FCC PART 15 SUBPART C

EMI MEASUREMENT AND TEST REPORT

For

AMBIT Microsystems Corporation

4-1, Ming Shen Street, Tu Chen Industrial District.
Tu Chen, Taipei Hsien 236, Taiwan, R.O.C.

FCC ID: MCL-T60H42400

March 13, 2003

This Report Concerns:	**Equipment Type:**
☒ Original Report	MiniPCI IIIB Wireless LAN Card

Test Engineer:	Jerry Wang
Report No.:	R0302123
Test Date:	February 27, 2003
Reviewed By:	Hans Mellberg
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *Ambit Microsystems Corporation*'s Model: *T60H424* or the "EUT" as referred to in this report is a MINIPCI IIIB Wireless LAN Card.

The EUT is complied with IEEE 802.11b 11 Mbps Standard. The WLAN application is implemented via a RF module. This RF module is developed for Wireless LAN application complied with IEEE 802.11b 11Mbps standard in ISM band. It can be used to provide a variety of low-cost wireless network interfaces to build your wireless connection via simply SMT procedure to speed the time to market. Three Intersil's chips are implemented in the RF module including ISL3985, HFA3783.

The EUT has the following functions:

- Compatible with IEEE 802.11b high rate standard to provide wireless Ethernet speeds of 11Mbps data rate
- Dynamic data rate switching with 11, 5.5, 2, and 1 Mbps
- Allows auto fallback data rate for optimized reliability, throughput and transmission range
- Supports wireless data encryption with 64/128-bit WEP standard for security
- Dual diversity antenna connectors supported for the multi-path environment
- Drivers supports Windows 95, 98, 98SE, NT, ME, 2000, Win XP.

For marketing purpose, the device was installed in Compaq laptop and tested with Sharp antenna.

** The test data in this test report was good for the test sample only. It may have deviation for other test samples.*

1.2 Objective

This type approval report is prepared on behalf of. *Ambit Microsystems Corporation* in accordance with Part 2, Subpart J, Part 15, Subparts B and C of the Federal Communication Commissions rules.

The objective of the manufacturer is to demonstrate compliance with FCC rules for Output Power, Antenna Requirements, 6 dB Bandwidth, power density, 100 kHz Bandwidth of Band Edges Measurement, Conducted and Spurious Radiated Emission, and RF safety requirements.

1.3 Related Submittal(s)/Grant(s)

No Related Submittals.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-1992, 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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 Meters.

1.5 Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI).

The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2000.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

1.6 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Due Date
HP	Spectrum Analyzer	8568B	2610A02165	12/6/03
HP	Spectrum Analyzer	8593B	2919A00242	12/20/03
HP	Amplifier	8349B	2644A02662	12/20/03
HP	Quasi-Peak Adapter	85650A	917059	12/6/03
HP	Amplifier	8447E	1937A01046	12/6/03
A.H. System	Horn Antenna	SAS0200/571	261	12/27/03
Com-Power	Log Periodic Antenna	AL-100	16005	11/2/03
Com-Power	Biconical Antenna	AB-100	14012	11/2/03
Solar Electronics	LISN	8012-50-R-24-BNC	968447	12/28/03
Com-Power	LISN	LI-200	12208	12/20/03
Com-Power	LISN	LI-200	12005	12/20/03
BACL	Data Entry Software	DES1	0001	12/20/03

*** Statement of Traceability: Bay Area Compliance Laboratory Corp.** certifies that all calibration has been performed using suitable standards traceable to the NIST.

1.7 Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Compaq	Notebook PC	Topaz1.0	J291800P1058	DoC
Compaq	Power Adapter	308745-001	PPP012L	DoC

1.8 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Compaq	Notebook PC	Topaz1.0	J291800P1058	DoC

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The host system was configured for testing in a typical fashion (as a normally used by a typical user).

The EUT was tested in the normal (native) operating mode to represent *worst*-case results during the final qualification test.

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The test software, Prism Test Utility (Version 3.0.22), provided by the customer, is started the Windows 98 terminal program under the Windows 98 operating system.

Once loaded, the program sequentially exercises each system component, and the Prism Test Utility icon appears in the PC screen. By the icon, select the channel to be tested, set the mode as “Host BSS”. After the setting, click the “Continuous TX” button for transmitting the RF power.

Repeat above steps for other channels to be tested.

2.3 Special Accessories

As shown in section 2.7, all interface cables used for compliance testing are shielded as normally supplied by their respective support equipment manufacturers.

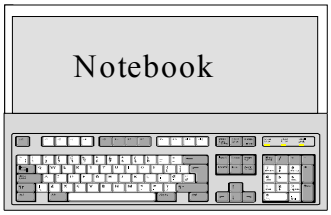
2.4 Schematics / Block Diagram

Please refer to Exhibit D.

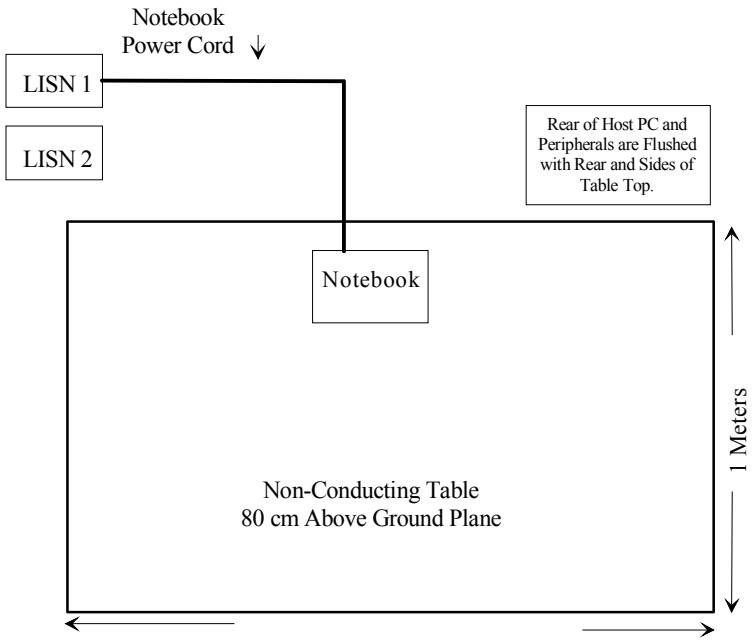
2.5 Equipment Modifications

No modifications were made by BACL Corporation to ensure the EUT to comply with the applicable limits and requirements.

2.6 Configuration of Test System



2.7 Test Setup Block Diagram



3 - SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§ 15.205	Restricted Bands	Compliant
§ 2.1091	RF Safety Requirements	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	Conducted Emission	Compliant
§15.209 (a)	Radiated Emission	Compliant
§15.209 (f)	Spurious Emission	Compliant
§15.247 (a) (2)	6 dB Bandwidth	Compliant
§15.247 (b) (2)	Peak Output Power	Compliant
§15.247 (b) (4)	RF Exposure	Compliant
§ 15.247 (c)	100 kHz Bandwidth of Frequency Band Edges	Compliant
§15.247 (d)	Peak Power Spectral Density	Compliant

Attestation: The testing was performed or supervised by BACL Corp. that the test measurements were made in accordance with the referred department standard(s); and that the radio equipment identified in this application has been subject to all the applicable test conditions specified in the department standards and all of the requirement standards have been met.

4 - PEAK OUTPUT POWER MEASUREMENT

4.1 Standard Applicable

According to §15.247(b) (3), for systems using digital modulation in the 2400-2483.5 MHz: 1 Watt.

4.2 Measurement Procedure

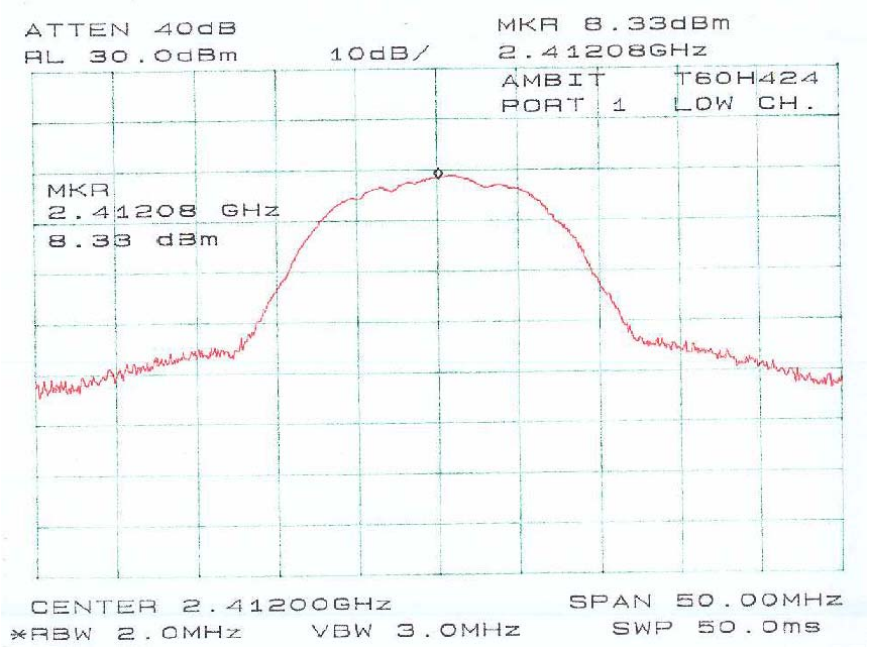
1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to a spectrum analyzer.
3. Add a correction factor to the display.

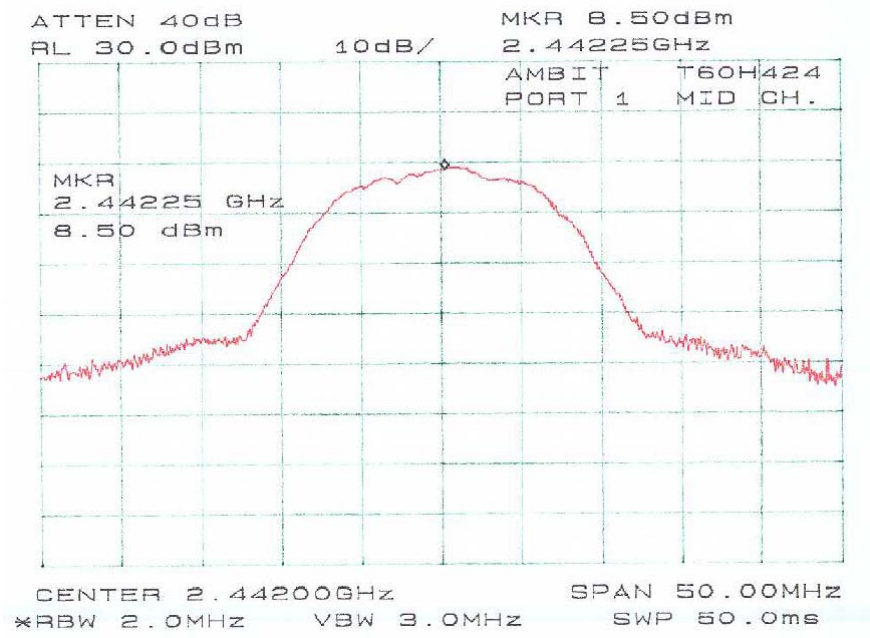
4.3 Measurement Result

Frequency (MHz)	Peak Output Power (dBm)	Correction Factor (dBm)	Corrected Output Power (dBm)	Corrected Output Power (mW)	Standard (W)	Result
2412	8.33	7.72	16.05	40.27	≤ 1W	Compliant
2442	8.50	7.72	16.22	41.88	≤ 1W	Compliant
2462	8.33	7.72	16.05	40.27	≤ 1W	Compliant

Note: Correction Factor = 10 log (BW6dB/RBW) = 10 log (11.83/2.0) = 7.72 dBm

Please refer to the attached plot(s).


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 8.33dBm
2.41208GHz
AMBIT T60H424
PORT 1 LOW CH.
MKR
2.41208 GHz
8.33 dBm
CENTER 2.41200GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 8.50dBm
2.44225GHz
AMBIT T60H424
PORT 1 MID CH.
MKR
2.44225 GHz
8.50 dBm
CENTER 2.44200GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 8.33dBm
2.46208GHz
AMBIT T60H424
PORT 1 HIGH CH
MKR
2.46208 GHz
8.33 dBm
CENTER 2.46200GHz
SPAN 50.00MHz
*RBW 2.0MHz
VBW 3.0MHz
SWP 50.0ms

5 - SPURIOUS EMISSION

5.1 Standard Applicable

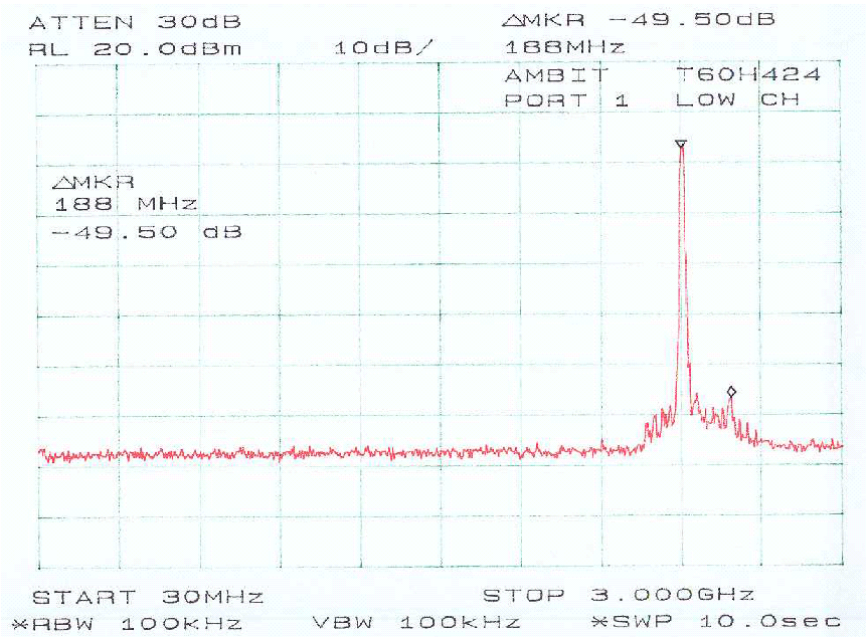
According to §15.209 (f) and §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation f a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit.

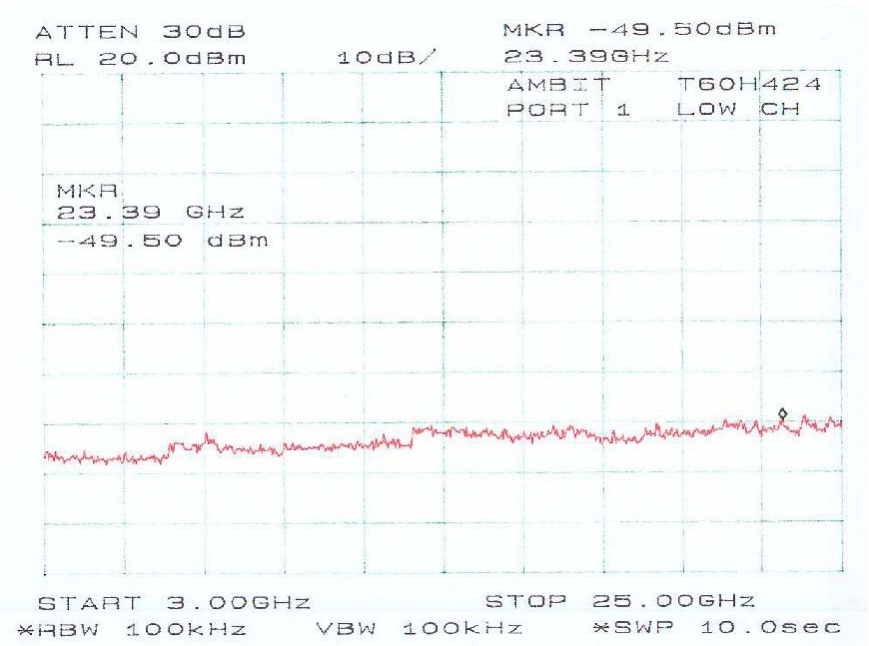
5.2 Measurement Procedure

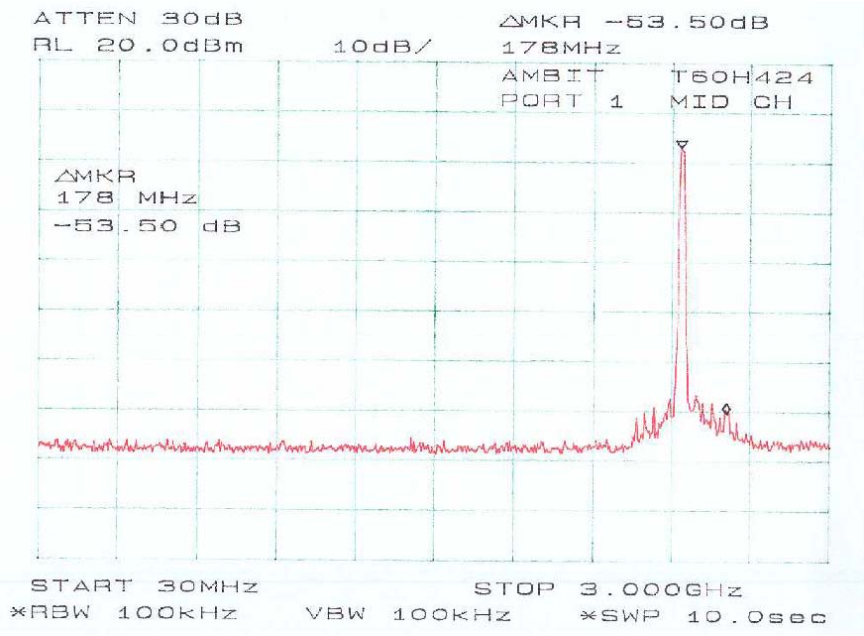
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Placed the EUT on a bench. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set the SA on Max-Hold Mode, and then keep the EUT in transmitting mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

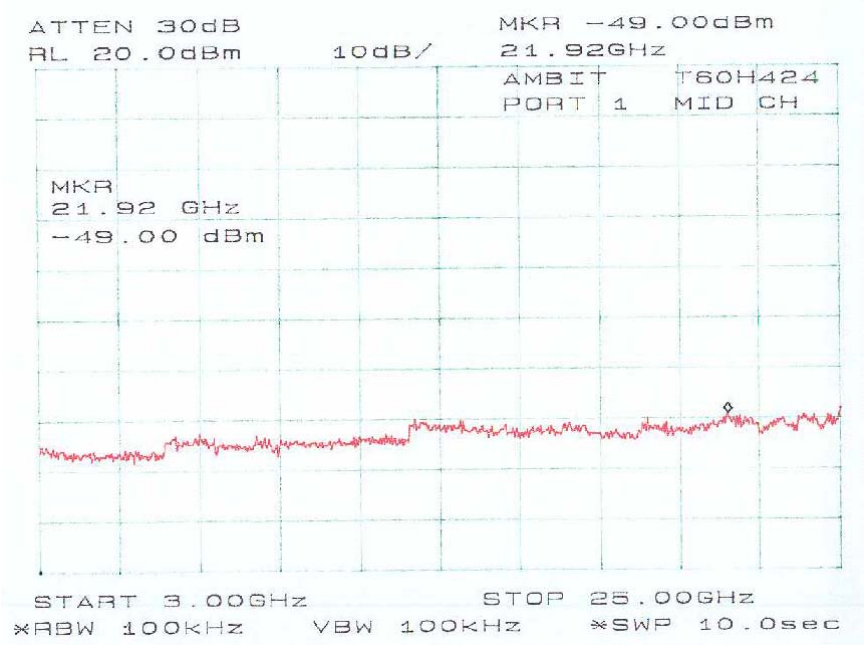
5.3 Measurement Data

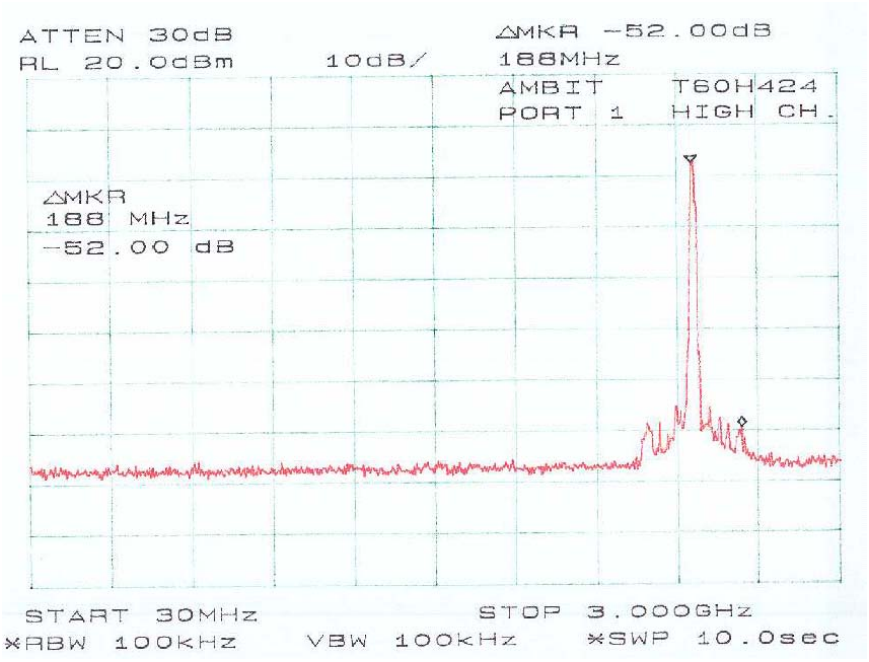
Please refer to the attached plot(s).

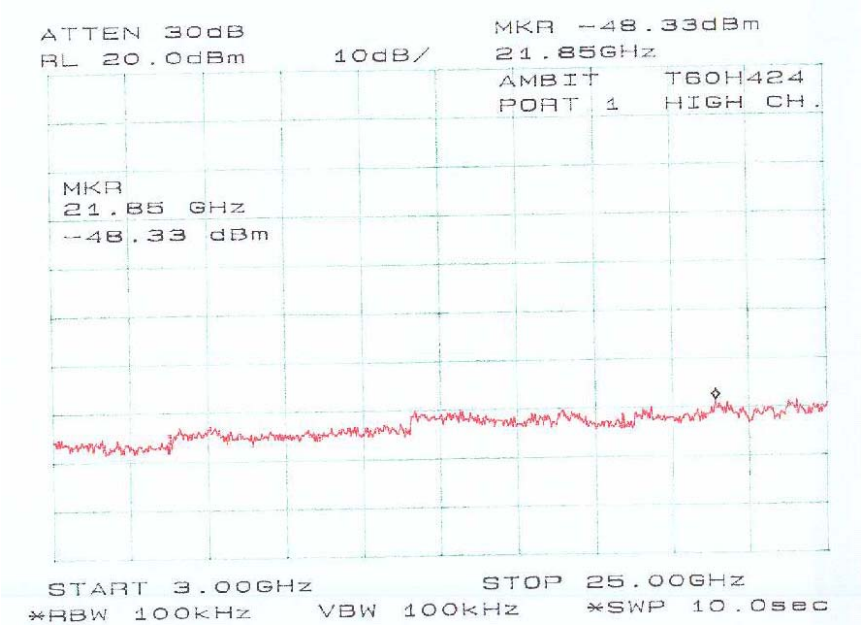

ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -49.50dB
188MHz
AMBIT T60H424
PORT 1 LOW CH
ΔMKR
188 MHz
-49.50 dB
START 30MHz
STOP 3.000GHz
*RBW 100kHz
VBW 100kHz
*SWP 10.0sec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -49.50dBm
23.398Hz
AMBIT T60H424
PORT 1 LOW CH
MKR
23.39 GHz
-49.50 dBm
START 3.00GHz
STOP 25.00GHz
*RBW 100kHz
VBW 100kHz
*SWP 10.0sec


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -53.50dB
178MHz
AMBIT T60H424
PORT 1 MID CH
ΔMKR
178 MHz
-53.50 dB
START 30MHz
STOP 3.000GHz
*RBW 100KHz
VBW 100KHz
*SWP 10.0sec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -49.00dBm
21.92GHz
AMBIT T60H424
PORT 1 MID CH
MKR
21.92 GHz
-49.00 dBm
START 3.00GHz
STOP 25.00GHz
*RBW 100KHz
VBW 100KHz
*SWP 10.0sec


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -52.00dB
188MHz
AMBIT T60H424
PORT 1 HIGH CH.
ΔMKR
188 MHz
-52.00 dB
START 30MHz
STOP 3.000GHz
*RBW 100kHz
VBW 100kHz
*SWP 10.0sec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -48.33dBm
21.85GHz
AMBIT T60H424
PORT 1 HIGH CH.
MKR
21.85 GHz
-48.33 dBm
START 3.00GHz
STOP 25.00GHz
*RBW 100kHz
VBW 100kHz
*SWP 10.0sec

6 - PEAK POWER SPECTRAL DENSITY

6.1 Standard Applicable

According to §15.247 (d), for digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

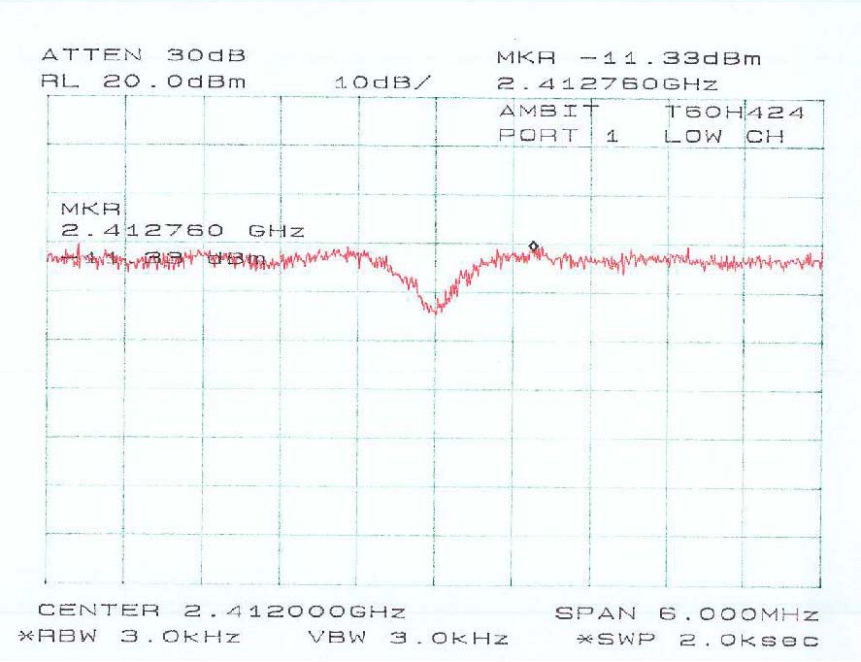
6.2 Measurement Procedure

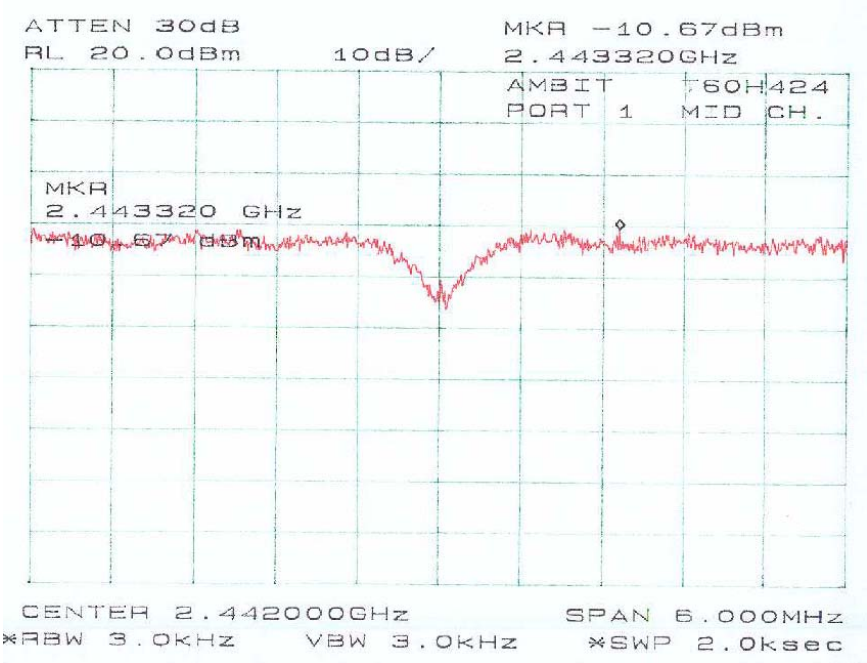
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Placed the EUT on a bench. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to 6MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Repeat above procedures until all frequencies measured were complete.

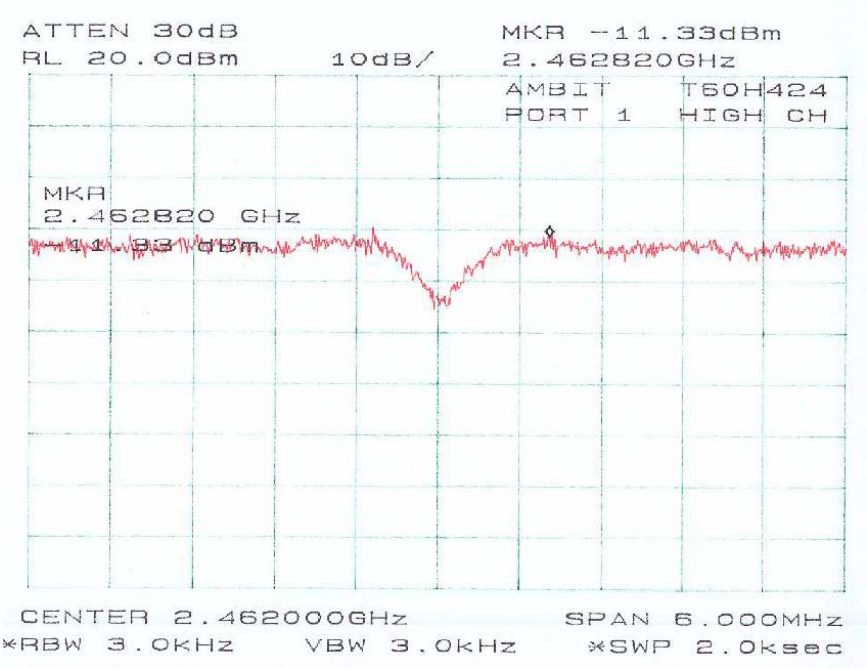
6.3 Test Results

Frequency (MHz)	Spectral Density (dBm)	Standard (dBm)	Result
2412	- 11.33	≤ 8	Compliant
2442	- 10.67	≤ 8	Compliant
2462	- 11.33	≤ 8	Compliant

Please refer to the attached plot(s).


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -11.33dBm
2.412760GHz
AMBIT T60H424
PORT 1 LOW CH
MKR
2.412760 GHz
CENTER 2.412000GHz
SPAN 6.000MHz
*RBW 3.0kHz
VBW 3.0kHz
*SWP 2.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -10.67dBm
2.443320GHz
AMBIT T60H424
PORT 1 MID CH.
MKR
2.443320 GHz
CENTER 2.442000GHz
SPAN 6.000MHz
*RBW 3.0kHz
VBW 3.0kHz
*SWP 2.0ksec


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -11.33dBm
2.462820GHz
AMBIT T60H424
PORT 1 HIGH CH
MKR
2.462820 GHz
-11.33 dBm
CENTER 2.462000GHz
SPAN 6.000MHz
*RBW 3.0KHz
VBW 3.0kHz
*SWP 2.0ksec

7 - 6 DB BANDWIDTH

7.1 Standard Applicable

According to §15.247(a)(2), for digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz.

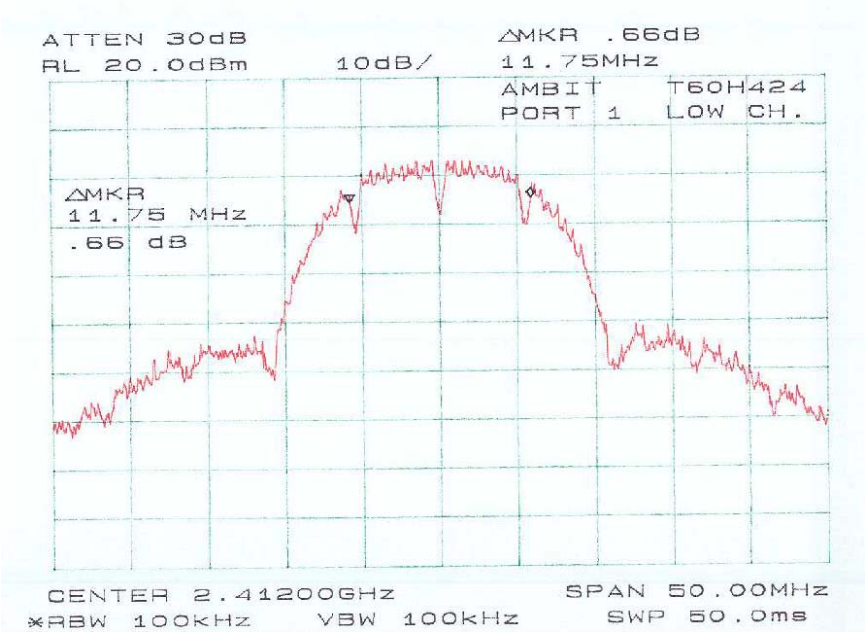
7.2 Measurement Procedure

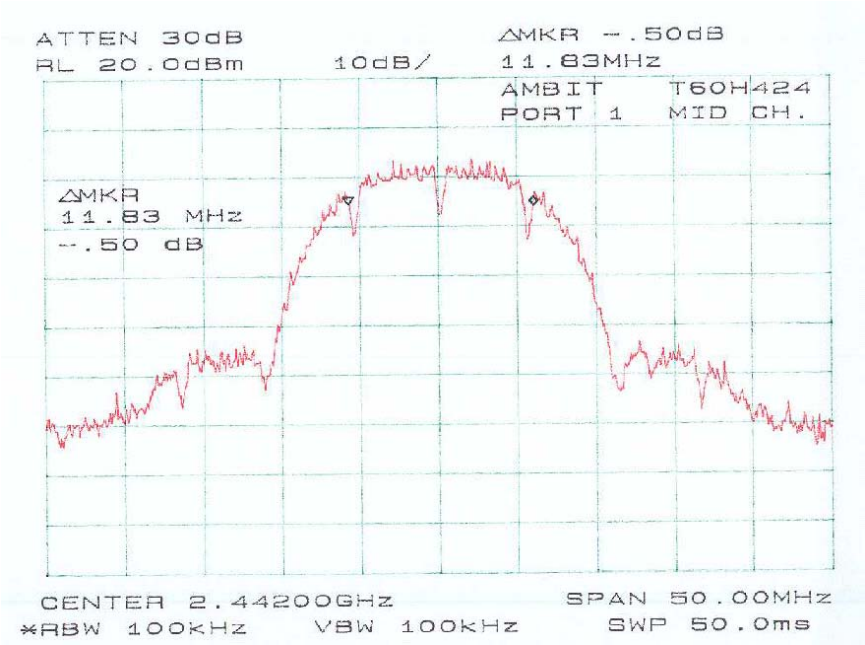
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Placed the EUT on a bench. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

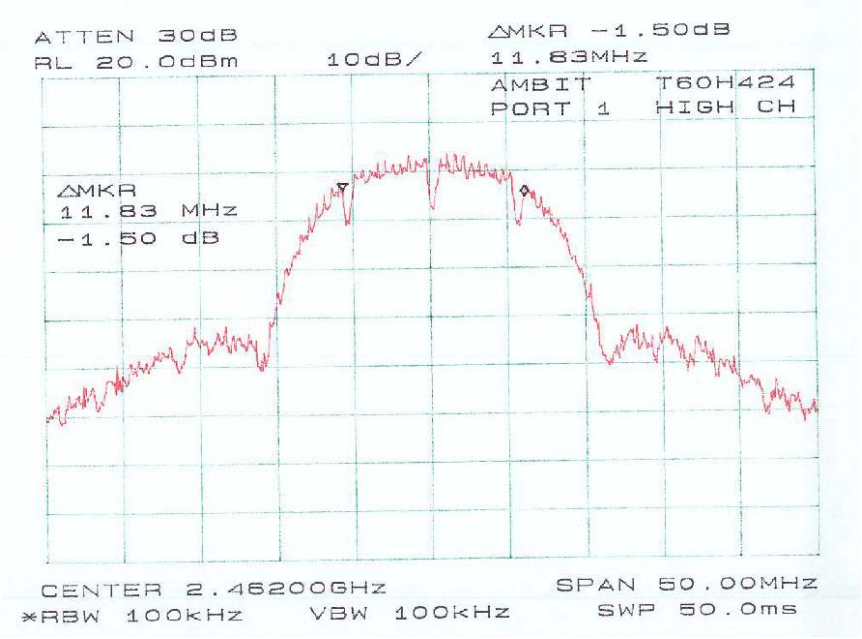
7.3 Measurement Data

Frequency (MHz)	6dB Bandwidth (MHz)	Standard (kHz)	Result
2412	11.75	500	Compliant
2442	11.83	500	Compliant
2462	11.83	500	Compliant

Please refer to appending plot for more information.


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR .66dB
11.75MHz
AMBIT T60H424
PORT 1 LOW CH.
ΔMKR
11.75 MHz
.66 dB
CENTER 2.41200GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -.50dB
11.83MHz
AMBIT T60H424
PORT 1 MID CH.
ΔMKR
11.83 MHz
-.50 dB
CENTER 2.44200GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -1.50dB
11.83MHz
AMBIT T60H424
PORT 1 HIGH CH
ΔMKR
11.83 MHz
-1.50 dB
CENTER 2.462000GHz
SPAN 50.00MHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms

8 -100 KHZ BANDWIDTH OF BAND EDGES MEASUREMENT

8.1 Standard Applicable

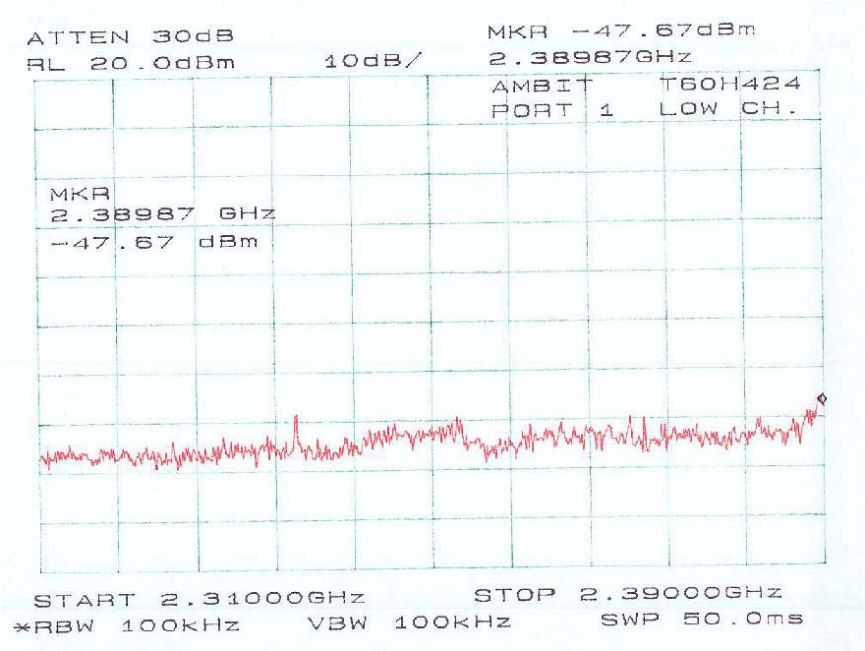
According to §15.247(c), in *any* 100 kHz bandwidth outside the frequency bands in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.2057(c)).

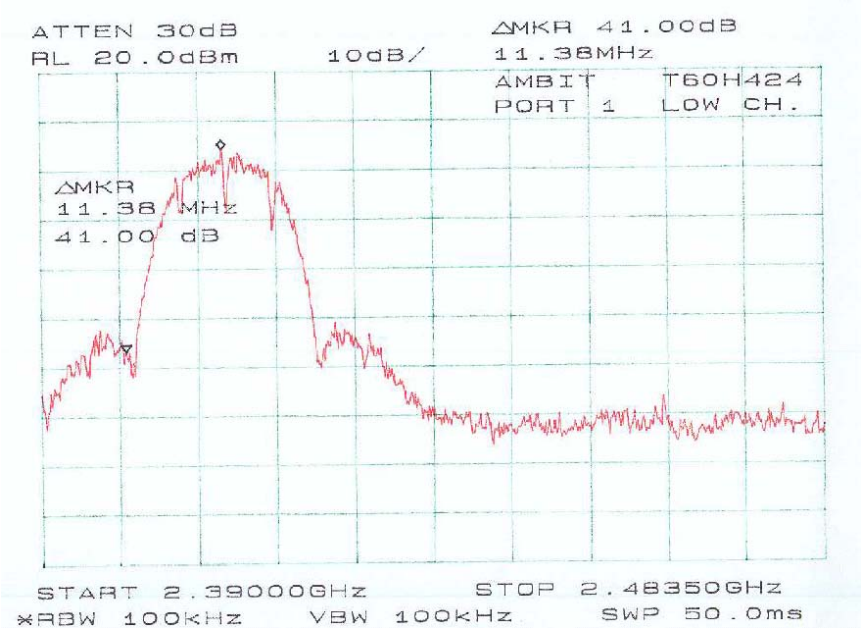
8.2 Measurement Procedure

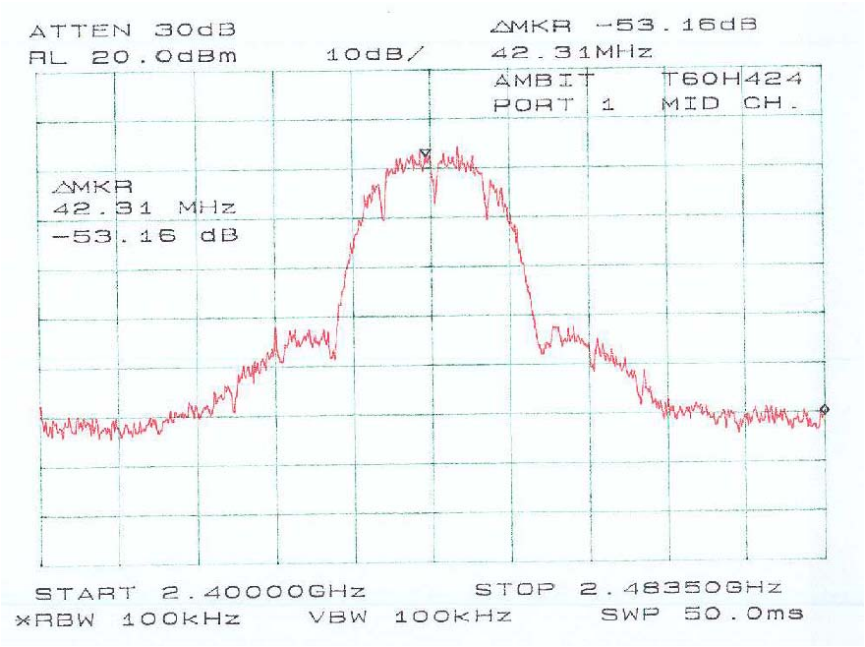
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Placed the EUT on a bench. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

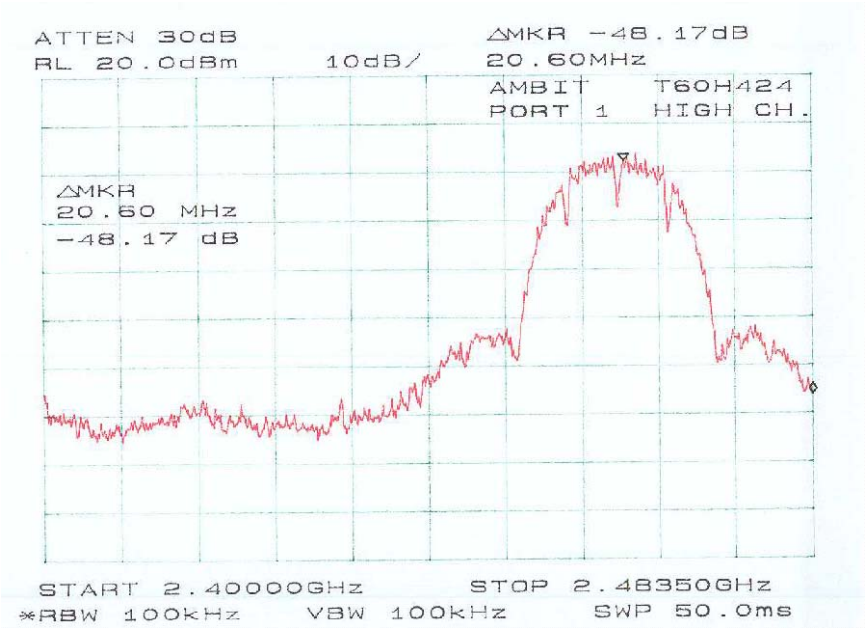
8.3 Test Results

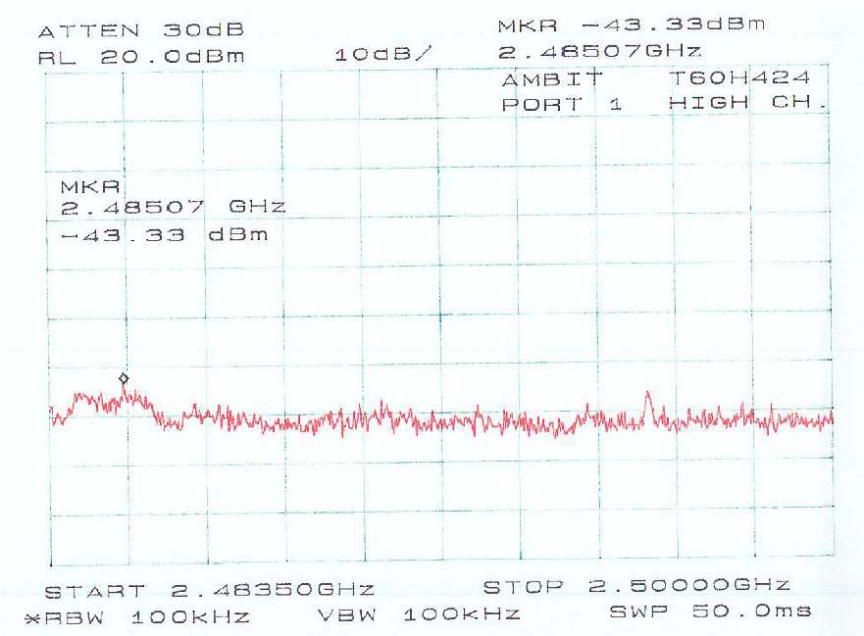
Please refer to the appending plot for more information.


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -47.67dBm
2.389870GHz
AMBIT T60H424
PORT 1 LOW CH.
MKR
2.38987 GHz
-47.67 dBm
START 2.31000GHz
STOP 2.39000GHz
*RBW 100KHz
VBW 100KHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR 41.00dB
11.38MHz
AMBIT T60H424
PORT 1 LOW CH.
ΔMKR
11.38 MHz
41.00 dB
START 2.39000GHz
STOP 2.48350GHz
*RBW 100KHz
VBW 100KHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -53.16dB
42.31MHz
AMBIT T60H424
PORT 1 MID CH.
ΔMKR
42.31 MHz
-53.16 dB
START 2.40000GHz
STOP 2.48350GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
ΔMKR -48.17dB
20.60MHz
AMBIT T60H424
PORT 1 HIGH CH.
ΔMKR
20.60 MHz
-48.17 dB
START 2.40000GHz
STOP 2.48350GHz
*RBW 100kHz
VBW 100kHz
SWP 50.0ms


ATTEN 30dB
RL 20.0dBm
10dB/
MKR -43.33dBm
2.48507GHz
AMBIT T60H424
PORT 1 HIGH CH.
MKR
2.48507 GHz
-43.33 dBm
START 2.48350GHz
STOP 2.50000GHz
*RBW 100KHz
VBW 100KHz
SWP 50.0ms

9 - ANTENNA REQUIREMENT

9.1 Standard Applicable

For intentional device, according to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to § 15.247 (1), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.2 Antenna Connected Construction

The directional gain of antenna used for transmitting is -2.42 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

10 - SPURIOUS RADIATED EMISSIONS

10.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is ±4.0 dB.

10.2 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup in accordance with the ANSI C63.4-1992. The specification used was the FCC 15 Subpart C limits.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The notebook was connected with 110Vac/60Hz power source.

10.3 Spectrum Analyzer Setup

According to FCC Rules, §15.33 (a) (1), the system was tested to 26GHz.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Range	***RBW***	***Video B/W***
Below 30MHz	10kHz	10kHz
30 – 1000MHz	100kHz	100kHz
Above 1000MHz	1MHz	1MHz

10.4 Test Procedure

For the radiated emissions test, the notebook and all support equipment power cords were connected to the AC floor outlet since the notebook power supply did not provide an accessory power outlet.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dBμV of specification limits), and are distinguished with a "**Qp**" in the data table.

10.5 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Subpart C. The equation for margin calculation is as follows:

Margin = Corr. Ampl. - Subpart C Limit

10.6 Summary of Test Results

According to the data in section 10.7, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.207 and 15.247, and had the worst margin of:

-3.3 dB at 7236 **MHz** in the **Vertical** polarization, Low Channel

-2.0 dB at **7311.00 MHz** in the **Horizontal** polarization, Middle Channel

-5.3 dB at 2462 **MHz** in the **Horizontal** polarization, High Channel

-1.4 dB at 380.93 **MHz** in the **Vertical** polarization, Unintentional Emission

10.7 Test Results for Radiated Emission

Intentional Emission, 30MHz ~ 26 GHz, 3 Meters

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart C		
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin	Mode
MHz	dBμV/m	Degree	Meter	H/V	dBμV/m	dBμV/m	dB	dBμV/m	dBμV/m	dB	
Low Channel											
7236.00	40.0	30	2.0	V	35.1	5.6	30.0	50.7	54.0	-3.3	AVE
7236.00	39.8	90	2.0	H	35.1	5.6	30.0	50.5	54.0	-3.5	AVE
2412.00	88.0	300	1.5	H	28.1	3.4	30.0	89.5	94.0	-4.6	AVE, FUND
4824.00	41.0	30	1.5	V	32.5	4.9	30.0	48.4	54.0	-5.6	AVE
4824.00	40.8	30	1.5	H	32.5	4.9	30.0	48.2	54.0	-5.8	AVE
2412.00	85.8	270	1.2	V	28.1	3.4	30.0	87.3	94.0	-6.7	AVE, FUND
7236.00	52.1	90	2.0	H	35.1	5.6	30.0	62.8	74.0	-11.2	PEAK
7236.00	51.2	30	2.0	V	35.1	5.6	30.0	61.9	74.0	-12.1	PEAK
2412.00	99.8	270	1.2	V	28.1	3.4	30.0	101.3	114.0	-12.7	PEAK, FUND
4824.00	52.0	30	1.5	V	32.5	4.9	30.0	59.4	74.0	-14.6	PEAK
2412.00	96.7	300	1.5	H	28.1	3.4	30.0	98.1	114.0	-15.9	PEAK, FUND
4824.00	50.5	30	1.5	H	32.5	4.9	30.0	57.9	74.0	-16.1	PEAK
Middle Channel											
7311.00	41.3	120	1.5	H	35.1	5.6	30.0	52.0	54.0	-2.0	AVE
7323.00	39.7	90	1.0	V	35.1	5.6	30.0	50.4	54.0	-3.6	AVE
2437.00	87.7	90	1.5	H	28.1	3.4	30.0	89.1	94.0	-4.9	AVE, FUND
4874.00	41.0	90	1.5	H	32.5	4.9	30.0	48.4	54.0	-5.6	AVE
4874.00	40.0	45	1.5	V	32.5	4.9	30.0	47.4	54.0	-6.6	AVE
2437.00	85.7	200	1.2	V	28.1	3.4	30.0	87.1	94.0	-6.9	AVE, FUND
7311.00	52.3	120	1.5	H	35.1	5.6	30.0	63.0	74.0	-11.0	PEAK
7311.00	50.7	90	1.0	V	35.1	5.6	30.0	61.4	74.0	-12.6	PEAK
2437.00	96.8	90	1.5	H	28.1	3.4	30.0	98.3	114.0	-15.7	PEAK, FUND
4874.00	50.8	90	1.5	H	32.5	4.9	30.0	58.2	74.0	-15.8	PEAK
4874.00	49.8	45	1.5	V	32.5	4.9	30.0	57.2	74.0	-16.8	PEAK
2437.00	94.2	200	1.2	V	28.1	3.4	30.0	95.6	114.0	-18.4	PEAK, FUND

Intentional Emission, 30MHz ~ 26 GHz, 3 Meters (Continued)

Indicated			Table	Antenna		Correction Factor			FCC 15 Subpart C		
Frequency	Ampl.	Direction	Height	Polar	Antenna	Cable Loss	Amp.	Corr. Ampl.	Limit	Margin	Mode
MHz	dBμV/m	Degree	Meter	H/V	dBμV/m	dBμV/m	dB	dBμV/m	dBμV/m	dB	
High Channel											
2462.00	87.2	330	2.0	H	28.1	3.4	30.0	88.7	94.0	-5.3	AVE, FUND
4924.00	41.3	45	1.0	V	32.5	4.9	30.0	48.7	54.0	-5.3	AVE
2462.00	86.5	180	1.5	V	28.1	3.4	30.0	88.0	94.0	-6.1	AVE, FUND
4924.00	40.2	200	1.0	V	32.5	4.9	30.0	47.6	54.0	-6.4	AVE
4924.00	51.2	45	1.0	V	32.5	4.9	30.0	58.6	74.0	-15.4	PEAK
4924.00	50.8	200	1.0	V	32.5	4.9	30.0	58.2	74.0	-15.8	PEAK
2462.00	93.7	330	2.0	H	28.1	3.4	30.0	95.2	114.0	-18.9	PEAK, FUND
2462.00	92.8	180	1.5	V	28.1	3.4	30.0	94.3	114.0	-19.8	PEAK, FUND

Unintentional Emission

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dBμV/m	Cable DB	Amp. DB	Corr. Ampl. dBμV/m	Limit dBμV/m	Margin dB
380.93	51.6	90	1.2	V	15.6	2.4	25.0	44.6	46.0	-1.4
324.86	51.2	120	1.5	H	15.5	2.3	25.0	44.0	46.0	-2.0
380.93	50.8	90	1.2	V	15.6	2.4	25.0	43.8	46.0	-2.2
240.00	52.6	90	1.5	H	13.8	2.2	25.0	43.6	46.0	-2.4
240.00	52.3	90	1.5	H	13.8	2.2	25.0	43.3	46.0	-2.7
1728.54	53.1	90	1.0	V	25.3	2.6	30.0	51.0	54.0	-3.0
1728.54	52.8	200	1.5	H	25.3	2.6	30.0	50.7	54.0	-3.3
380.92	49.6	0	1.5	H	15.6	2.4	25.0	42.6	46.0	-3.4
240.00	51.6	120	1.8	H	13.8	2.2	25.0	42.6	46.0	-3.4
240.00	50.9	30	1.0	V	13.8	2.2	25.0	41.9	46.0	-4.1
380.93	48.6	120	1.2	V	15.6	2.4	25.0	41.6	46.0	-4.4
240.00	50.2	30	1.0	V	13.8	2.2	25.0	41.2	46.0	-4.8
757.95	40.2	90	1.5	H	22.2	3.5	25.0	40.9	46.0	-5.1
254.00	50.4	90	1.5	H	13.3	2.2	25.0	40.9	46.0	-5.1
254.00	50.3	120	1.5	H	13.3	2.2	25.0	40.8	46.0	-5.2
324.86	47.9	90	1.5	H	15.5	2.3	25.0	40.7	46.0	-5.3
240.00	49.7	30	1.0	V	13.8	2.2	25.0	40.7	46.0	-5.3
254.00	50.1	90	1.5	H	13.3	2.2	25.0	40.6	46.0	-5.4
757.95	39.4	120	1.5	H	22.2	3.5	25.0	40.1	46.0	-5.9
324.86	46.4	90	1.5	H	15.5	2.3	25.0	39.2	46.0	-6.8
440.04	42.1	90	1.2	V	16.9	2.9	25.0	36.9	46.0	-9.1
440.04	39.7	90	1.2	V	16.9	2.9	25.0	34.5	46.0	-11.5
1182.00	38.2	300	2.0	H	23.7	4.2	25.0	41.1	54.0	-12.9
440.04	37.9	90	1.2	V	16.9	2.9	25.0	32.7	46.0	-13.3
72.05	40.3	30	1.2	V	9.2	1.2	25.0	25.7	40.0	-14.3
181.30	37.2	90	2.0	H	13.2	2.0	25.0	27.4	43.5	-16.1
1182.00	34.7	270	2.0	H	23.7	4.2	25.0	37.6	54.0	-16.4
82.01	37.5	270	1.0	V	9.5	1.2	25.0	23.2	40	-16.8

Note:

FUND: Fundamental

11 - CONDUCTED EMISSIONS

11.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is ±2.4 dB.

11.2 EUT Setup

The measurement was performed at the **O**pen **A**rea **T**est **S**ite, using the same setup per ANSI C63.4-1992 measurement procedure. The specification used was FCC 15 Subpart C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The host PC system was connected with 110Vac/60Hz power source.

11.3 Spectrum Analyzer Setup

The spectrum analyzer was set with the following configurations during the conduction test:

Start Frequency	150 kHz
Stop Frequency	30 MHz
Sweep Speed	Auto
IF Bandwidth	10 kHz
Video Bandwidth	10 kHz
Quasi-Peak Adapter Bandwidth	9 kHz
Quasi-Peak Adapter Mode	Normal

11.4 Test Procedure

During the conducted emission test, the power cord of the host system was connected to the auxiliary outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of each modes tested to ensure EUT is compliant with all installation combination.

All data was recorded in the peak detection mode. Quasi-peak readings were only performed when an emission was found to be marginal (within -4 dBμV of specification limits). Quasi-peak readings are distinguished with a "**Qp**".

11.5 Summary of Test Results

The EUT complies with the FCC Conducted margin for a Class B device, with the *worst* margin reading of:

-8.6 dBμV at 0.810 MHz in the Neutral mode

11.6 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC CLASS B	
Frequency MHz	Amplitude dBμV	Detector Qp/Ave/Peak	Phase Line/Neutral	Limit dBμV	Margin dB
0.810	37.4	Ave	Neutral	46	-8.6
0.810	36.5	Ave	Line	46	-9.5
0.150	54.7	QP	Neutral	66	-11.3
21.900	37.9	Ave	Neutral	50	-12.1
0.150	52.1	QP	Line	66	-13.9
0.150	41.3	Ave	Line	56	-14.7
0.810	40.9	QP	Neutral	56	-15.1
0.810	40.2	QP	Line	56	-15.8
0.150	40.1	Ave	Neutral	56	-15.9
21.600	30.1	Ave	Line	50	-19.9
21.300	30.4	QP	Line	60	-28.8
21.900	38.2	QP	Neutral	60	-28.8

11.7 Plot of Conducted Emissions Test Data

Plot(s) of Conducted Emissions Test Data are presented hereinafter as reference.

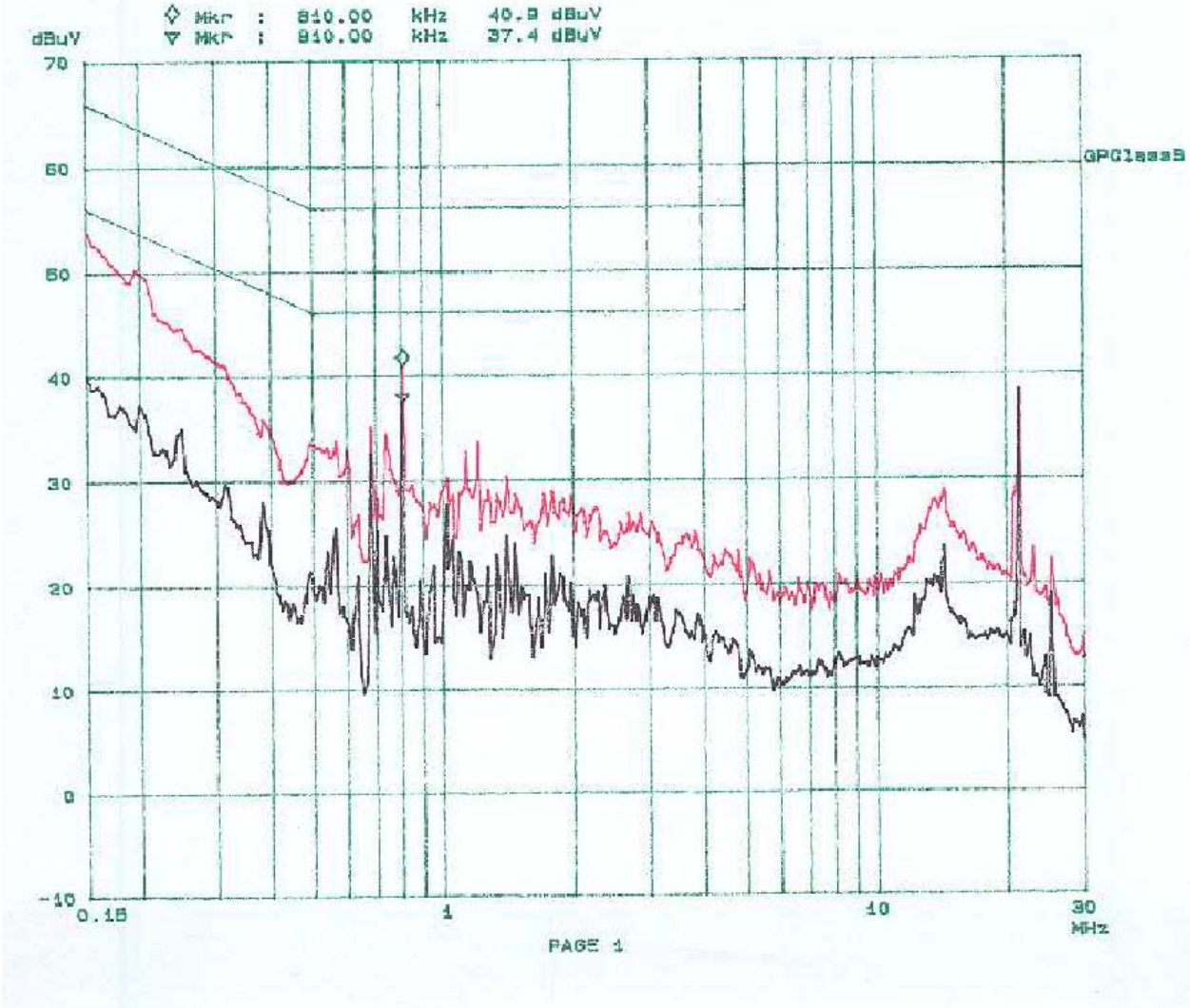
Bay Area Compliance Corporation
CISPR CLASS B

EUT: T60H424
Manuf: Ambit
Op Cond: Normal
Operator: Ben
Test Spec: +
Comment: N
File name: AMBITN.RES

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	QP+CAV	20ms	10dBLN	OFF

Final Measurement: x QP / + CAV
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



Bay Area Compliance Corporation
CISPR CLASS B

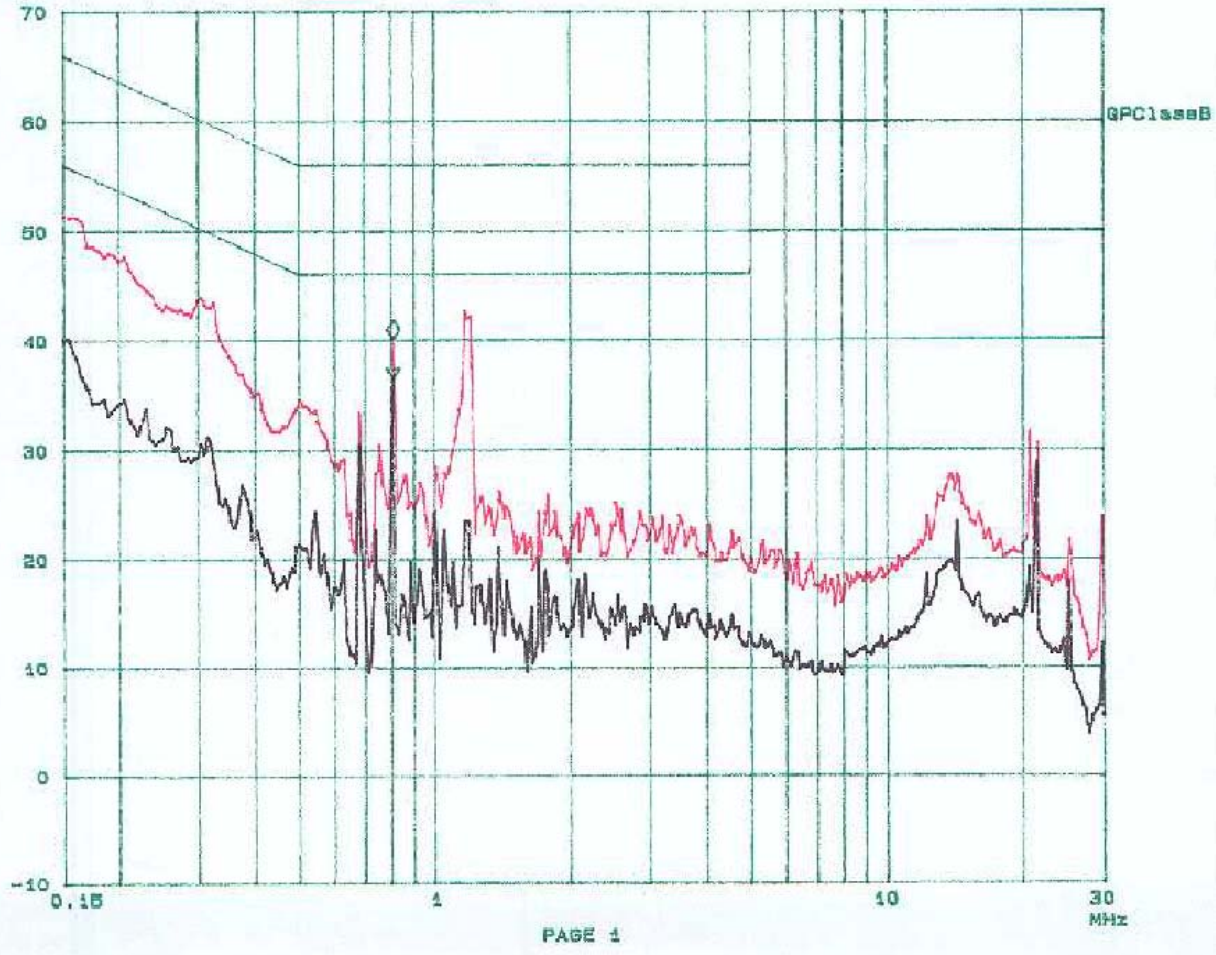
EUT: T60H424
Manuf: Ambit
Op Cond: Normal
Operator: Ben
Test Spec: +
Comment: Line
File name: AMBIT.RES

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	QP+CAV	20ms	10dBLN	OFF

Final Measurement: x QP / + CAV
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB

◇ Mkr : 810.00 kHz 40.2 dBuV
▽ Mkr : 810.00 kHz 36.5 dBuV



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