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FCC Part 15C TEST REPORT

of

GSM900/1800/1900 GPRS Mobile Phone

FCC ID: S5D-KMP6J1CE1

Model No.: NEC N8605

Serial No.: 1331605000004674

Report No.: FCC06-8057

Date: August 29, 2006

Prepared for

Wuhan NEC Mobile Communication Co., Ltd.

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Prepared by

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Table of Contents

1	Test Report Certification	4
2	General Information	5
	2.1 Description of EUT	5
	2.2 Test Standards and Results	6
	2.3 List of Test Equipments Used	6
	2.4 Test Facility	7
	2.5 Environmental conditions	7
3	Conducted Emission Test	8
	3.1 Limits of Conducted Emission	8
	3.2 Test Procedure	8
	3.3 Test Setup	9
	3.4 EUT Setup and Operating Conditions	9
	3.5 Test Results	10
4	Radiated Emission Test	12
	4.1 Limits of Radiated Emission	12
	4.2 Test Procedure	12
	4.3 Test Setup	13
	4.4 EUT Setup and Operating Conditions	13
	4.5 Test Results	14
5	Bandwidth and Carried Frequency Separation	28
	5.1 Definition	28
	5.2 Test Procedure	28
	5.3 Test Setup	28
	5.4 EUT Setup and Operating Conditions	28
	5.5 Test Results	28
6	Hopping Sequence	29
	6.1 Requirement of the standard	29
	6.2 Test Results	29
7	Equal Hopping Frequency Use	29
	7.1 Requirement of the standard	29
	7.2 Test Results	29
8	Receiver Input Bandwidth and Hopping Capability	29

8.1 Requirement of the standard	29
8.2 Test Results	29
9 Time of Occupancy (Dwell Time)	30
9.1 Requirement of the Standard.....	30
9.2 Test Procedure	30
9.3 Test Setup	30
9.4 EUT Setup and Operating Conditions.....	30
9.5 Test Results	30
10 Peak Output Power.....	31
10.1 Requirement of the standard	31
10.2 Test Procedure	31
10.3 Test Setup	31
10.4 EUT Setup and Operating Conditions.....	31
10.5 Test Results	31
11 Band Edge	32
11.1 Requirement of the standard	32
11.2 Test Procedure	32
11.3 Test Setup	32
11.4 EUT Setup and Operating Conditions.....	32
11.5 Test Results.....	32
12 Conducted Spurious Emission	34
12.1 Requirement of the standard	34
12.2 Test Procedure	34
12.3 Test Setup	34
12.4 EUT Setup and Operating Conditions.....	34
12.5 Test Results	35
13 Radiated Spurious Emission	38
13.1 Requirement of the standard	38
13.2 Test Procedure	38
13.3 Test Setup	39
13.4 EUT Setup and Operating Conditions.....	39
13.5 Test Results	40
Appendix I: Photographs of the EUT.....	42
Appendix II: Photographs of the Test Configuration	42

1 Test Report Certification

Product: GSM900/1800/1900 GPRS Mobile Phone

Model No.: S5D-KMP6J1CE1

Applicant: NEC N8605

Applicant Address: Wuhan NEC Mobile Communication Co., Ltd.

Manufacturer: Building No.3, Optics Valley Construction & Industrial Park, East Lake New Technology Development Zone, Wuhan, Hubei 430223, China

Manufacturer Address: Wuhan NEC Mobile Communication Co., Ltd.

Test Standards: 47 CFR Part 15, Subpart C

Test Result: PASS

We, Shenzhen Electronic Product Quality Testing Center, hereby certify that the submitted samples of the above item, as detailed in chapter 2.1 of this report, has been tested in our facility. The test record, data evaluation and test configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified.

Tested by: Lin Xingsun, Date: Aug. 29, 2006
Lin Xingsun

Checked by: Smart Li, Date: Aug. 30, 2006
Smart Li

Approved by: Wu Li An, Date: Aug. 30, 2006
Wu Li An



2 General Information

2.1 Description of EUT

Description:	GSM900/1800/1900 GPRS Mobile Phone
Model No.:	NEC N8605
Serial No.:	1331605000004674
Hardware Version:	EP4
Software Version:	TF-DF-MODULE-VER-01.06_7
Modulation	FHSS
Frequency:	2402MHz – 2480 MHz
Number of Channels:	79
Power:	≤ 10dBm
Bluetooth Antenna:	Permanent attached

NOTE:

1. The EUT is a GSM mobile phone. It supports Bluetooth function, operating at 2.4GHz ISM band. The Bluetooth modulation is Frequency Hopping Spread Spectrum (FHSS). The Channels and transmitter center frequencies are: $F(\text{MHz})=2401+1*n$, $1 \leq n \leq 79$.
2. Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

Perform EMC test according to FCC Part 15 Subpart C (Bluetooth, 2.4GHz ISM band radiator).

2.3 Test Standards and Results

The EUT has been tested according to 47 CFR Part 15, Radio Frequency Devices (10-1-05 Edition).

Test items and the results are as bellow:

?	FCC Rules	Test Type	Result	Test Date
1	§15.207	Conducted Emission	PASS	2006.07.17
2	§15.209 §15.247(c)	Radiated Emission	PASS	2006.08.22
3	§15.247(a)	Bandwidth and Carrier Frequency Separation	PASS	2006.08.16
4	§15.247(a)	Hopping Sequence	PASS	/
5	§15.247(a)	Equal Hopping Frequency Use	PASS	/
6	§15.247(a)	Receiver Input Bandwidth and Hopping Capability	PASS	/
7	§15.247(a)	Time of Occupancy(Dwell time)	PASS	2006.08.20
8	§15.247(b)	Peak Output Power	PASS	2006.08.16
9	§15.247(c)	Band Edge	PASS	2006.08.16
10	§15.247(c)	Conducted Spurious Emission	PASS	2006.08.16
11	§15.247(c)	Radiated Spurious Emission	PASS	2006.08.22

2.4 List of Test Equipments Used

Description	Manufacturer	Model No.	Cal. Due Date	Serial No.
Test Receiver	Rohde & Schwarz	ESIB26	2007.06.05	A0304218
Spectrum Analyzer	Rohde & Schwarz	FSP13	2006.12.25	M-030176
LISN	Schwarzbeck	NSLK8127	2007.06.05	A0304233
Loop Antenna	Rohde & Schwarz	HFH2-Z2	2007.06.05	A0304220
Ultra Broadband Ant.	Rohde & Schwarz	HL562	2007.06.05	A0304224
Horn Ant.	Rohde & Schwarz	HF906	2007.06.05	100150
Mobile Phone Tester	Willtek	4403	2007.02.10	0811211
Shield Room	Nanbo Tech	Site 1	2007.01.17	A0304188
Anechoic Chamber	Albatross	EMC12.8× 6.8× 6.4(m)	2007.04.10	A0304210

2.5 Test Facility

Shenzhen Electronic Product Quality Testing Center (SET) is a third party testing organization accredited by China National Accreditation Board for Laboratories (CNAL) according to ISO/IEC 17025. The accreditation certificate number is **L1659**.

The EMC chamber site No.1 (EMC12.8×6.8×6.4(m)), and the radiated and conducted Emission test equipments of SET are constructed and calibrated to meet the FCC requirements ANSI C63.4:2001 and CISPR 22/EN 55022. The FCC Registration Number is **261302**.

The EMC chamber site No.1 (EMC12.8×6.8×6.4(m)) also complies with Canada standard RSS 212, and acceptable to Industry Canada for the performance of radiated measurements. The Industry Canada Registration Number is **IC 5915**.

2.6 Environmental conditions

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

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3 Conducted Emission Test

3.1 Limits of Conducted Emission

According to FCC §15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms 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
0.50 - 30	60	50

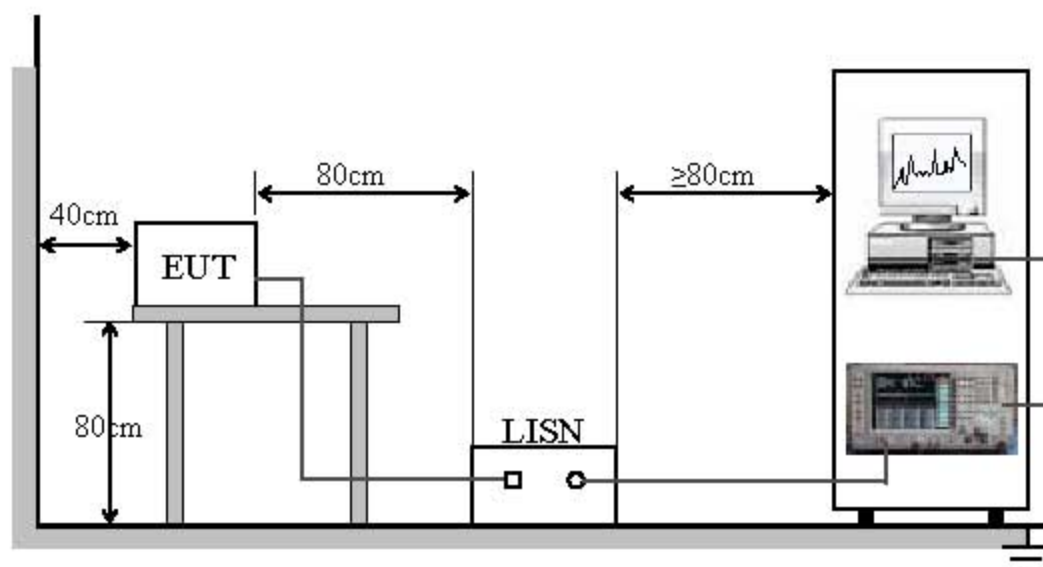
NOTE:

1. The lower limit shall apply at the band edges.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2 Test Procedure

- a. The EUT was placed on a 0.8m high insulating table and kept 0.4 meters from the conducting wall of shielded room.
- b. The EUT was connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50 Ω /50 μ H of coupling impedance for the measuring instrument.
- c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- d. The frequency range from 150 kHz to 30 MHz was searched using CISPR Quasi-Peak and Average detector.

3.3 Test Setup



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

3.4 EUT Setup and Operating Conditions

The EUT configuration of the emission tests was MS + Battery + Charger + Bluetooth Headset. During the measurement, the EUT was charging empty battery. The charger was powered by 120V 60Hz AC mains supply.

A communication link was also established between the MS and a System Simulator (SS). The MS operated at PCS 1900MHz mid ARFCN (661) and maximum output power (level 0).

The Bluetooth function was active and an audio link was established between the EUT and a Bluetooth headset.

3.5 Test Results

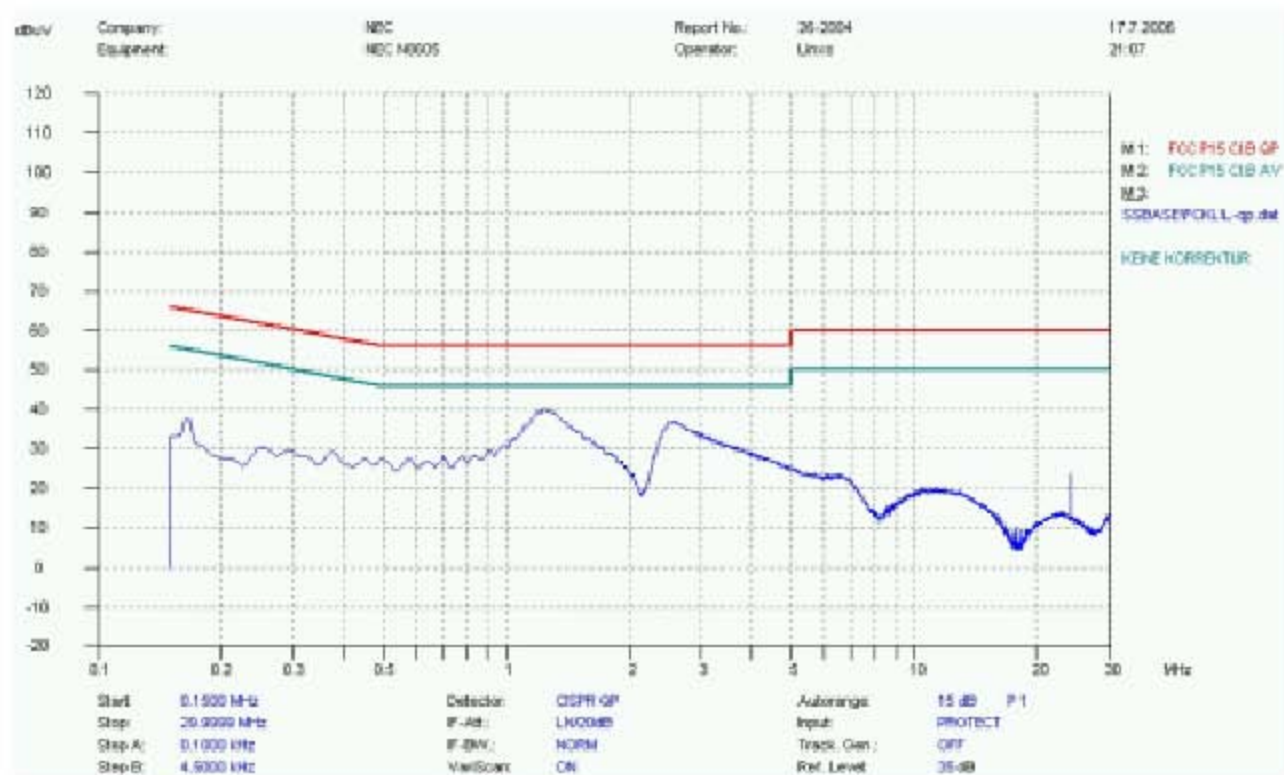
No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.1635	65.3	55.3	35.7	--
2	0.4335	57.2	47.2	30.5	--
3	1.2435	56.0	46.0	42.4	--
4	2.5665	56.0	46.0	39.2	--
5	4.5420	56.0	46.0	30.0	--
6	6.3740	60.0	50.0	27.3	--

NOTE:

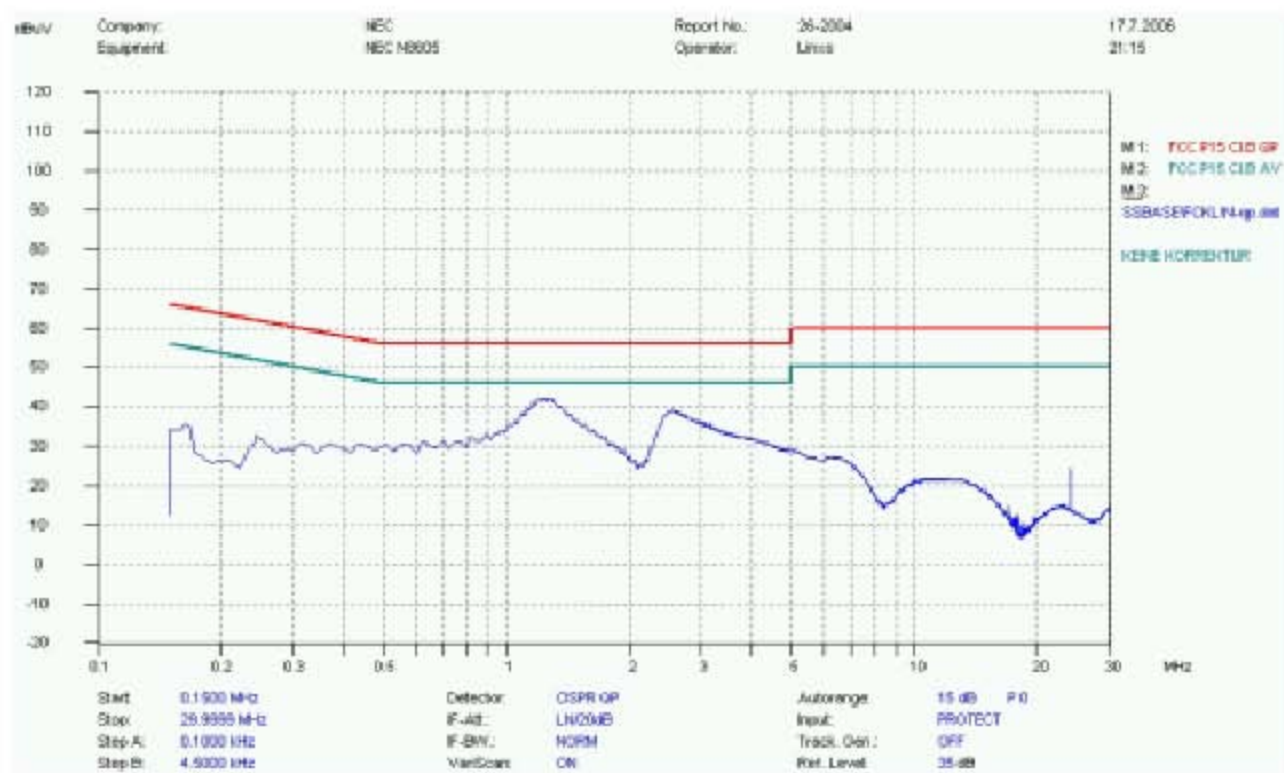
1. QP and AV are abbreviations of the quasi-peak and average individually.
2. If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.
3. The emission levels recorded above is the larger ones of both L phase and N phase.

Test Plots

1. Mains terminal disturbance voltage, L phase



2. Mains terminal disturbance voltage, N phase



4 Radiated Emission Test

4.1 Limits of Radiated Emission

According to FCC §15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

According to FCC §15.209 (a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency(MHz)	Field Strength(μ V/m)	Measurement Distance(m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

As shown in 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 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules,

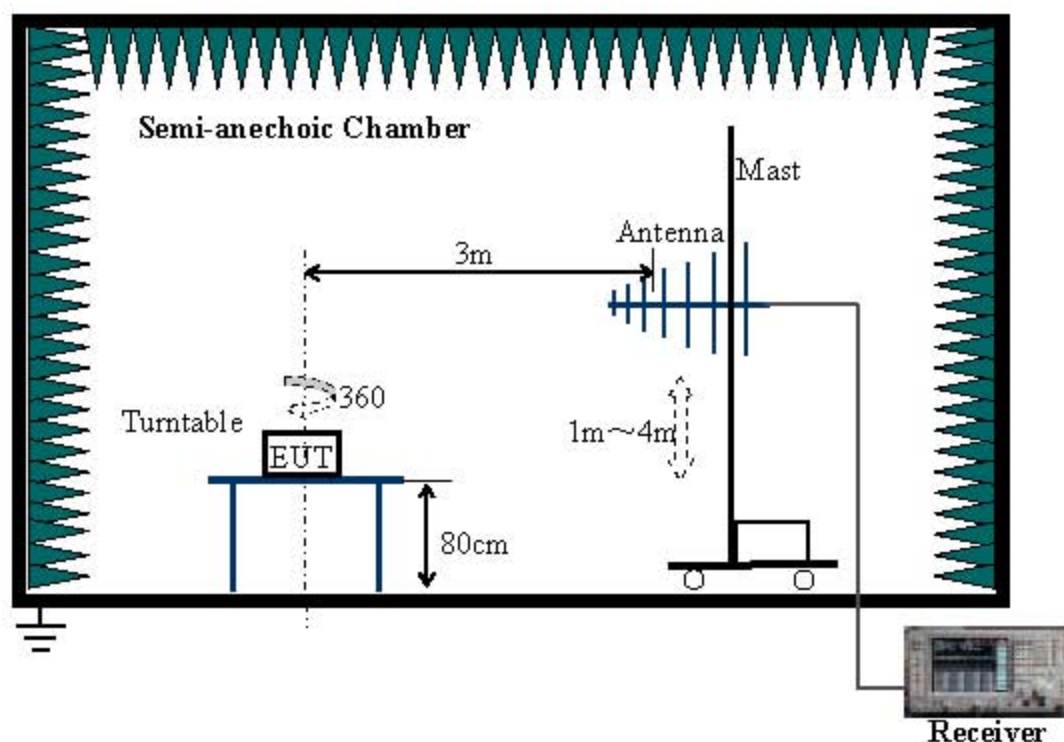
4.2 Test Procedure

- The EUT was placed on the top of a ratable 0.8 meters above the ground at a semi-anechoic chamber.
- In the frequency range of 9 kHz to 30 MHz, magnetic field was measured with loop antenna. The antenna was positioned with its plane vertical at 1 m distance from the EUT. The center of the loop was 1 m above the ground. During the measurement the loop antenna rotated about its vertical axis for maximum response at each azimuth about the EUT.
- In the frequency range above 30MHz, ultra-broadband bi-log antenna (30 MHz to 1 GHz) and horn antenna (above 1GHz) were used. Antenna was 3 meters away from the EUT. Antenna height was varied from one meter to four meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The test-receiver system was set to Peak Detector Function and Specified Bandwidth with

Maximum Hold Mode.

- e. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emission that did not have 10 dB margins would be retested one by one using the quasi-peak method.

4.3 Test Setup



For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.

4.4 EUT Setup and Operating Conditions

The EUT was powered off and connected to a notebook computer. A set of software (provided by the applicant) installed in the computer activated and controlled the Bluetooth module of the EUT. The Bluetooth module was operating at maximum power output and wanted channels.

After setting the notebook computer was moved outside the chamber to avoid radiated disturbance.

4.5 Test Results

Tx Frequency: 2402MHz

Frequency (MHz)	Antenna Polarization	QPLimits (dB μ V/m)	Emission Level (dB μ V/m)
No peak found	Vertical	--	--
No peak found	Horizontal	--	--

Tx Frequency: 2441MHz

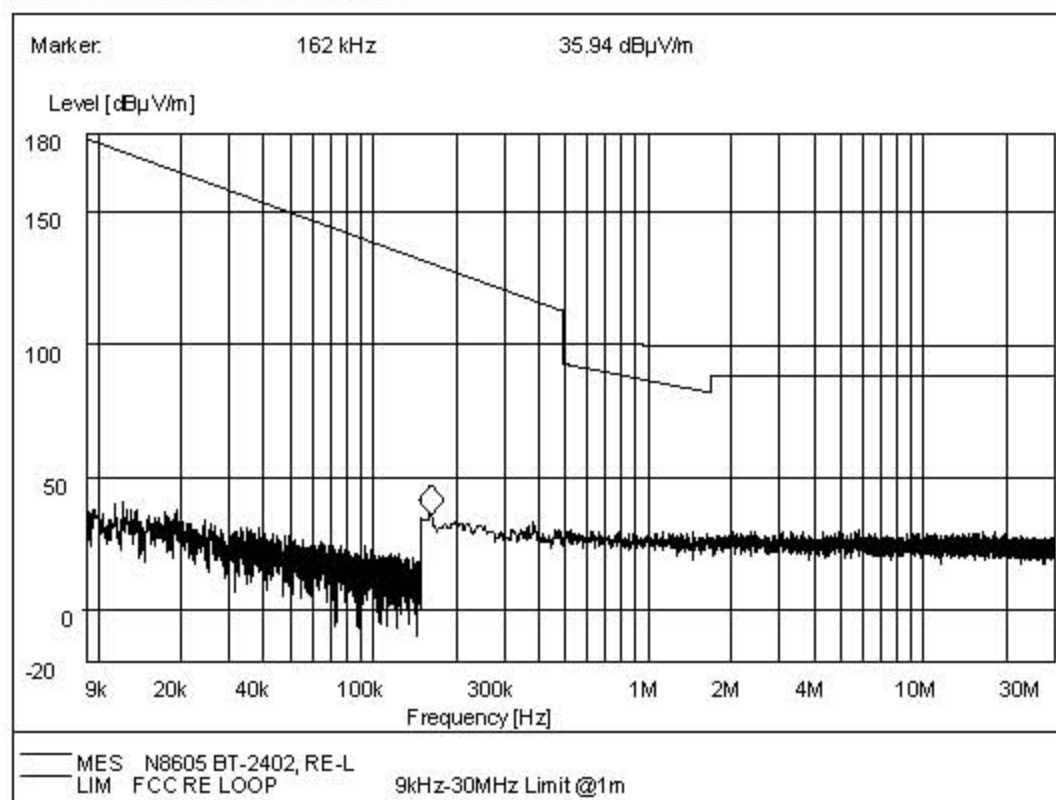
Frequency (MHz)	Antenna Polarization	QPLimits (dB μ V/m)	Emission Level (dB μ V/m)
No peak found	Vertical	--	--
No peak found	Horizontal	--	--

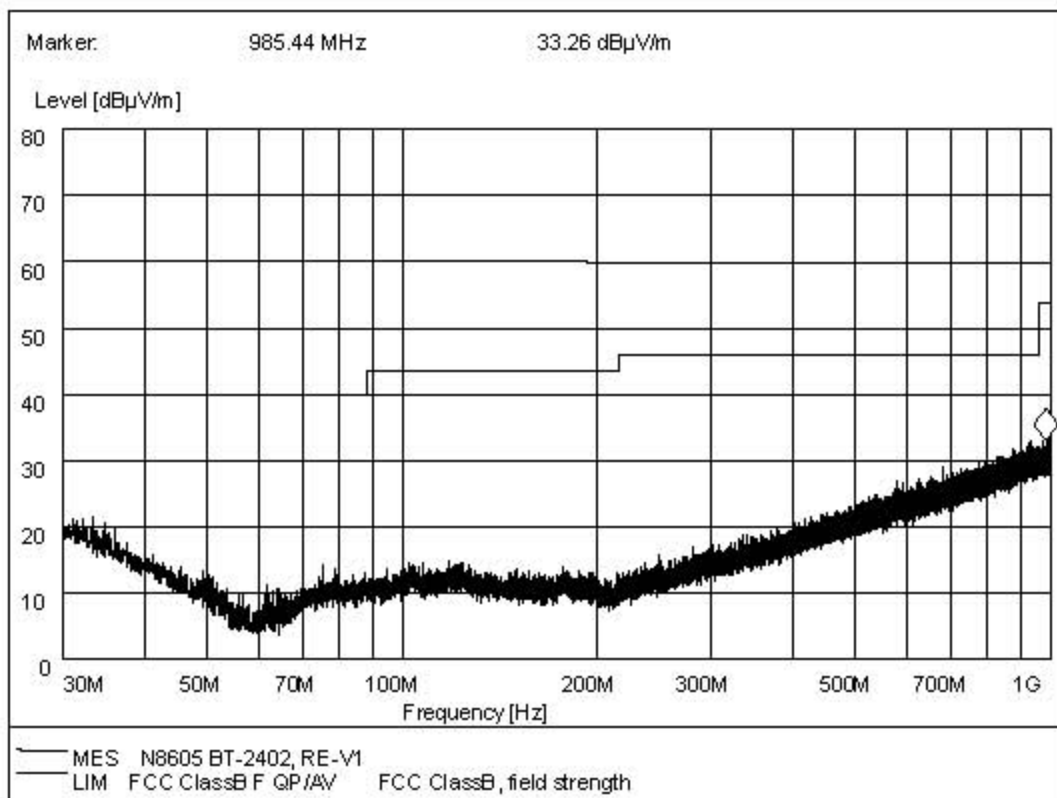
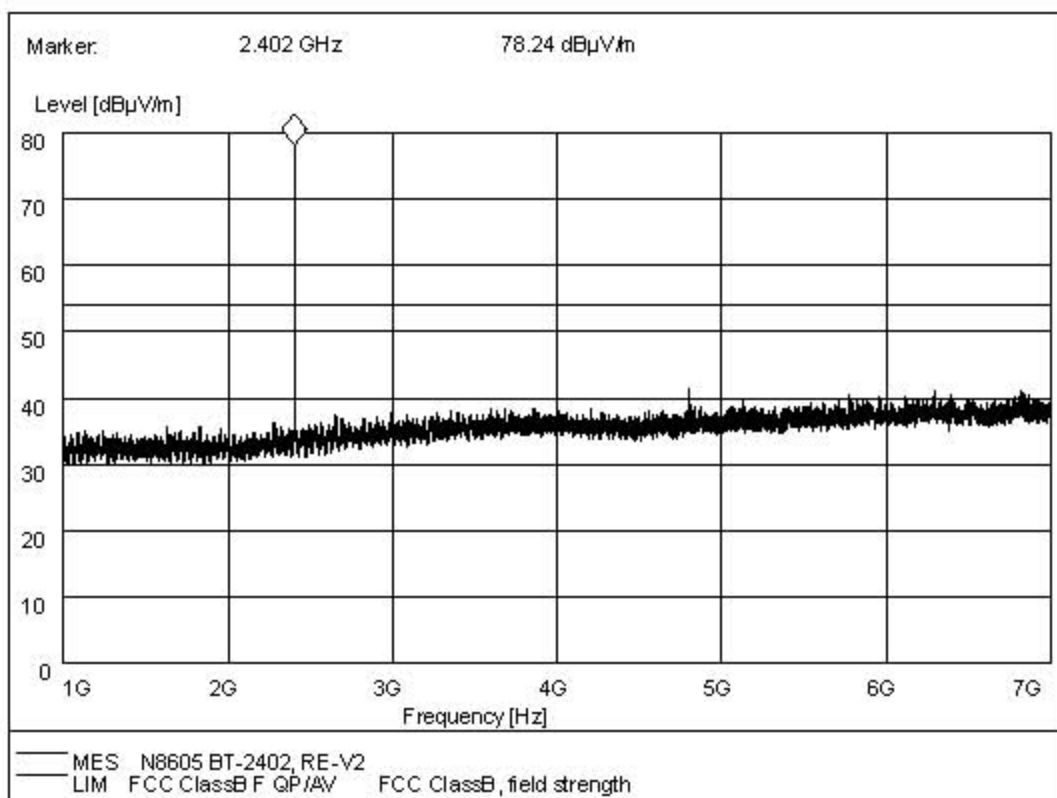
Tx Frequency: 2480MHz

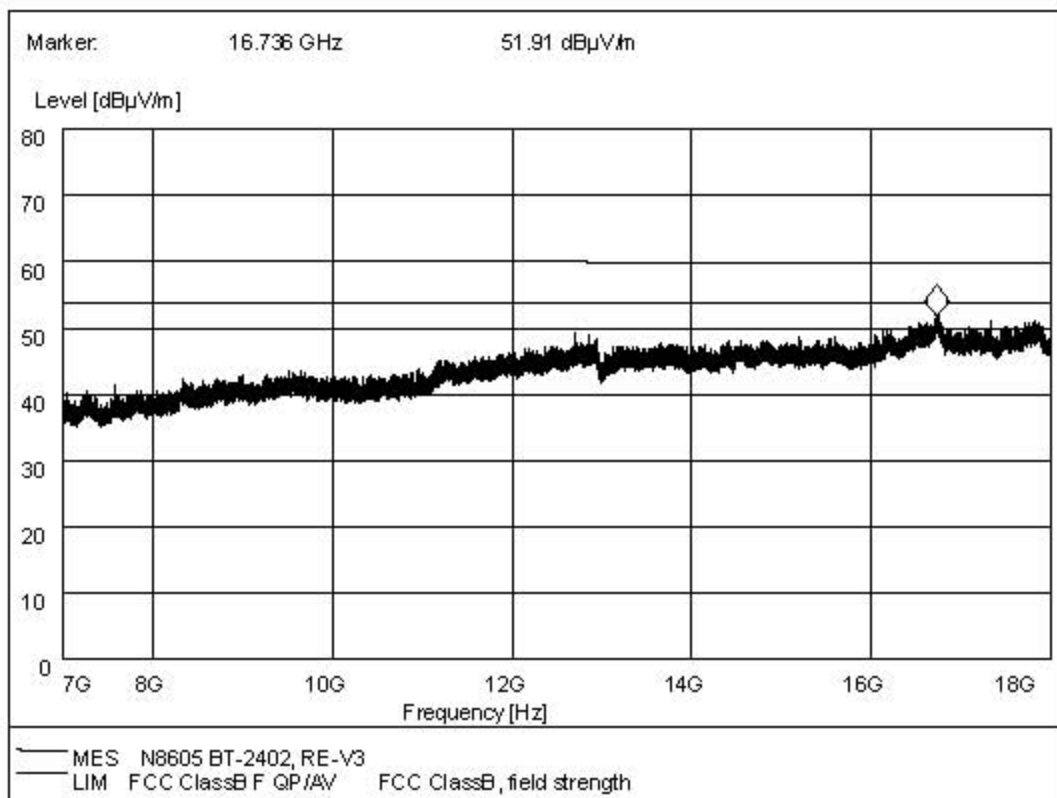
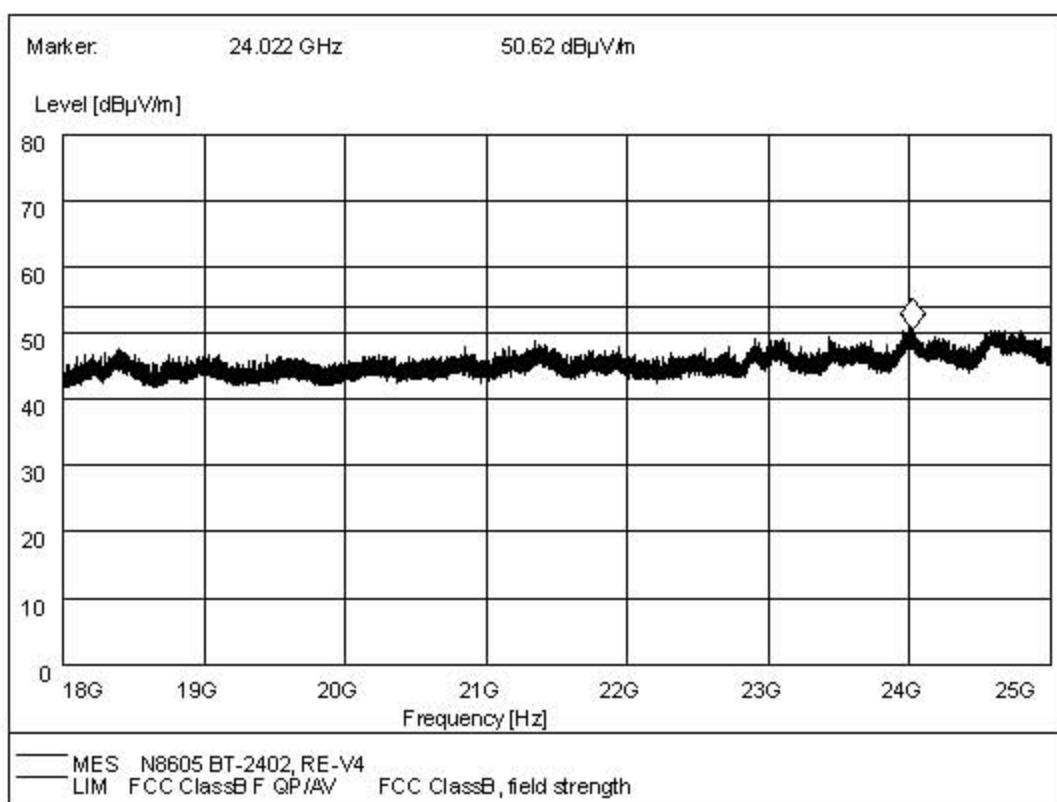
Frequency (MHz)	Antenna Polarization	QPLimits (dB μ V/m)	Emission Level (dB μ V/m)
No peak found	Vertical	--	--
No peak found	Horizontal	--	--

Test Plots

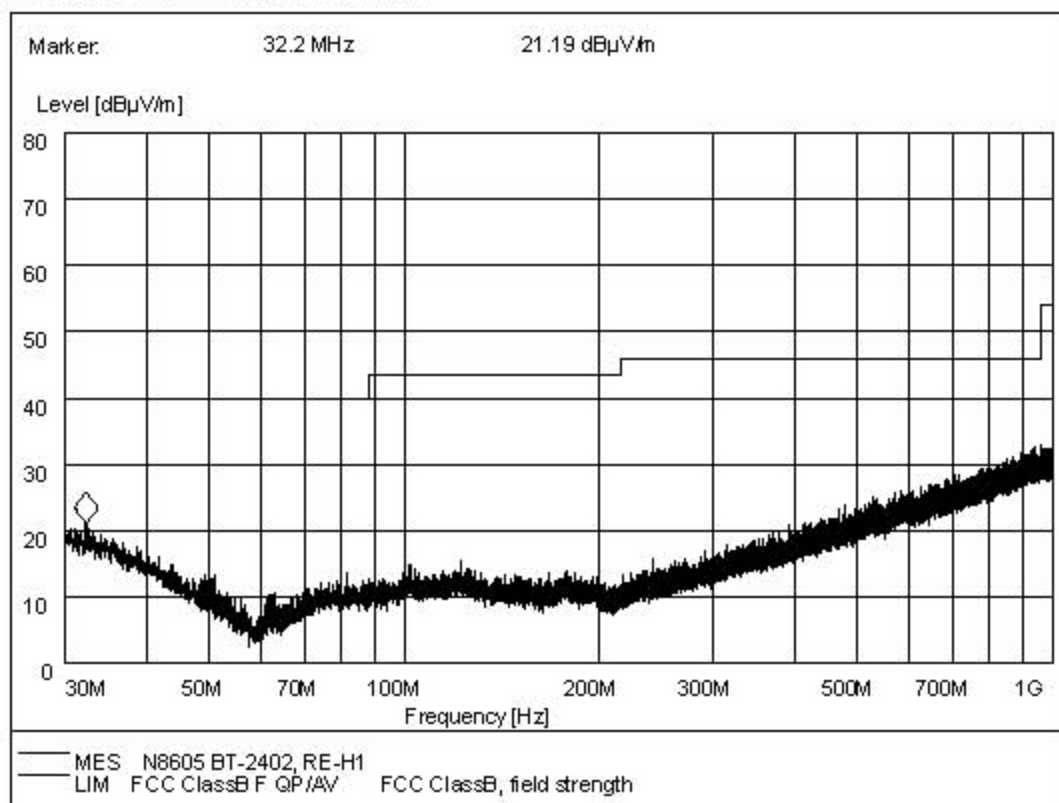
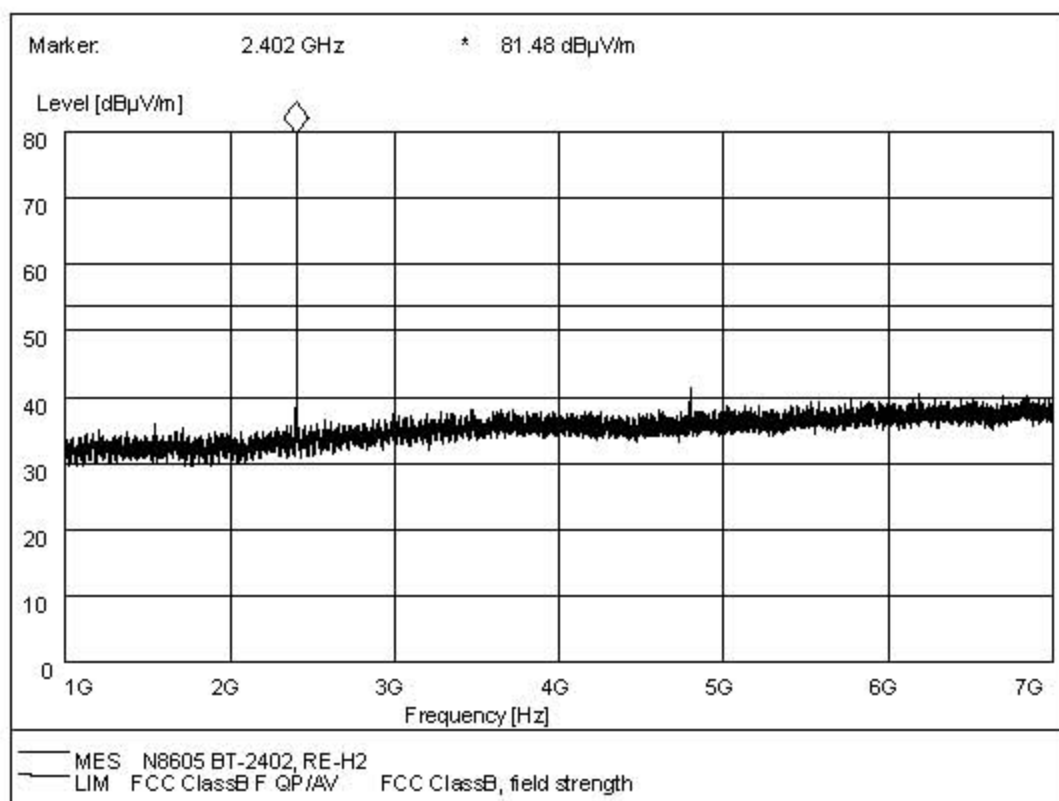
1. Lowest channel 2402MHz, Vertical

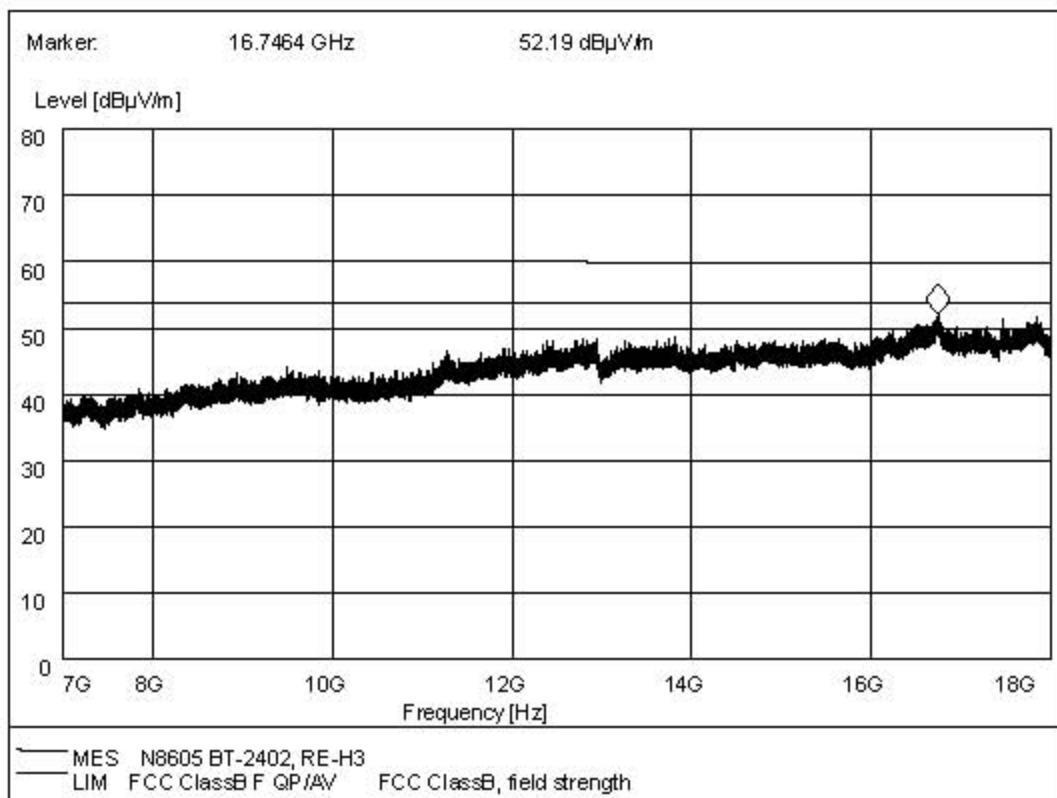
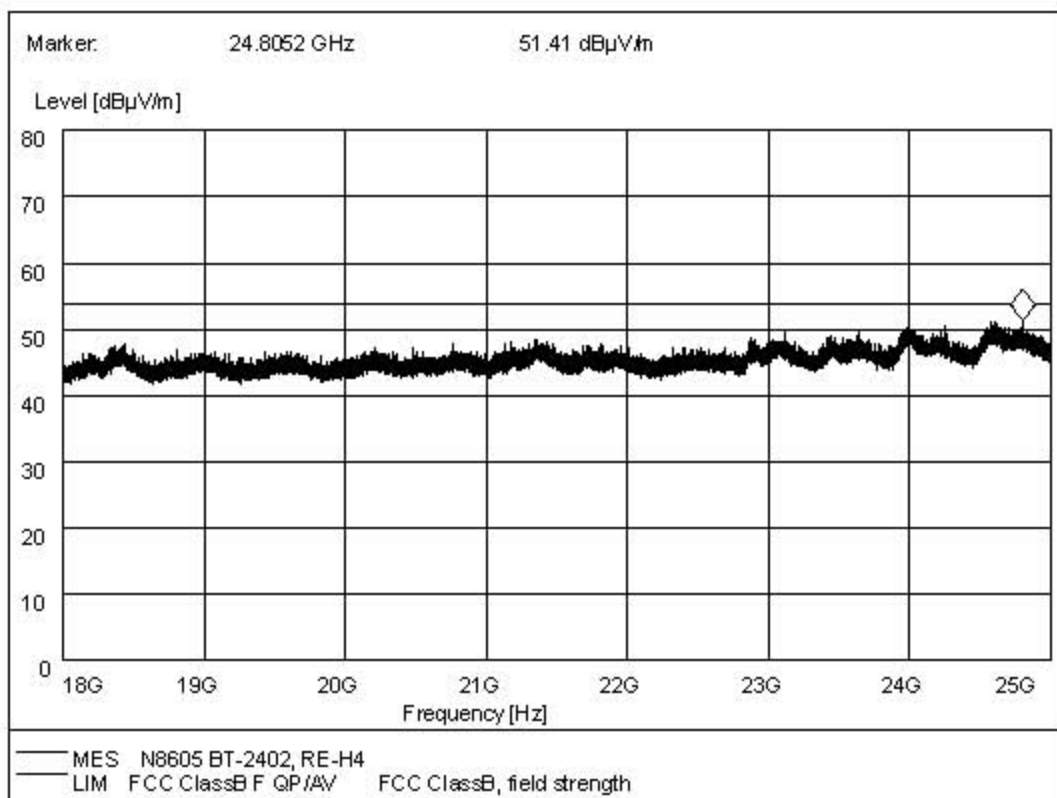




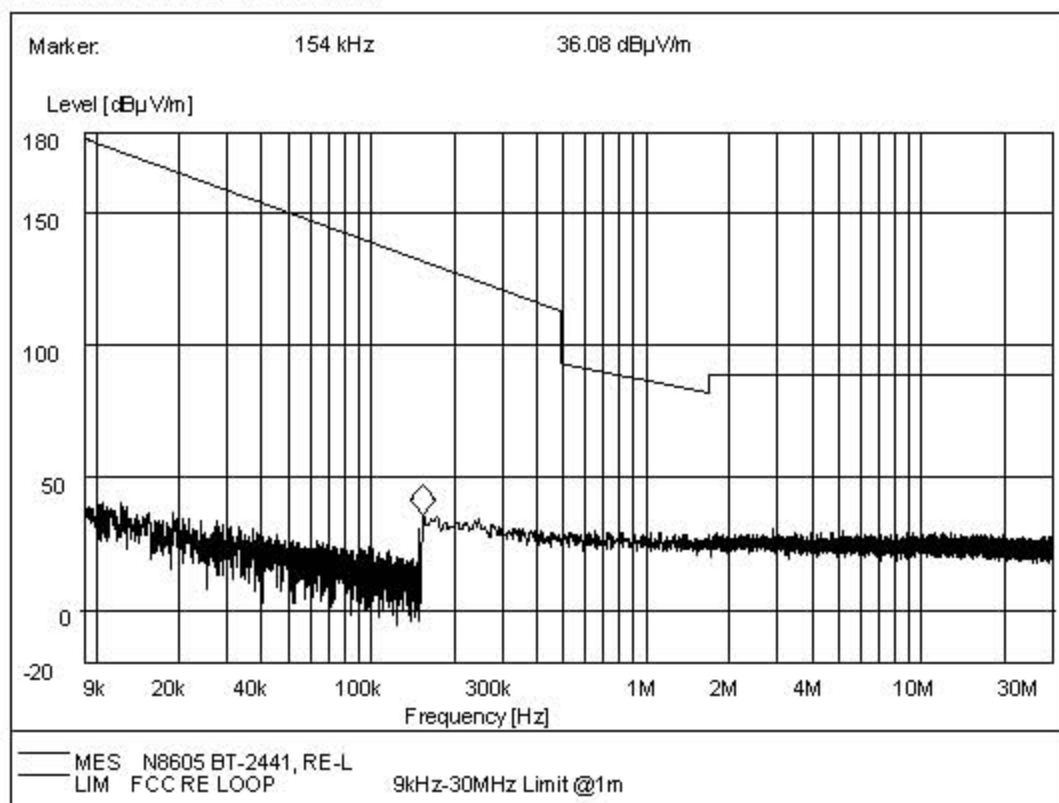
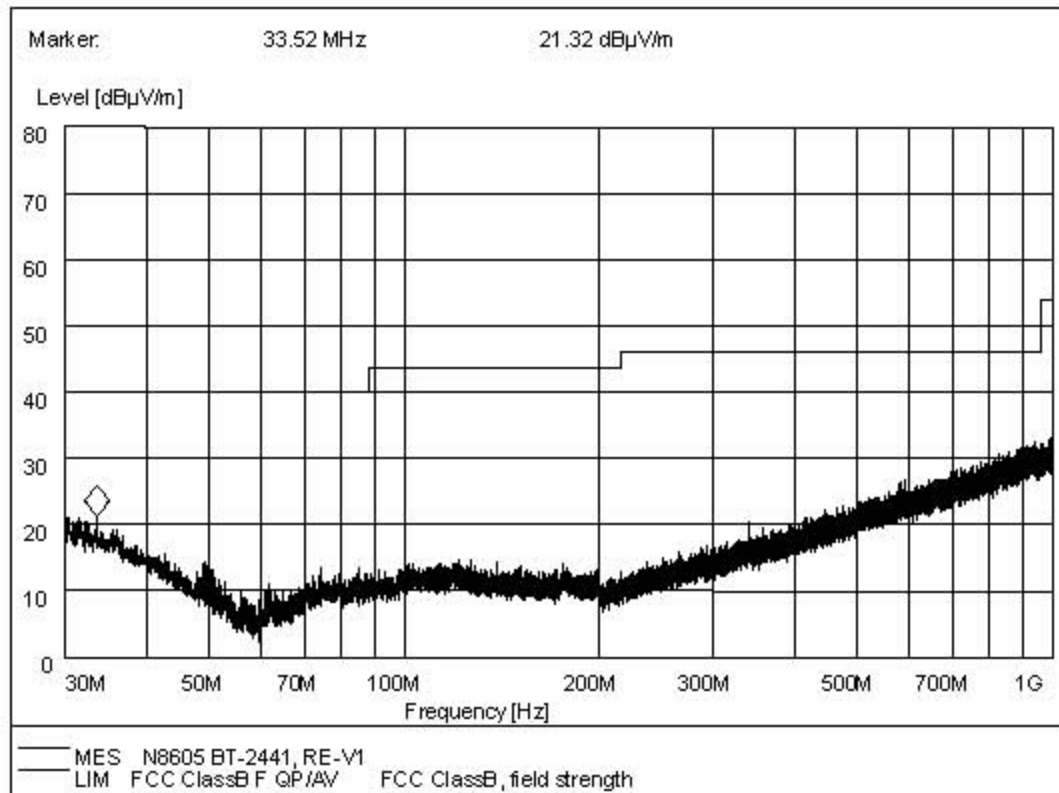


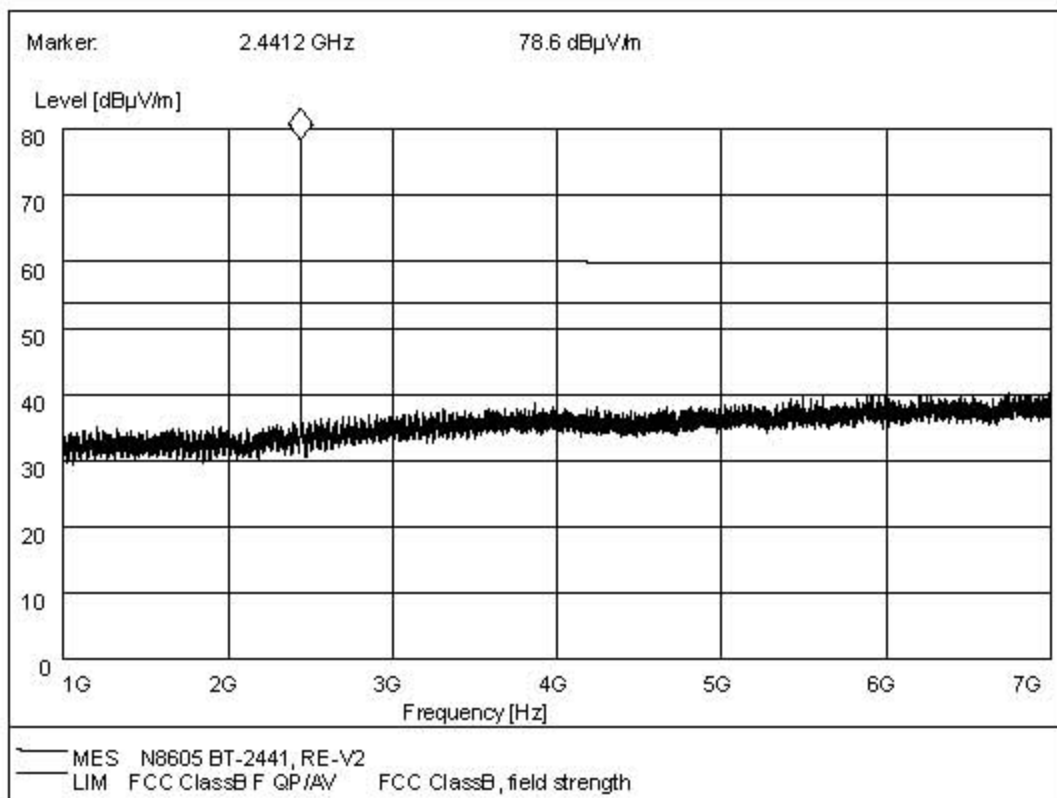
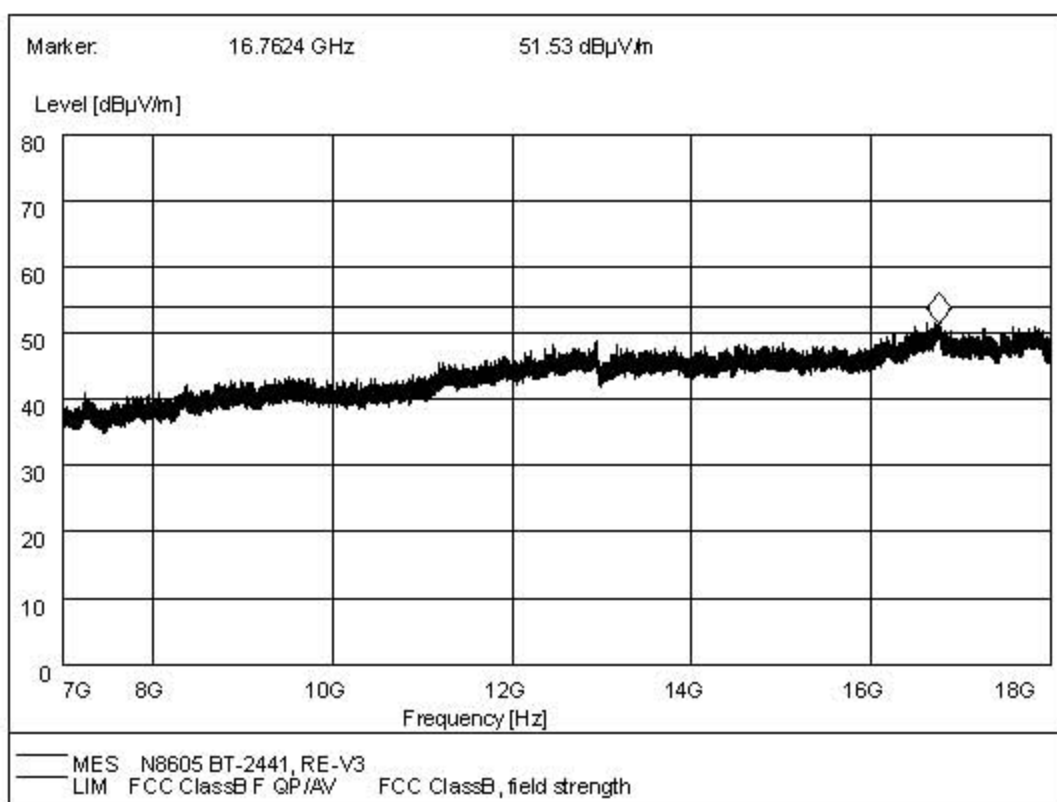
2. Lowest channel 2402MHz, Horizontal

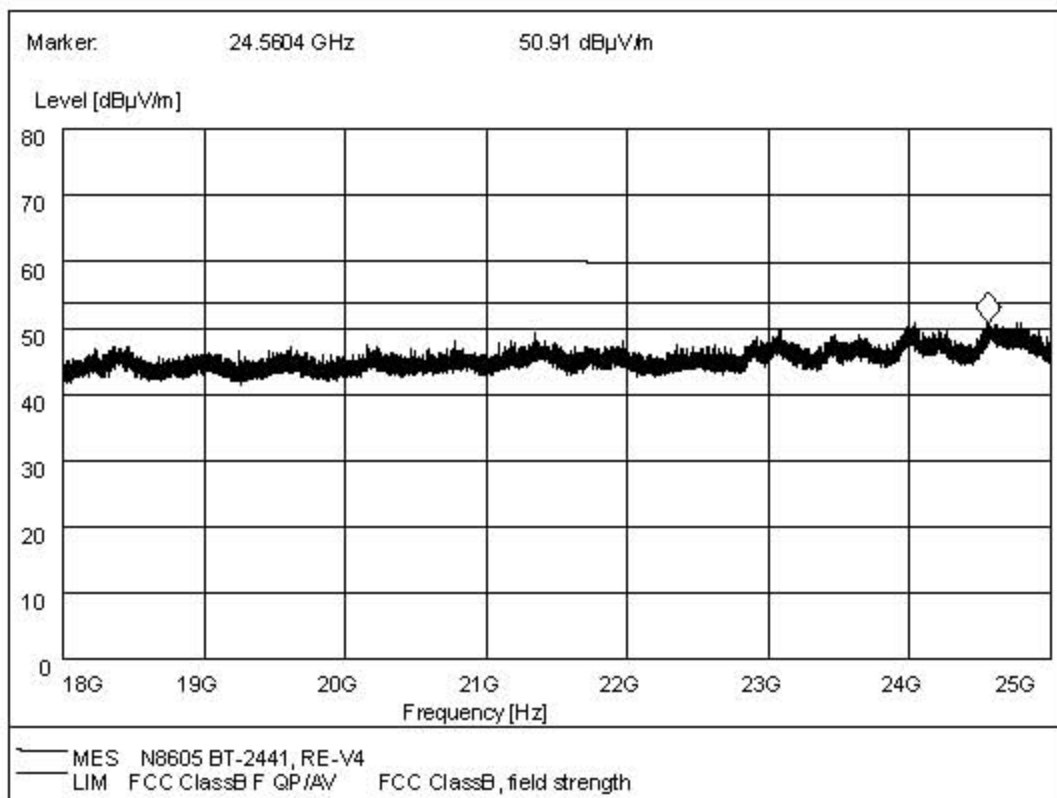




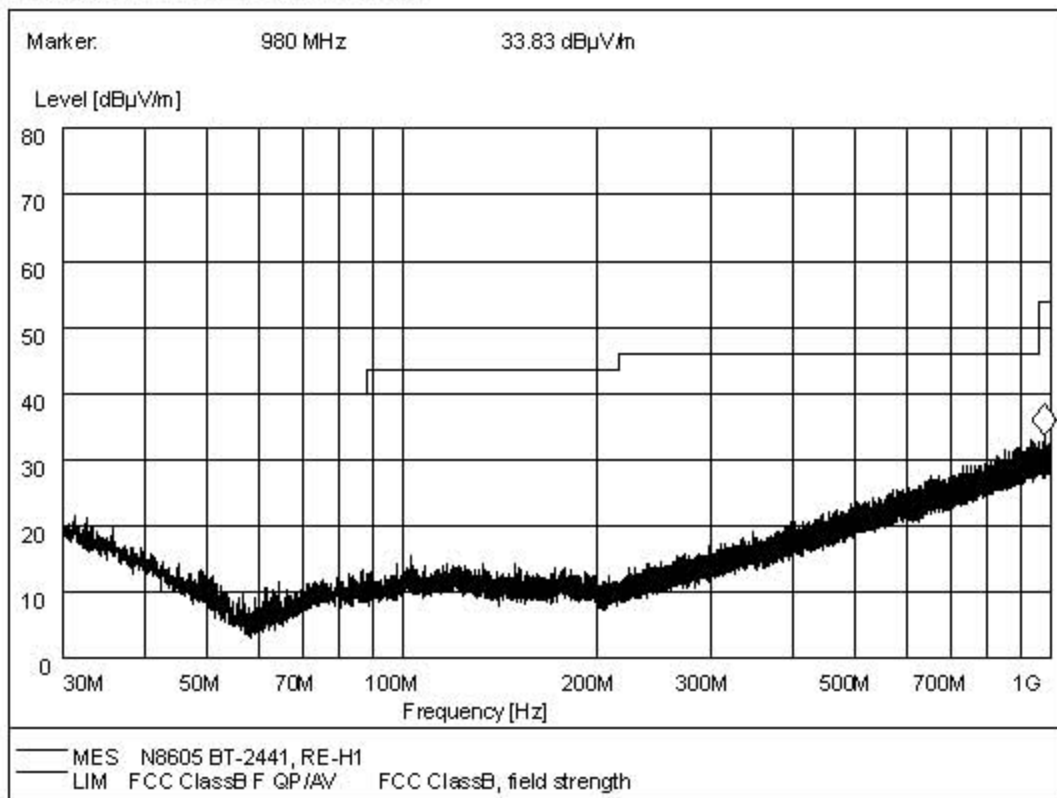
3. Middle channel 2441MHz, Vertical

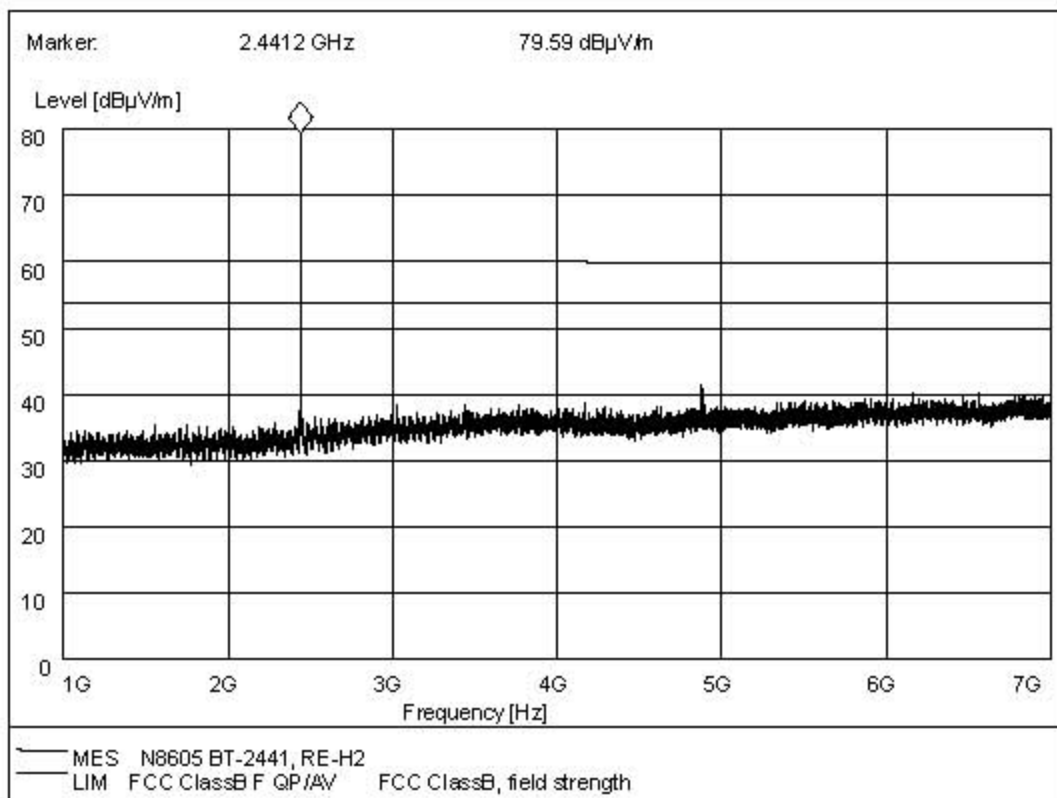
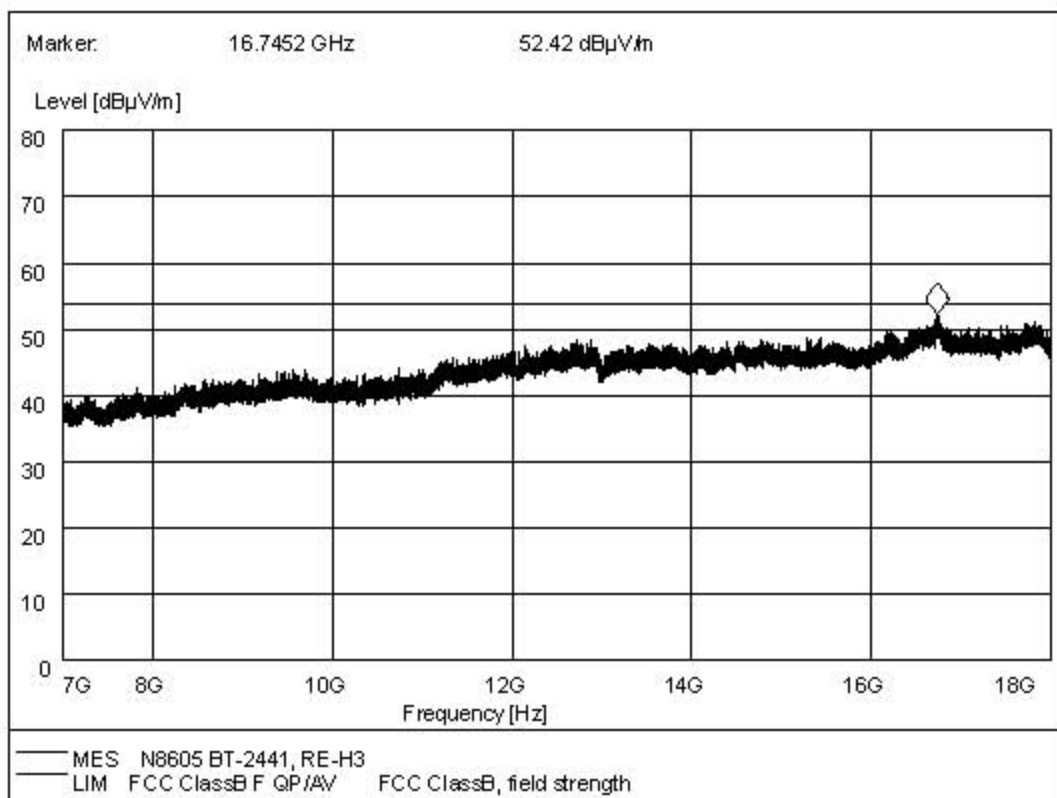


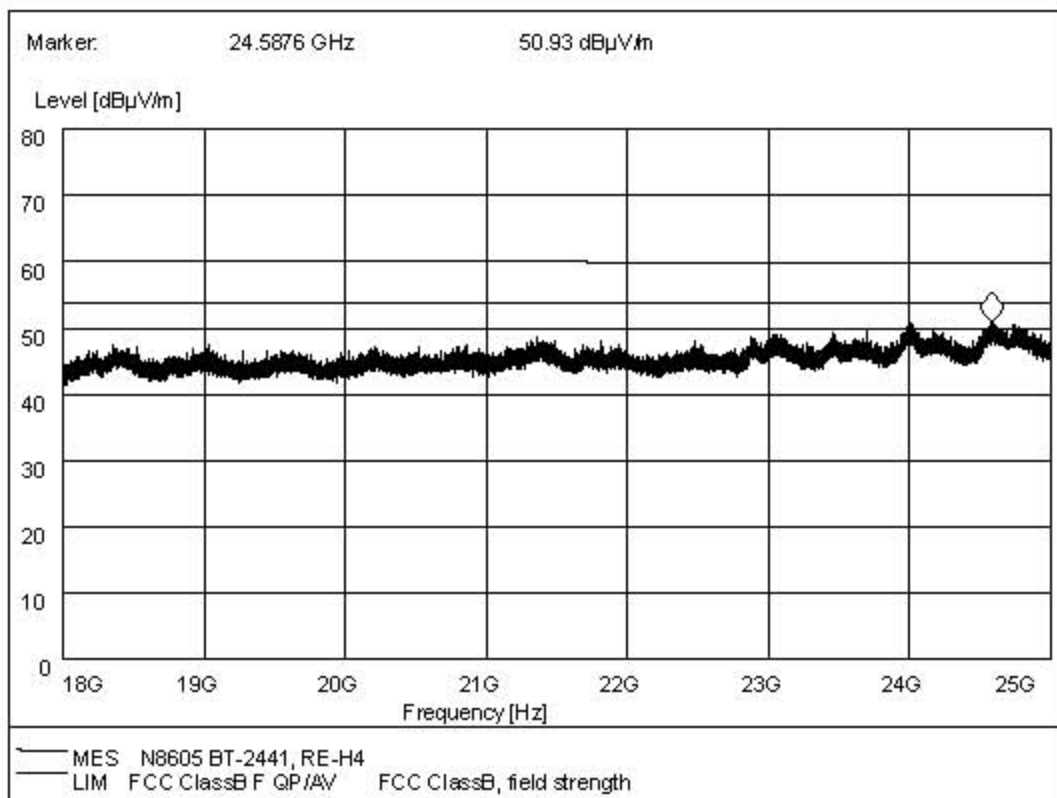




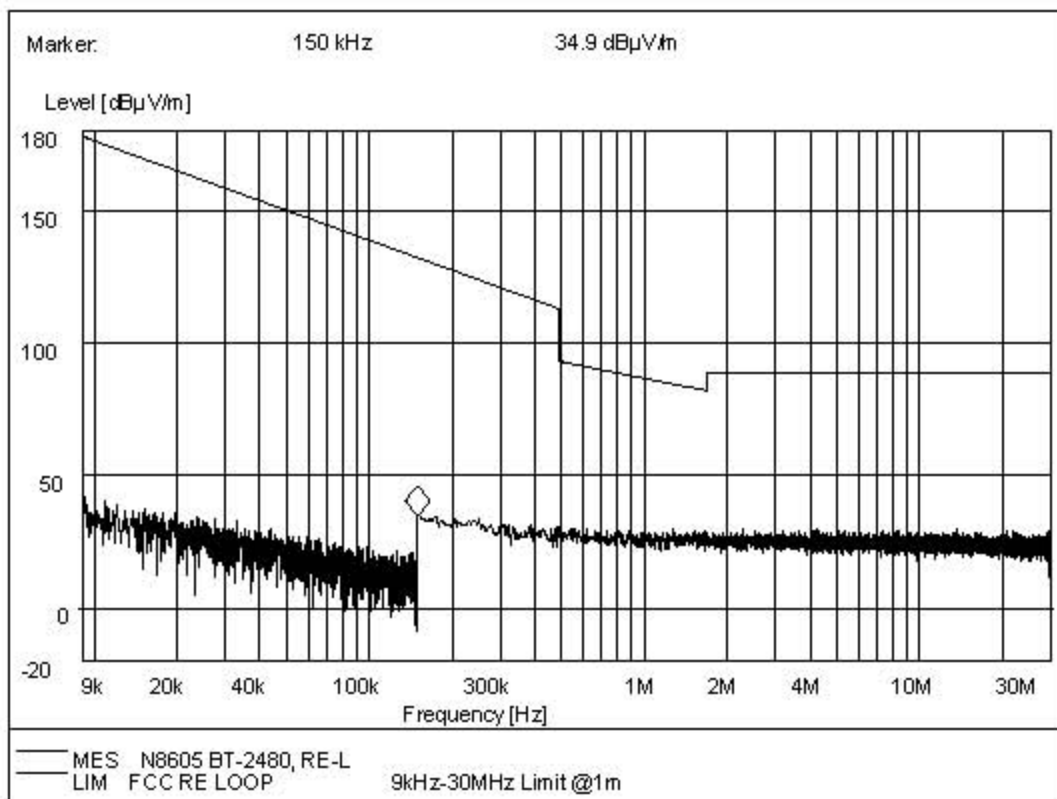
4. Middle channel 2441MHz, Horizontal

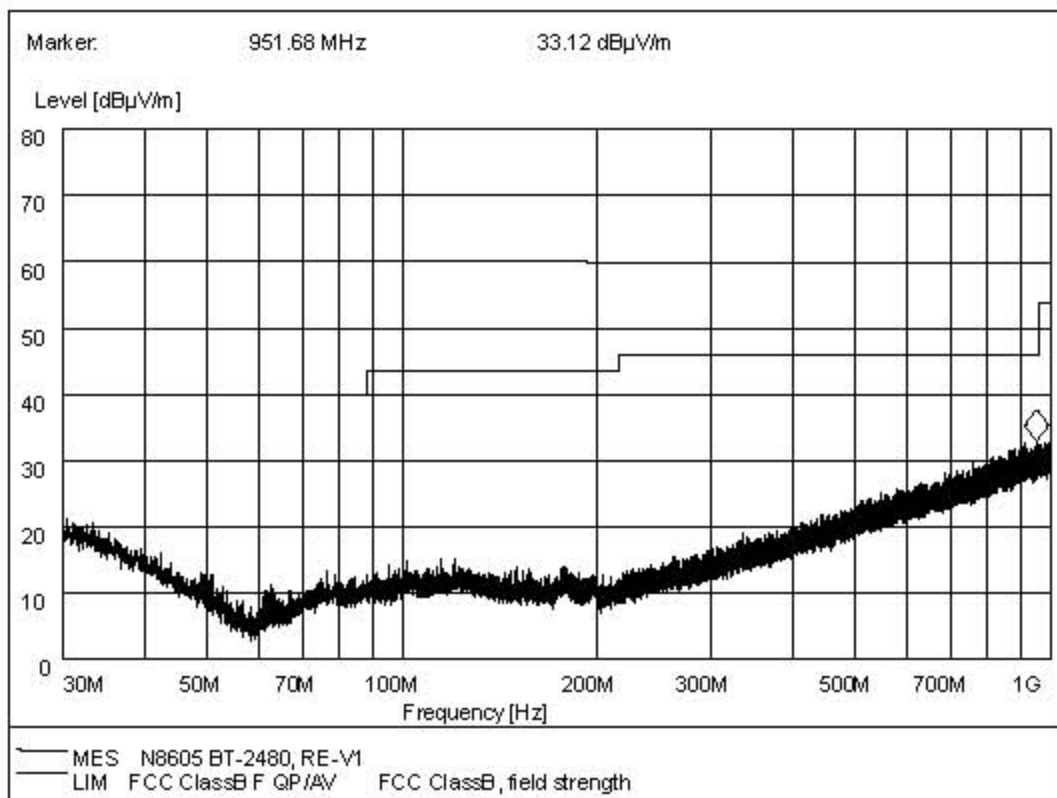
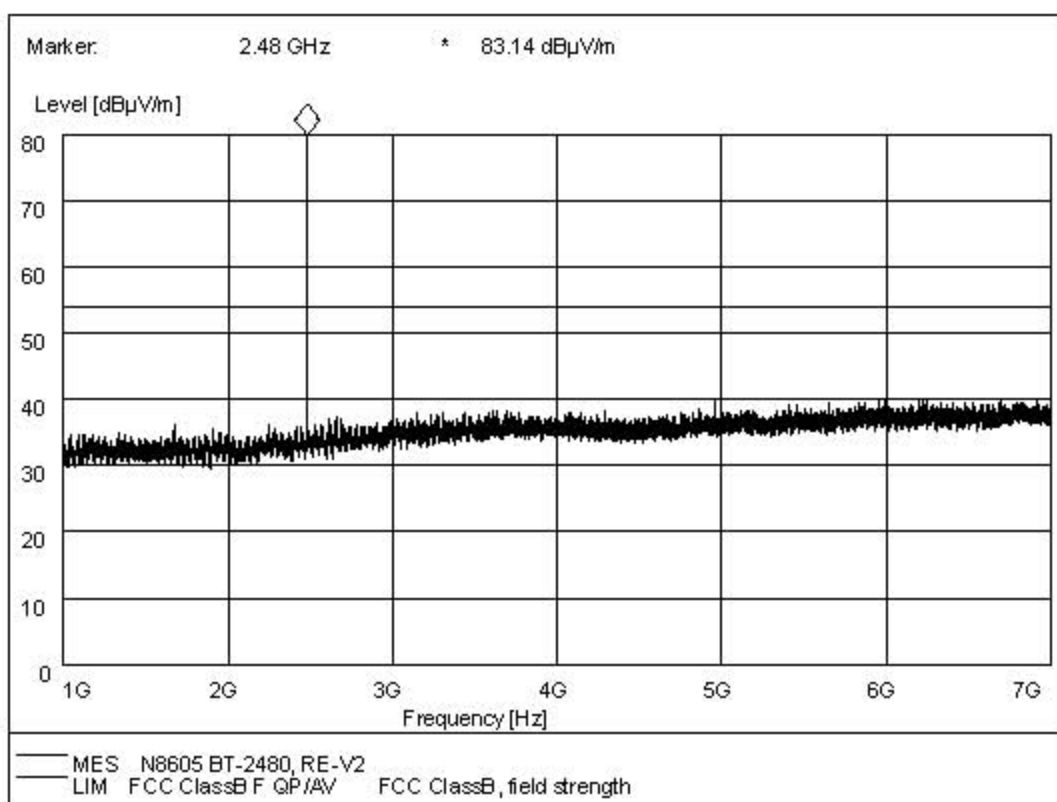


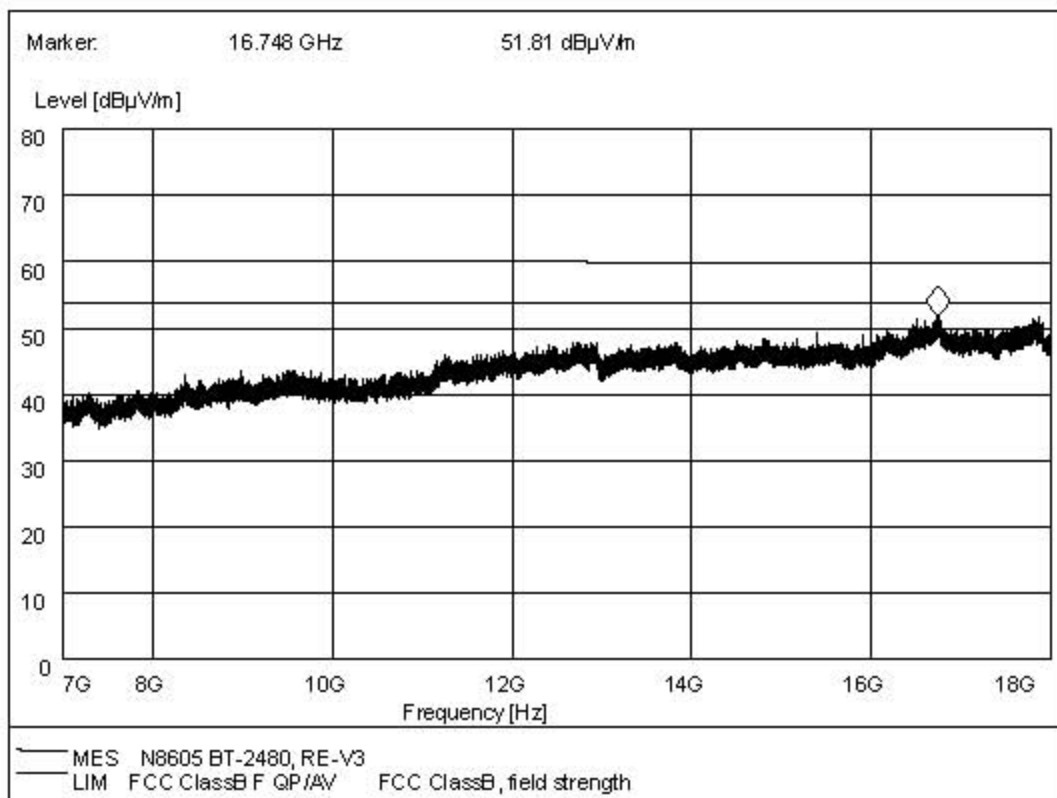
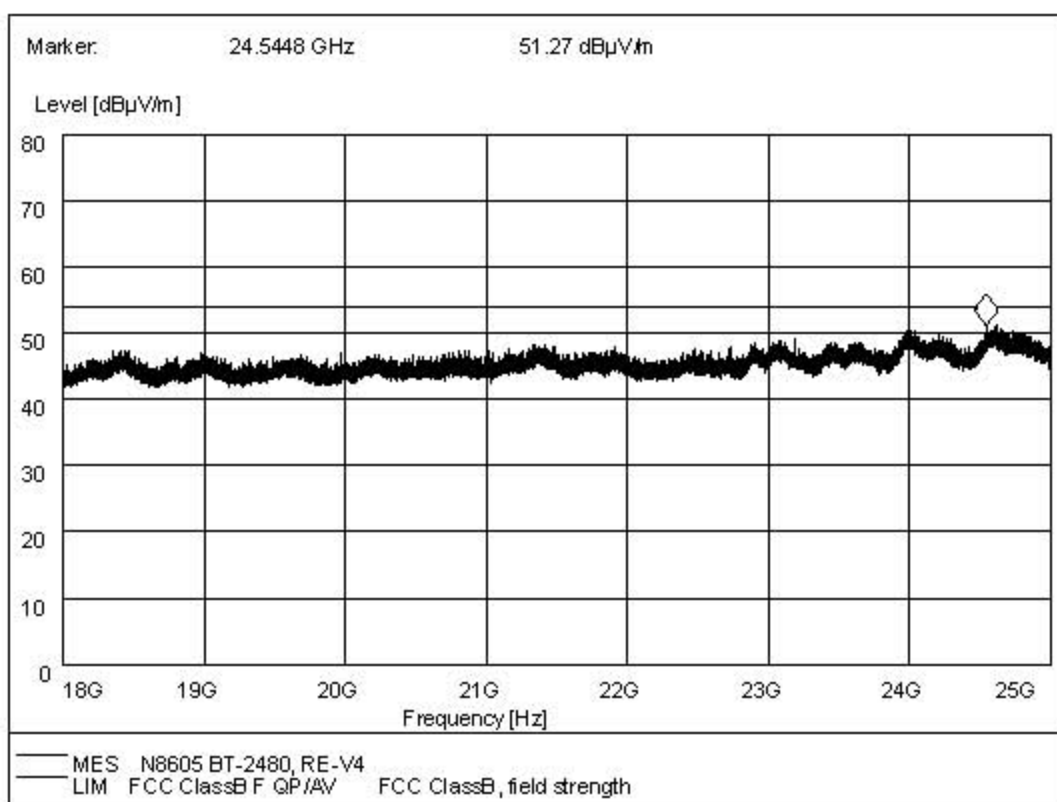




5. Highest channel 2480MHz, Vertical







6. Highest channel 2480MHz, Horizontal

