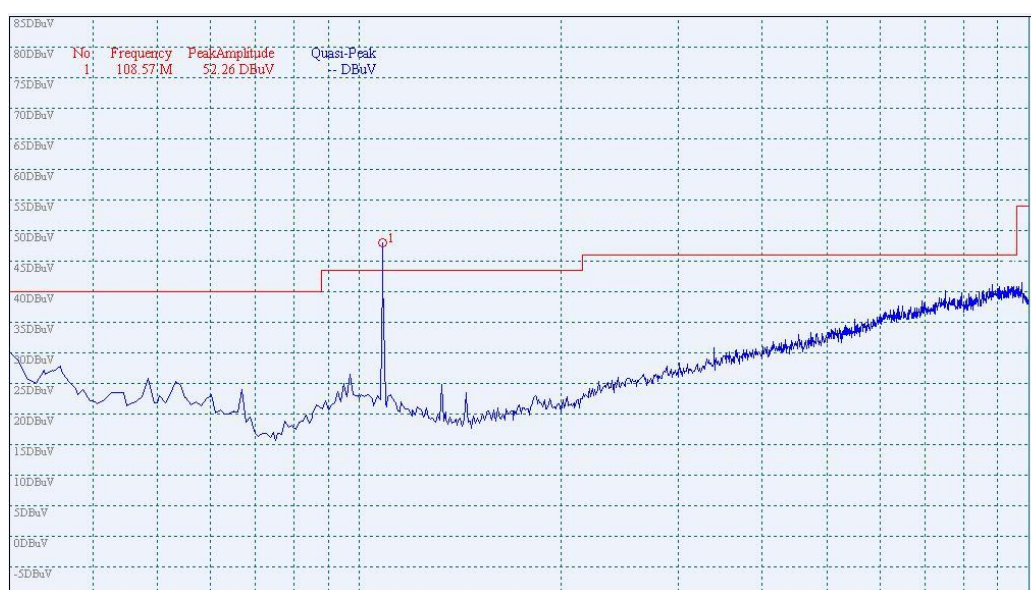


(Plot D Antenna = Vertical)

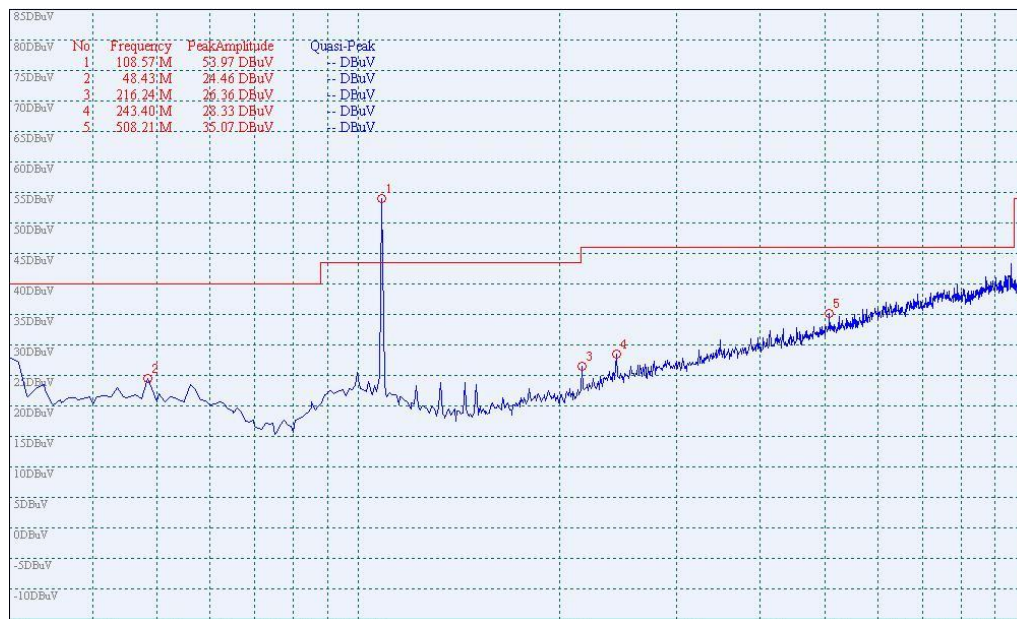
	Frequency (MHz)	Emission Level [dBμV/m]	Polarisation	Quasi-Peak Limit (dBμV/m)	Verdict
98 MHz	48.43	24.96	Horizontal	40	PASS
	132.82	24.46	Horizontal	43.5	PASS
	294.81	30.14	Horizontal	46	PASS
	692.51	39.15	Horizontal	46	PASS

High channel /107.9MHz

Quasi peak (RBW: 120 kHz, VBW: 300 kHz)



(Plot E Antenna = Horizontal)



(Plot F Antenna = Vertical)

	Frequency (MHz)	Emission Level [dBμV/m]	Polarisation	Quasi-Peak Limit (dBμV/m)	Verdict
98 MHz	48.43	24.46	Vertical	40	PASS
	216.24	26.36	Vertical	46	PASS
	243.40	28.33	Vertical	46	PASS
	508.21	35.07	Vertical	46	PASS

3.3 26 dB Bandwidth

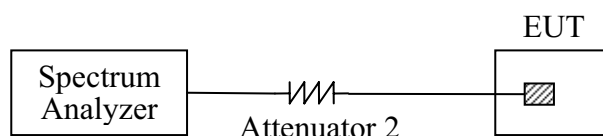
(FCC §15.239(a), RSS-210 A2.8)

3.3.1 Definition

The measurement is made according to ANSI C63.4 and IC standard RSS-210.

3.3.2 Test Description

A. Test Setup:



B. Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E7405A	US44210471	2008.07	1year
Attenuator 1	Resnet	20dB	(n.a.)	(n.a.)	(n.a.)

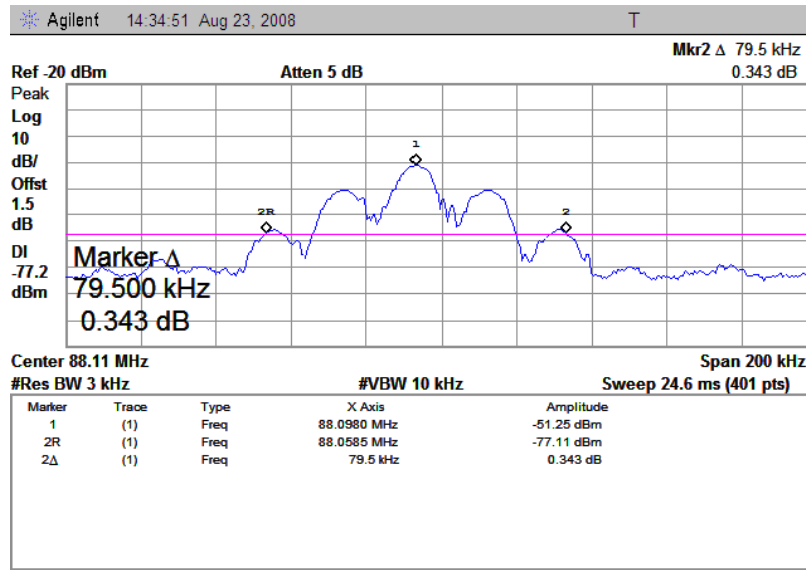
3.3.2.1 Test Result

The lowest, middle and highest channels are selected to perform testing to record the 26 dB bandwidth of the Module.

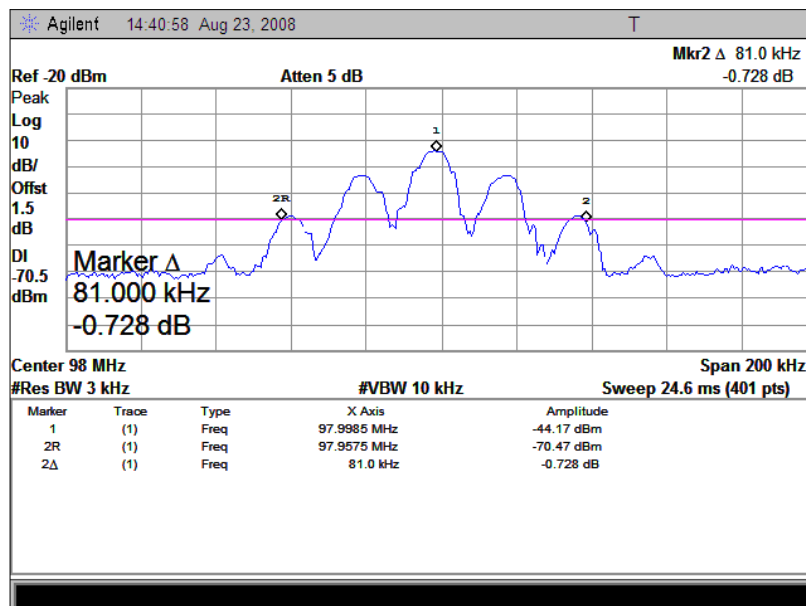
A. Test Verdict:

Frequency (MHz)	26 dB Bandwidth (kHz)	Refer to Plot	Limits (kHz)	Result
88.1	79.5	Plot A	≤ 200	PASS
98	81.0	Plot B	≤ 200	PASS
107.9	81.5	Plot C	≤ 200	PASS

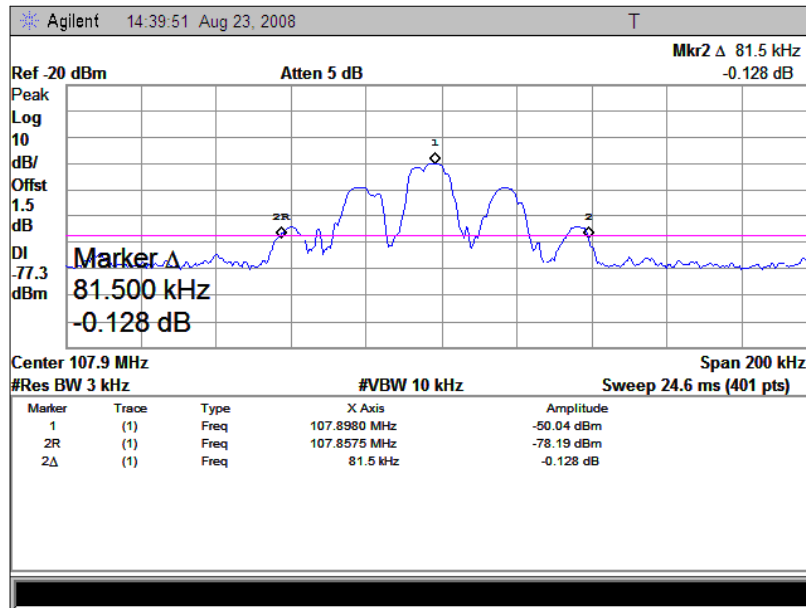
B. Test Plot:



(Plot A: Frequency = 88.1MHz)



(Plot B: Frequency = 98MHz)



(Plot C: Frequency = 107.9MHz)

** END OF REPORT **