

FCC Part 15B

Measurement and Test Report

For

Airspan Networks Inc

777 Yamato Road, Suite 310 Boca Raton FL 33431 USA

FCC ID: PIDMIMAX4900

FCC Rule(s):	<u>FCC Part 15 Subpart B</u>
Product Description:	<u>WiMAX Outdoor CPE</u>
Tested Model:	<u>M-Pro-V89-505i</u>
Report No.:	<u>STR13088081I-3</u>
Tested Date:	<u>2013-08-06 to 2013-08-24</u>
Issued Date:	<u>2013-08-26</u>
Tested By:	<u>Seven Song / Engineer</u> <i>Seven Song</i>
Reviewed By:	<u>Lahm Peng / EMC Manager</u> <i>Lahm peng</i>
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
Prepared By:	

SEM.Test Compliance Service Co., Ltd
 3/F, Jinbao Commerce Building, Xin'an Fanshen Road,
 Bao'an District, Shenzhen, P.R.C. (518101)
 Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd

TABLE OF CONTENTS

1. GENERAL INFORMATION.....3

 1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....3

 1.2 TEST STANDARDS.....4

 1.3 TEST METHODOLOGY4

 1.4 TEST FACILITY4

 1.5 EUT SETUP AND OPERATION MODE5

2. SUMMARY OF TEST RESULTS6

3. CONDUCTED EMISSIONS7

 3.1 MEASUREMENT UNCERTAINTY7

 3.2 TEST EQUIPMENT LIST AND DETAILS7

 3.3 TEST PROCEDURE.....7

 3.4 BASIC TEST SETUP BLOCK DIAGRAM.....7

 3.5 ENVIRONMENTAL CONDITIONS8

 3.6 SUMMARY OF TEST RESULTS/PLOTS8

 3.8 CONDUCTED EMISSIONS TEST DATA.....8

4. RADIATED EMISSIONS.....11

 4.1 MEASUREMENT UNCERTAINTY11

 4.2 TEST EQUIPMENT LIST AND DETAILS11

 4.3 TEST PROCEDURE.....11

 4.4 TEST RECEIVER SETUP12

 4.5 CORRECTED AMPLITUDE & MARGIN CALCULATION.....12

 4.6 ENVIRONMENTAL CONDITIONS12

 4.7 SUMMARY OF TEST RESULTS/PLOTS12

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: AirSPAN Networks Inc
 Address of applicant: 777 Yamato Road, Suite 310 Boca Raton FL 33431
 USA
 Manufacturer: KZ BroadBand Technologies, Ltd
 Address of manufacturer: 1601 Tower C, Skyworth Building, High-tech
 Industrial Park, Nanshan District, Shenzhen, China.

General Description of EUT	
Product Name:	WiMAX Outdoor CPE
Trade Name:	AirStream
Model No.:	M-Pro-V89-505i
Adding Model:	AirStream 400F49, AirStream 400F49C, AirStream 400F58, AirStream 400F58C, M-Pro-H89-505i, M-Pro-L89-560i
<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The other model listed in the report has different appearance only of M-Pro-V89-505i without circuit and electronic construction changed, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Rated Voltage:	DC 48V
Rated Current:	300mA
Rated Power:	15W
Power Adapter Model:	SSA301F480063US, IP: 100-240V~,0.8A OP:DC48V,0.63A
Lowest Internal Frequency:	32.768kHz
Highest Internal Frequency:	100MHz
Classification of ITE:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Airspan Networks Inc in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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.

1.4 Test Facility

- **FCC – Registration No.: 994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

- **Industry Canada (IC) Registration No.: 7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

- **CNAS Registration No.: L4062**

Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
DC Power Cable	1.2	Unshielded	Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
RJ45	1.5	Unshielded	Without Ferrite

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Notebook	Lenovo	E23	/

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.107 (a)	Conducted Emissions	Compliant
§ 15.109 (a)	Radiated Emissions	Compliant

N/A: not applicable

3. Conducted Emissions

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

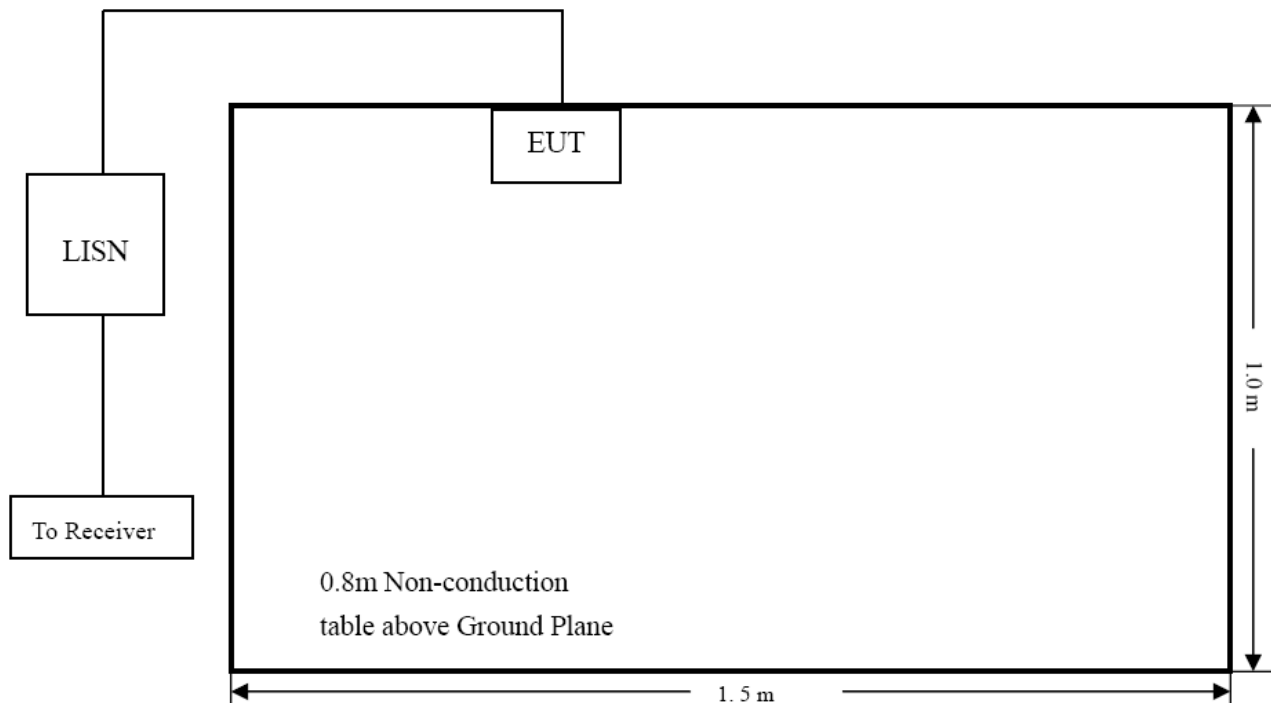
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2013-05-07	2014-05-06
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2013-05-07	2014-05-06
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2013-05-07	2014-05-06

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2003, 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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin reading of:

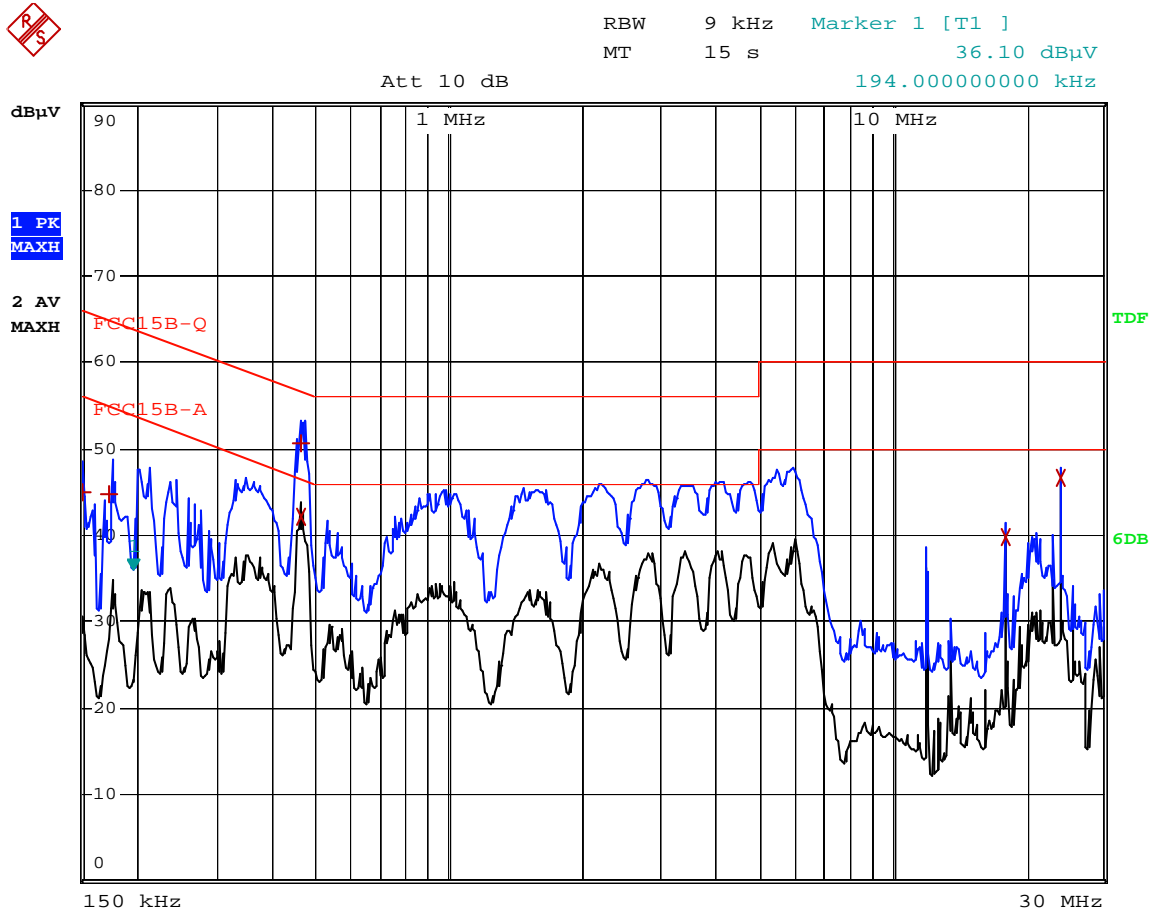
-3.37 dB at 23.978 MHz in the **Neutral** mode, **Average** detector, **0.15-30MHz**

3.8 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

EUT: WIMAX Outdoor CPE
 Tested Model: M-Pro-V89-505i
 Operating Condition: Operating
 Comment: AC120V/60Hz, DC 48V

Test Specification: Neutral

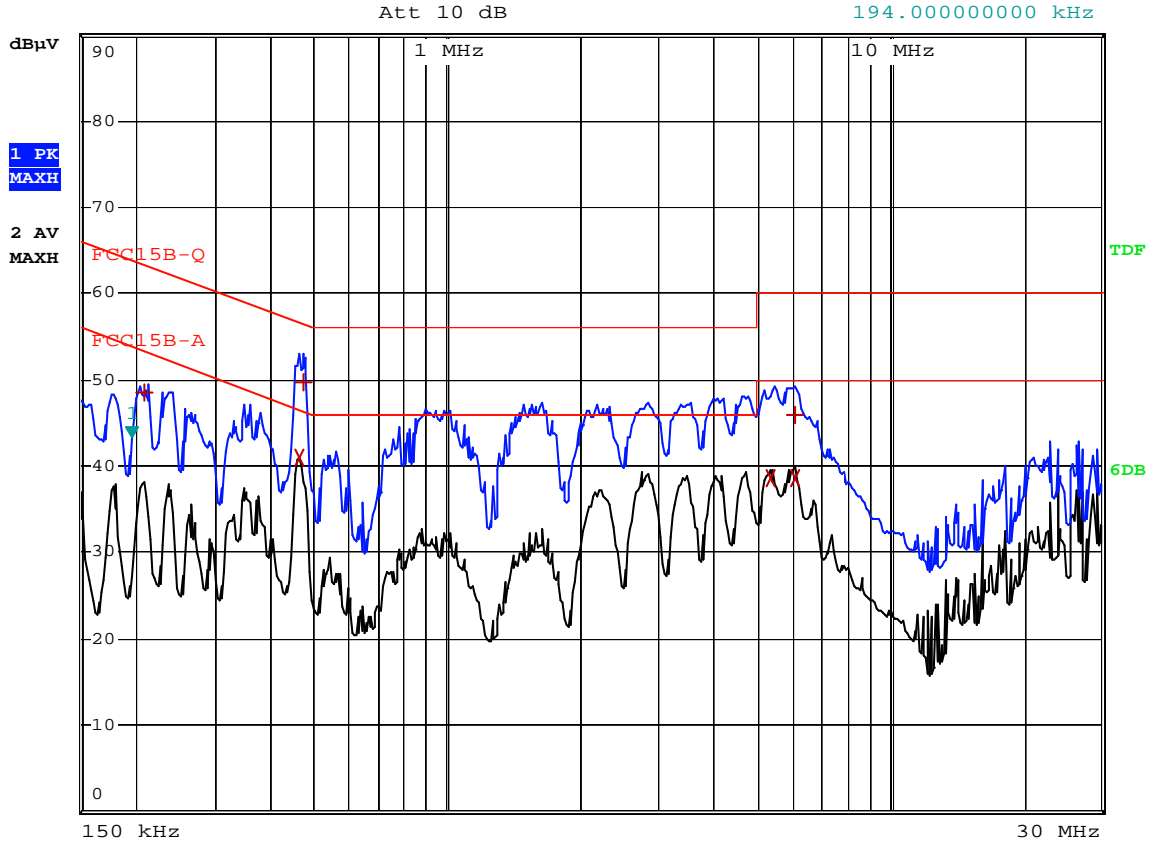


EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC15B-Q		
Trace2:	FCC15B-A		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	150 kHz	44.94	-21.05
1 Quasi Peak	174 kHz	44.69	-20.07
1 Quasi Peak	462 kHz	50.70	-5.94
2 Average	462 kHz	42.10	-4.55
2 Average	17.982 MHz	39.85	-10.14
2 Average	23.978 MHz	46.62	-3.37

Test Specification: Line



RBW 9 kHz Marker 1 [T1]
 MT 15 s 43.33 dBµV
 194.00000000 kHz



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC15B-Q		
Trace2:	FCC15B-A		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	210 kHz	48.60	-14.60
2 Average	462 kHz	41.10	-5.55
1 Quasi Peak	474 kHz	49.76	-6.67
2 Average	5.382 MHz	38.67	-11.32
1 Quasi Peak	6.142 MHz	46.05	-13.94
2 Average	6.142 MHz	38.60	-11.39

4. Radiated Emissions

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

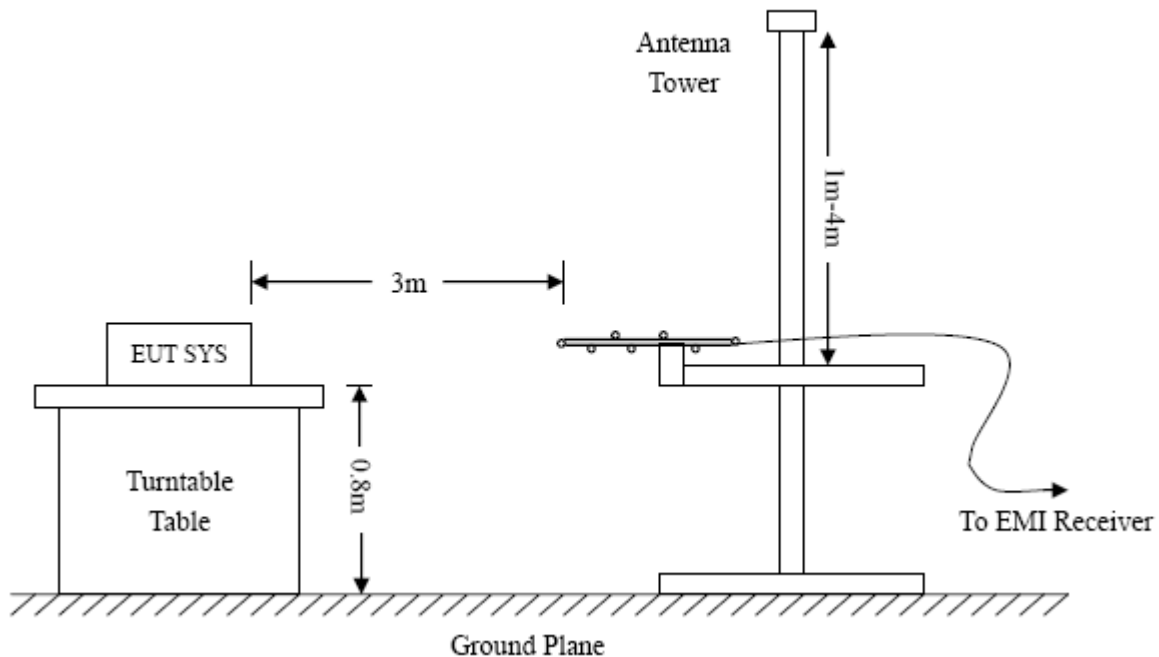
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2013-05-07	2014-05-06
EMI Test Receiver	R&S	ESVB	825471/005	2013-05-07	2014-05-06
Pre-amplifier	Agilent	8447F	3113A06717	2013-05-07	2014-05-06
Pre-amplifier	Compliance Direction	PAP-0118	24002	2013-05-07	2014-05-06
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2013-04-20	2014-04-19
Horn Antenna	ETS	3117	00086197	2013-04-20	2014-04-19
Loop Antenna	SCHWARZECK	HFRA 5165	9365	2013-04-20	2014-04-19

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

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

The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

Frequency :9kHz-30MHz	Frequency :30MHz-1GHz	Frequency :Above 1GHz
RBW=10KHz,	RBW=120KHz,	RBW=1MHz,
VBW =30KHz	VBW=300KHz	VBW=3MHz(Peak), 10Hz(AV)
Sweep time= Auto	Sweep time= Auto	Sweep time= Auto
Trace = max hold	Trace = max hold	Trace = max hold
Detector function = peak	Detector function = peak, QP	Detector function = peak, AV

4.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.109(a) Limit}$$

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst margin of:

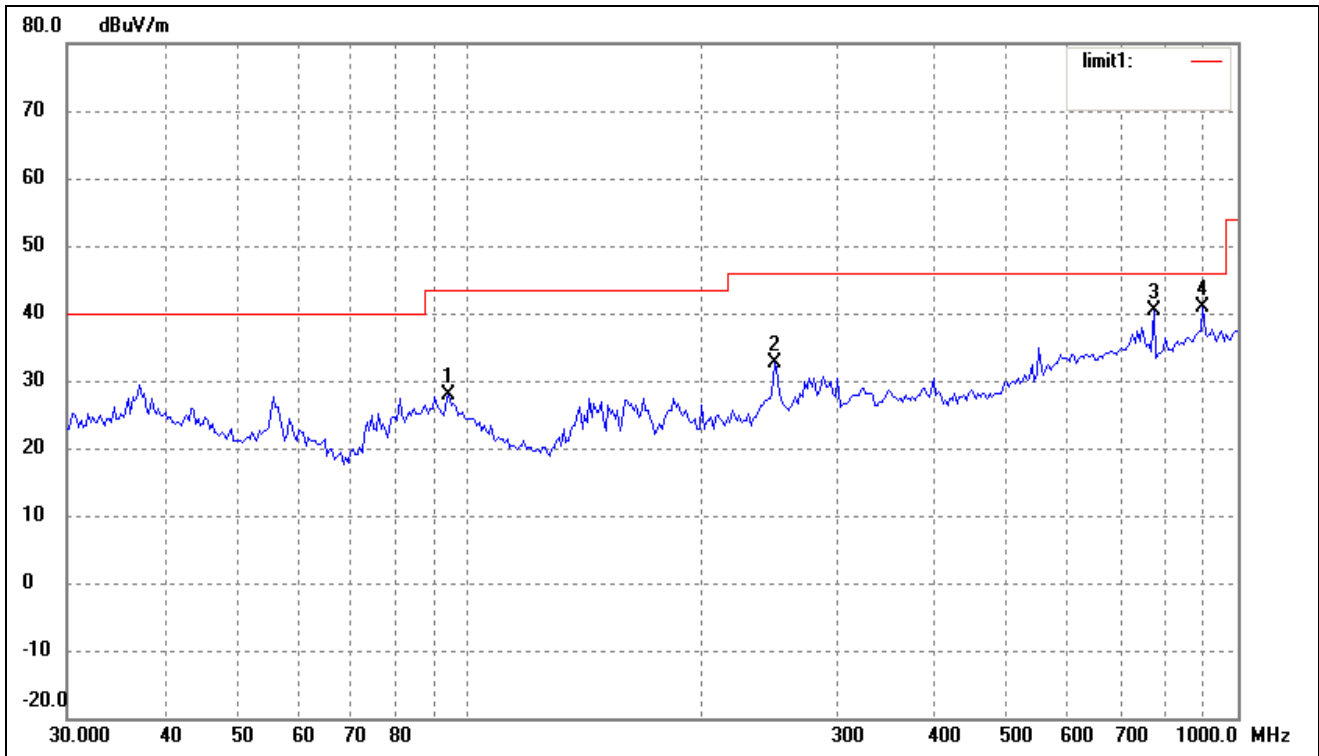
-3.25 dB at 37.2854 MHz in the Vertical polarization, 9 kHz to 2 GHz, 3Meters

Plot of Radiated Emissions Test Data

EUT: *WiMAX Outdoor CPE*
 Tested Model: *M-Pro-V89-505i*
 Operating Condition: *Operating*
 Comment: *AC120V/60Hz, DC 48V*

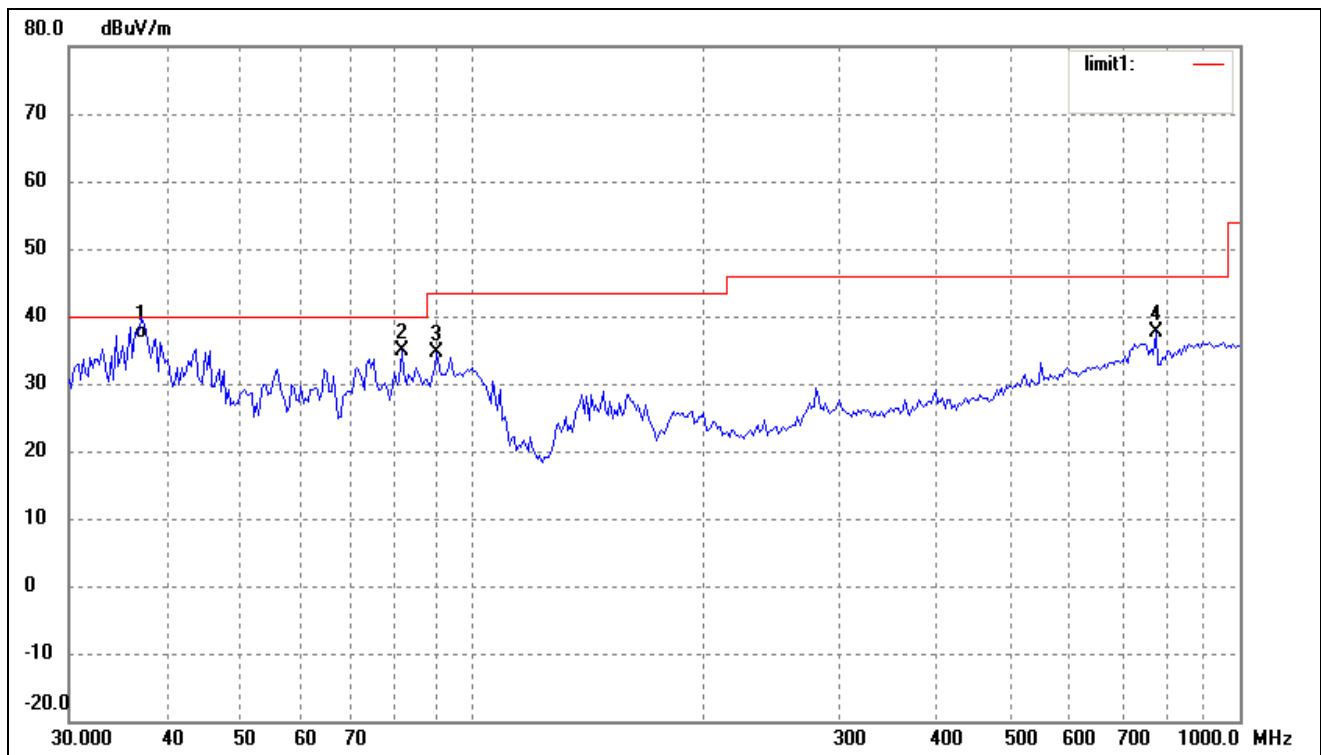
Test Specification: *Horizontal*

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	94.0978	22.59	5.37	27.96	43.50	-15.54	272	100	peak
2	249.4250	25.28	7.27	32.55	46.00	-13.45	185	100	peak
3	776.8777	24.41	15.98	40.39	46.00	-5.61	226	100	peak
4	900.1473	21.40	19.38	40.78	46.00	-5.22	360	100	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	37.2854	27.50	9.25	36.75	40.00	-3.25	241	100	QP
2	81.2116	32.80	2.02	34.82	40.00	-5.18	272	100	peak
3	90.2205	30.09	4.43	34.52	43.50	-8.98	164	100	peak
4	776.8777	21.69	15.98	37.67	46.00	-8.33	270	100	peak

Note: Testing is carried out with frequency rang 9kHz to the 2GHz, which above 1GHz are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.. The measurements greater than 20dB below the limit from 9kHz to 30MHz and the data is not report.

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