



# FCC RADIO TEST REPORT

Applicant : Ubiquiti Inc.  
Address : 685 Third Avenue, New York, New York 10017 USA  
Equipment : AmpliFi Router  
Model No. : AFi-R, AFi-R-G  
Trade Name : ULABS  
FCC ID : SWX-AFRP

**I HEREBY CERTIFY THAT :**

The sample was received on Jun. 27, 2019 and the testing was completed on Oct. 08, 2019 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





Contents

- 1. **Summary of Test Procedure and Test Results.....5**
  - 1.1 Applicable Standards .....5
- 2. **Test Configuration of Equipment under Test ..... 6**
  - 2.1 Feature of Equipment.....6
  - 2.2 Carrier Frequency of Channels .....7
  - 2.3 Test Mode and Test Software .....8
  - 2.4 Description of Test System.....8
  - 2.5 General Information of Test.....9
  - 2.6 Measurement Uncertainty .....10
- 3. **Test Equipment and Ancillaries Used for Tests ..... 11**
- 4. **Antenna Requirements ..... 13**
  - 4.1 Antenna Construction and Directional Gain .....13
- 5. **Test of AC Power Line Conducted Emission ..... 14**
  - 5.1 Test Limit .....14
  - 5.2 Test Procedures .....14
  - 5.3 Typical Test Setup .....15
  - 5.4 Test Result and Data .....16
  - 5.5 Test Photographs .....18
- 6. **Test of Radiated Spurious Emission ..... 19**
  - 6.1 Test Limit .....19
  - 6.2 Test Procedures .....19
  - 6.3 Typical Test Setup .....20
  - 6.4 Test Result and Data (9KHz ~ 30MHz) .....21
  - 6.5 Test Result and Data (30MHz ~ 1GHz).....21
  - 6.6 Test Result and Data (1GHz ~ 25GHz) .....23
  - 6.7 Restricted Bands of Operation .....47
  - 6.8 Test Photographs (30MHz ~ 1GHz) .....48
  - 6.9 Test Photographs (1GHz ~ 25GHz) .....49
- 7. **Test of Conducted Spurious Emission .....50**
  - 7.1 Test Limit .....50
  - 7.2 Test Procedure .....50
  - 7.3 Test Setup Layout .....50
  - 7.4 Test Result and Data .....50
- 8. **On Time, Duty Cycle and Measurement methods ..... 78**
  - 8.1 Test Limit .....78
  - 8.2 Test Procedure .....78
  - 8.3 Test Setup Layout .....78
  - 8.4 Test Result and Data .....78
- 9. **6dB Bandwidth Measurement Data ..... 80**
  - 9.1 Test Limit .....80
  - 9.2 Test Procedures .....80
  - 9.3 Test Setup Layout .....80



9.4 Test Result and Data ..... 80

**10. Maximum Average Output Power ..... 90**

10.1 Test Limit ..... 90

10.2 Test Procedures ..... 90

10.3 Test Setup Layout ..... 90

10.4 Test Result and Data ..... 90

**11. Power Spectral Density ..... 91**

11.1 Test Limit ..... 91

11.2 Test Procedures ..... 91

11.3 Test Setup Layout ..... 91

11.4 Test Result and Data ..... 91

**12. Radio Frequency Exposure ..... 98**

12.1 Applicable Standards ..... 98

12.2 EUT Specification ..... 98

12.3 Test Results ..... 99

12.4 Calculation ..... 99

12.5 Maximum Permissible Exposure ..... 100





# 1. Summary of Test Procedure and Test Results

## 1.1 Applicable Standards

ANSI C63.4:2014

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	PASS
15.207	. AC Power Line Conducted Emission	PASS
15.209 15.205	. Radiated Spurious Emission	PASS
15.247(d)	. Conducted Spurious Emission	PASS
15.247(a)(2)	. 6dB Bandwidth	PASS
15.247(b)	. Maximum Peak and Average Output Power	PASS
15.247(e)	. Power Spectral Density	PASS
2.1091	. Radio Frequency Exposure	PASS

\*The lab has lowered the uncertainty risk of test equipment, environment, and staff technicians according to ISO-IEC17025. Therefore we define test result as compliant when it complies with the standard without further evaluation of test result uncertainty.

\*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report(TEFD1906241).



## 2. Test Configuration of Equipment under Test

### 2.1 Feature of Equipment

Frequency Range	BT / BLE: 2400-2483.5MHz 802.11b/g/n: 2400-2483.5MHz 802.11a/n/ac: 5150-5250MHz, 5725-5850MHz
Modulation Type	BT: GFSK, $\pi/4$ -DQPSK, 8DPSK BLE: GFSK 802.11b: CCK, DQPSK, DBPSK 802.11g/n/a: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	DSSS, OFDM, FHSS, DTS
Data Rate	BT: GFSK: 1Mbps, $\pi/4$ -DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps WLAN: For 2.4G 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS23, HT20/40 For 5G 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS23, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80
Antenna Type	Internal Antenna
Antenna Gain	For BT/BLE 2400-2480MHz: 1dBi For WLAN: 2400-2483.5MHz: ANT A / B / C: 4dBi 5150-5250MHz: ANT A / B / C: 4dBi 5725-5850MHz: ANT A / B / C: 4dBi
Adapter	UBIQUITI / GP-M015-QC INPUT: 100-240Vac, 50/60Hz, 0.5A MAX OUTPUT: 5Vdc, 3.0A or 9Vdc, 1.7A or 12Vdc, 1.25A
Firmware Number	v3.3.0

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

#### Difference description

Model No.	Remark
AFi-R	The differences between these two model numbers is housing color.
AFi-R-G	



### 2.2 Carrier Frequency of Channels

802.11b, 802.11g, 802.11n HT20 (2412MHz~2462MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
<b>*01</b>	<b>2412</b>	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	<b>*11</b>	<b>2462</b>
<b>*06</b>	<b>2437</b>	---	---

802.11n HT40 (2422MHz~2452MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
<b>*03</b>	<b>2422</b>	<b>*09</b>	<b>2452</b>
04	2427	---	---
05	2432	---	---
<b>*06</b>	<b>2437</b>	---	---

Note: Channels remarked \* are selected to perform test.



### 2.3 Test Mode and Test Software

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.10.
- b. The complete test system included Remote workstation and EUT for RF test. The Remote workstation included Notebook.
- c. An executive program, " Art2 command " under Windows OS system was executed to transmit and receive data via WLAN.
- d. The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)
4	802.11n HT40 (13.5Mbps)
caused "Test Mode 4" generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)
4	802.11n HT40 (13.5Mbps)
caused "Test Mode 4" generated the worst case, they were reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	802.11b (1Mbps)
2	802.11g (6Mbps)
3	802.11n HT20 (6.5Mbps)
4	802.11n HT40 (13.5Mbps)
caused "Test Mode 1~4" generated the worst case, they were reported as the final data.	

### 2.4 Description of Test System

N/A





**2.5 General Information of Test**

Test Site	<b>CerpPASS Technology Corporation Test Laboratory</b> Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881	
	FCC	TW1079, TW1439
	IC	4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication test C-4663 for Conducted emission test R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 25,000MHz	
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Finish Date	Environmental Conditions	Tested By
RF Conducted	RFCON01-NK	2019/08/01	24°C / 62%	Vic Yeh
Radiated Emissions	3M02-NK	2019/10/08	24°C / 50%	Vic Yeh
RF Conduction	CON01-NK	2019/10/05	20°C / 40%	Leon Huang



### 2.6 Measurement Uncertainty

Measurement Item	Uncertainty
Radiated Spurious Emission(9KHz~30MHz)	±3.405dB
Radiated Spurious Emission(30MHz~1GHz)	±5.326dB
Radiated Spurious Emission(1GHz~25GHz)	±5.918dB
Conducted Spurious Emission	±2.156dB
6dB Bandwidth	±4.401%
20dB Bandwidth	±4.40%
Occupied Bandwidth	±4.41%
Peak Output Power(Conducted Power Meter)	±1.31dB
Dwell Time	±0.11%
Power Spectral Density	±2.146dB
Duty Cycle	±0.17%



### 3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	275	2019/09/24	2020/09/23
Bilog Antenna	Schwarzbeck	VULB9168	369	2019/03/29	2020/03/28
Active Loop Antenna	EMCO	6507	40855	2019/05/24	2020/05/23
Horn Antenna	EMCO	3115	31589	2019/04/01	2020/03/31
Horn Antenna	EMCO	3116	31974	2019/09/17	2020/09/16
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2019/05/14	2020/05/13
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100047	2019/03/28	2020/03/27
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2019/08/02	2020/08/01
Preamplifier	EM Electronics corp.	EM330	60660	2019/03/11	2020/03/10
Preamplifier	EMC INSTRUMENTS	EMC051845SE	980333	2019/09/20	2020/09/19
Preamplifier	Agilent	8449B	3008A01954	2019/03/11	2020/03/10
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2018/10/31	2019/10/30
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2019/04/09	2020/04/08
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1316	2019/09/20	2020/09/19
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805443/4	2019/05/20	2020/05/19
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805796/4	2019/05/20	2020/05/19
Cable-8m(1G-40G)	HUBER SUHNER	SUCOFLEX 100	805795/4	2019/05/20	2020/05/19
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Spectrum Analyzer	ROHDE & SCHWARZ	FSP 40	100047	2019/03/28	2020/03/27
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2019/04/07	2020/04/06
Attenuator	KEYSIGHT	8491B	MY39250705	2018/09/04	2019/09/03
TEMP & HUMIDITY CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2018/08/30	2019/08/29
Power Meter	Anritsu	ML2495A	1224005	2019/4/11	2020/04/10
Power Sensor	Anritsu	MA2411B	1207295	2019/04/09	2020/04/08



<b>Test Item</b>	AC Power Line Conducted Emission				
<b>Test Site</b>	CON01-NK				
<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Serial No</b>	<b>Calibration Date</b>	<b>Valid Date</b>
EMI Receiver	ROHDE & SCHWARZ	ESCI	100443	2019/03/29	2020/03/28
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-568	2019/03/15	2020/03/14
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101934	2019/03/12	2020/03/11
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130606	2019/03/14	2020/03/13
E3	AUDIX	v8.2014-8-6	RK-000531	NA	NA



### 4. Antenna Requirements

#### 4.1 Antenna Construction and Directional Gain

Antenna Type	Internal Antenna
Antenna Gain	2412-2462MHz: ANT A / B / C: 4dBi 5150MHz-5250MHz: ANT A / B / C: 4dBi 5725MHz -5850MHz: ANT A / B / C: 4dBi

2412-2462MHz

For Power directional gain=  $G_{ant}= 4 \text{ dBi}$

For PSD directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$   
= 8.77 (dBi)

5150MHz-5250MHz

For Power directional gain=  $G_{ant}= 4 \text{ dBi}$

For PSD directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$   
= 8.77 (dBi)

5725MHz -5850MHz

For Power directional gain=  $G_{ant}= 4 \text{ dBi}$

For PSD directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$   
= 8.77 (dBi)



## 5. Test of AC Power Line Conducted Emission

### 5.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

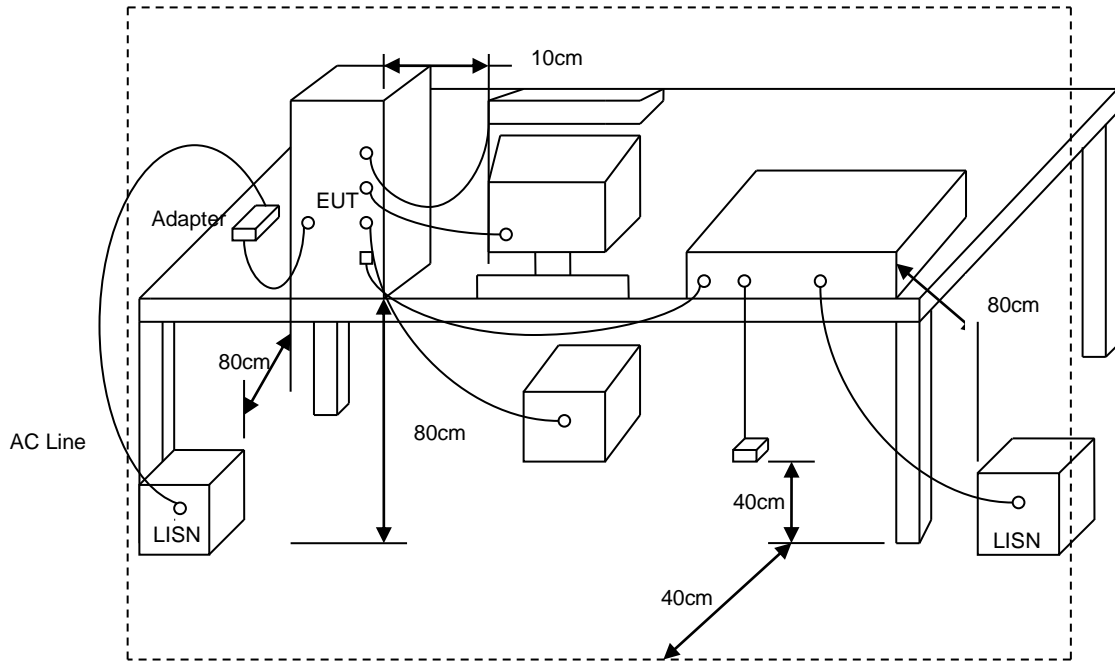
\*Decreases with the logarithm of the frequency.

### 5.2 Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



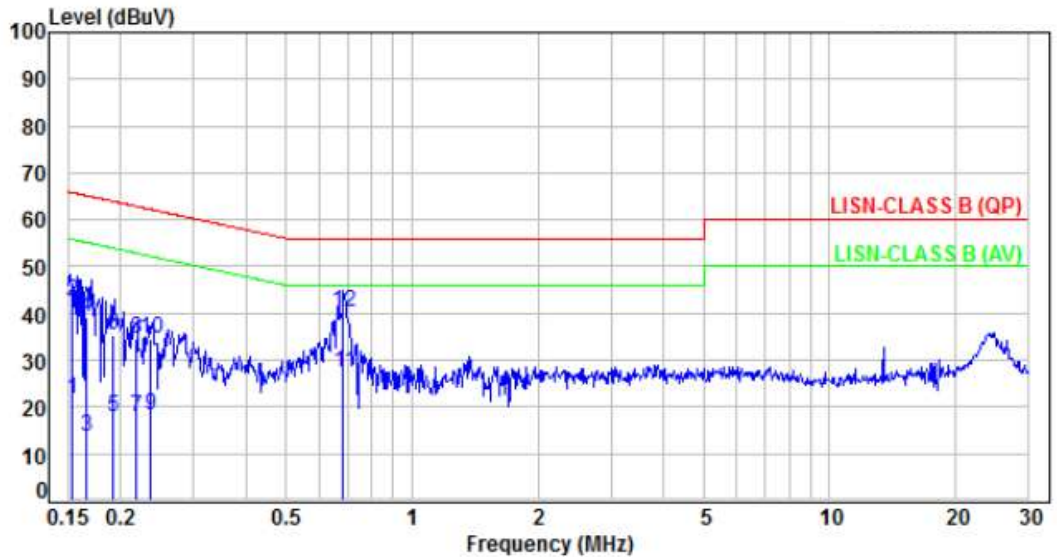
### 5.3 Typical Test Setup





5.4 Test Result and Data

Power	: AC 120V / 60Hz	Pol/Phase	: LINE
Test Mode	: Mode 4		:



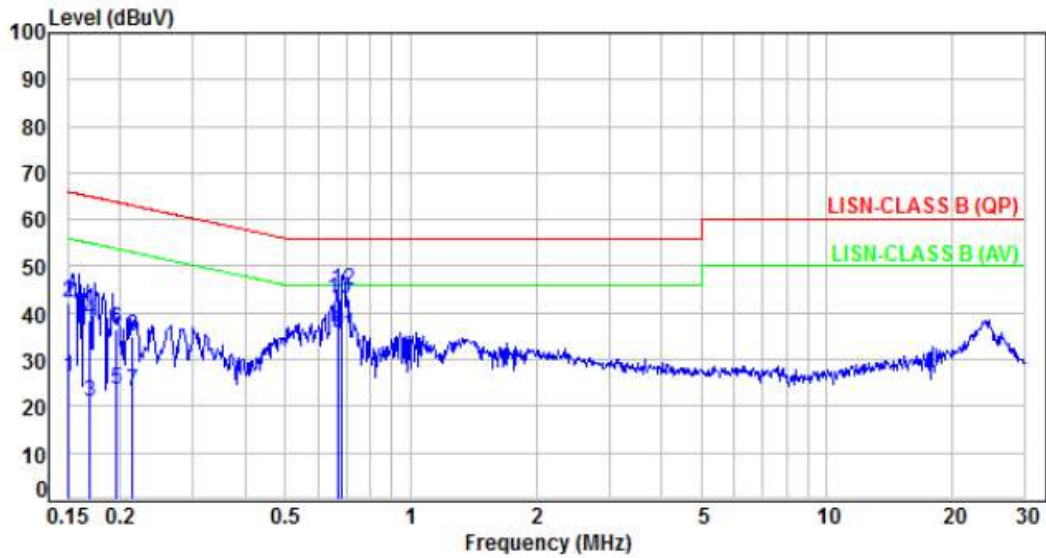
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.92	11.86	21.78	55.80	-34.02	Average	P
2	0.15	9.92	32.85	42.77	65.80	-23.03	QP	P
3	0.17	9.92	3.77	13.69	55.19	-41.50	Average	P
4	0.17	9.92	29.11	39.03	65.19	-26.16	QP	P
5	0.19	9.92	7.94	17.86	53.92	-36.06	Average	P
6	0.19	9.92	25.39	35.31	63.92	-28.61	QP	P
7	0.22	9.92	7.79	17.71	52.86	-35.15	Average	P
8	0.22	9.92	24.75	34.67	62.86	-28.19	QP	P
9	0.24	9.92	8.42	18.34	52.19	-33.85	Average	P
10	0.24	9.92	24.55	34.47	62.19	-27.72	QP	P
11	0.68	9.95	17.55	27.50	46.00	-18.50	Average	P
12	0.68	9.95	30.40	40.35	56.00	-15.65	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss





Power	: AC 120V / 60Hz	Pol/Phase	: NEUTRAL
Test Mode	: Mode 4		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.95	16.34	26.29	55.94	-29.65	Average	P
2	0.15	9.95	32.35	42.30	65.94	-23.64	QP	P
3	0.17	9.95	10.94	20.89	55.02	-34.13	Average	P
4	0.17	9.95	28.57	38.52	65.02	-26.50	QP	P
5	0.20	9.95	13.73	23.68	53.74	-30.06	Average	P
6	0.20	9.95	26.40	36.35	63.74	-27.39	QP	P
7	0.21	9.95	13.19	23.14	53.03	-29.89	Average	P
8	0.21	9.95	24.94	34.89	63.03	-28.14	QP	P
9	0.67	9.97	25.64	35.61	46.00	-10.39	Average	P
10	0.67	9.97	32.83	42.80	56.00	-13.20	QP	P
11	0.68	9.97	25.28	35.25	46.00	-10.75	Average	P
12	0.68	9.97	34.95	44.92	56.00	-11.08	QP	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



## 6. Test of Radiated Spurious Emission

### 6.1 Test Limit

In any 100kHz bandwidth outside the frequency band 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
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

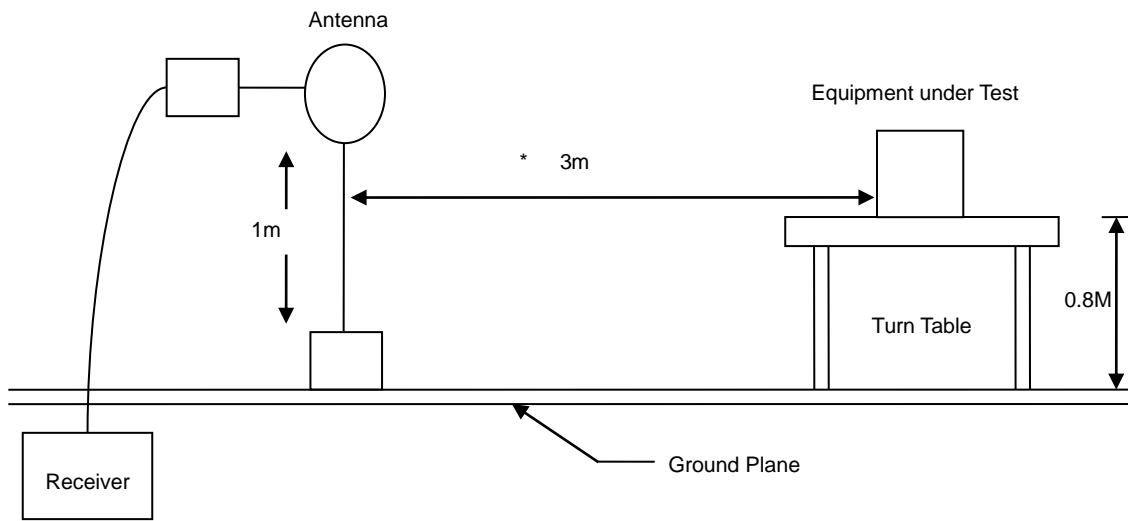
### 6.2 Test Procedures

- The EUT was placed on a rotatable table top 0.8 meter above ground.
- The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- The table was rotated 360 degrees to determine the position of the highest radiation.
- The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- "Cone of radiation" has been considered to be 3dB bandwidth of the measurement antenna.

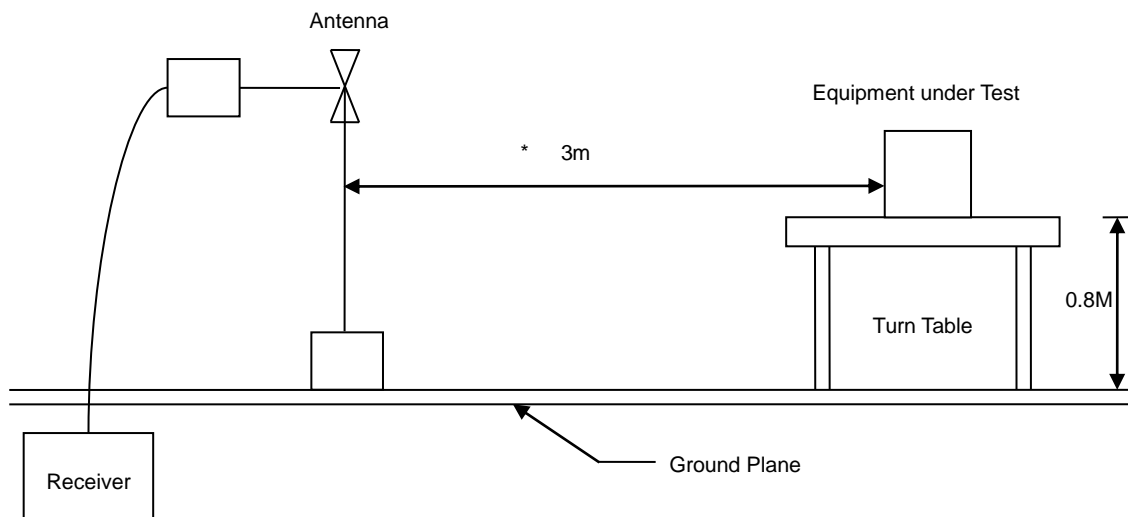


### 6.3 Typical Test Setup

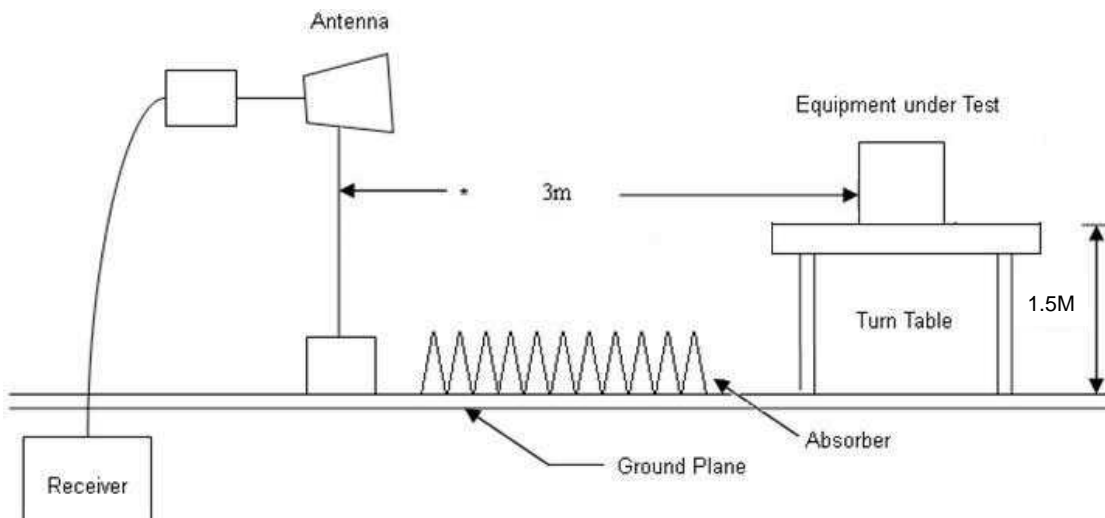
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



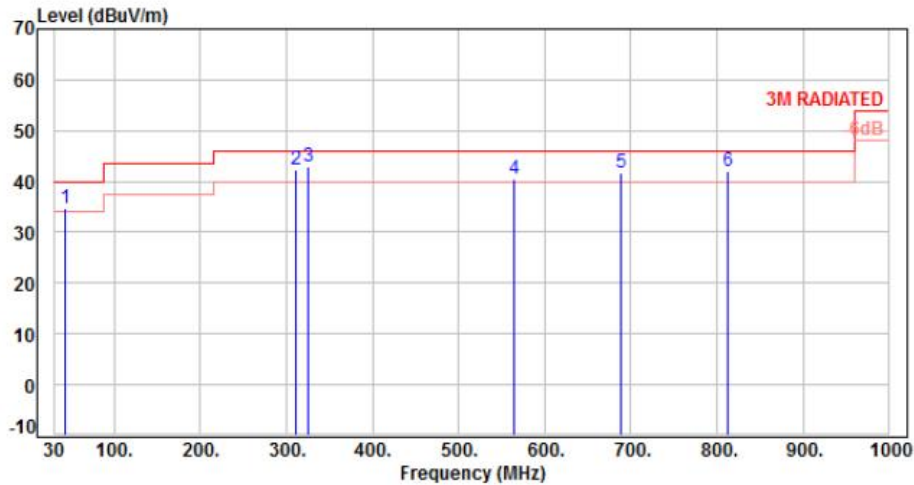


### 6.4 Test Result and Data (9KHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

### 6.5 Test Result and Data (30MHz ~ 1GHz)

Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 4		:

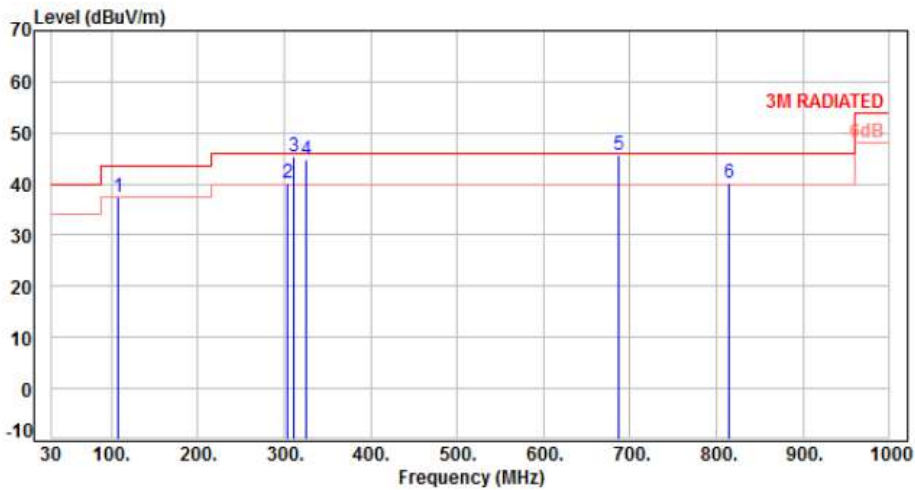


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	43.16	-9.36	43.94	34.58	40.00	-5.42	QP	100	310	P
2	311.52	-8.14	50.40	42.26	46.00	-3.74	Peak	100	0	P
3	324.64	-7.64	50.52	42.88	46.00	-3.12	Peak	100	0	P
4	563.92	-2.24	42.88	40.64	46.00	-5.36	Peak	100	0	P
5	687.71	-0.04	41.62	41.58	46.00	-4.42	Peak	100	0	P
6	813.13	1.95	39.98	41.93	46.00	-4.07	QP	122	26	P

Note: Level=Reading+Factor  
Margin=Level-Limit  
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4		:



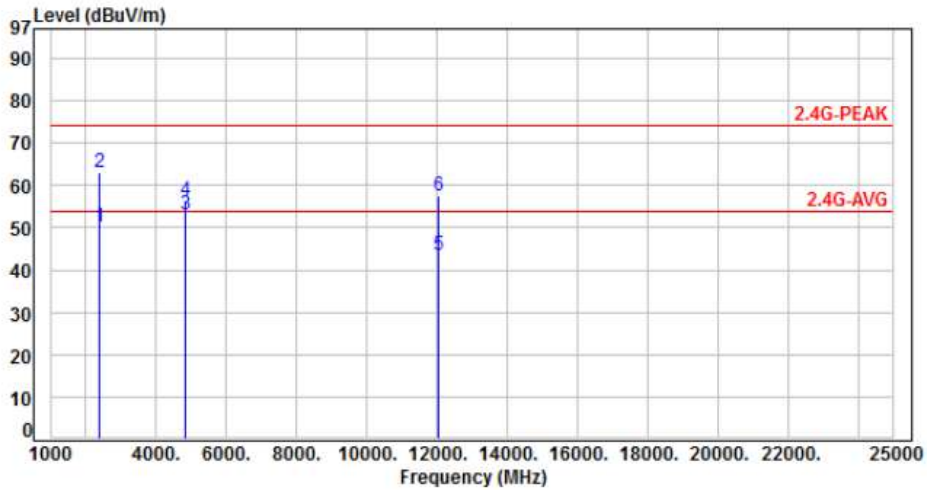
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	108.43	-12.67	50.00	37.33	43.50	-6.17	QP	200	253	P
2	303.77	-8.32	48.45	40.13	46.00	-5.87	QP	100	242	P
3	311.30	-8.15	53.61	45.46	46.00	-0.54	QP	100	239	P
4	325.26	-7.61	52.34	44.73	46.00	-1.27	QP	100	241	P
5	687.53	-0.04	45.61	45.57	46.00	-0.43	QP	100	118	P
6	813.63	1.97	38.26	40.23	46.00	-5.77	Peak	100	0	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



6.6 Test Result and Data (1GHz ~ 25GHz)

Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH01		:

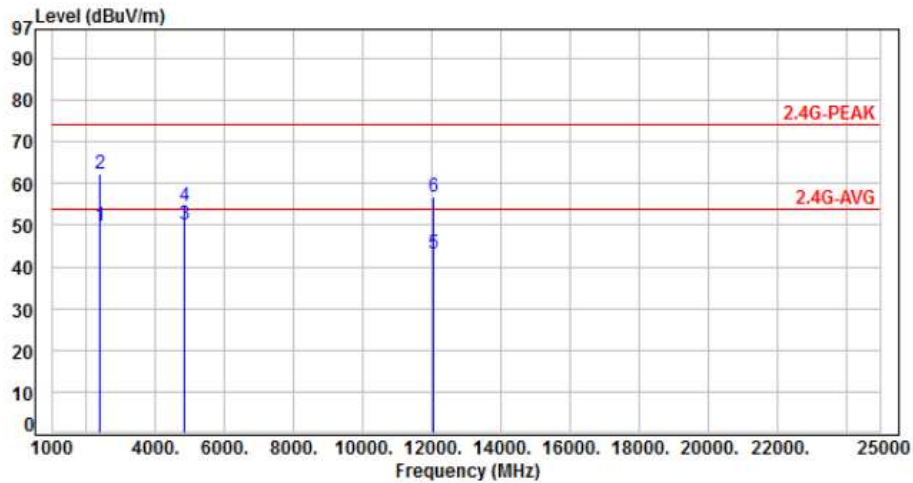


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2376.00	-3.62	53.95	50.33	54.00	-3.67	Average	127	115	P
2	2376.00	-3.62	66.70	63.08	74.00	-10.92	Peak	127	115	P
3	4824.00	3.76	49.19	52.95	54.00	-1.05	Average	121	117	P
4	4824.00	3.76	52.59	56.35	74.00	-17.65	Peak	121	117	P
5	12060.00	13.45	30.10	43.55	54.00	-10.45	Average	100	81	P
6	12060.00	13.45	44.25	57.70	74.00	-16.30	Peak	100	81	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH01		:

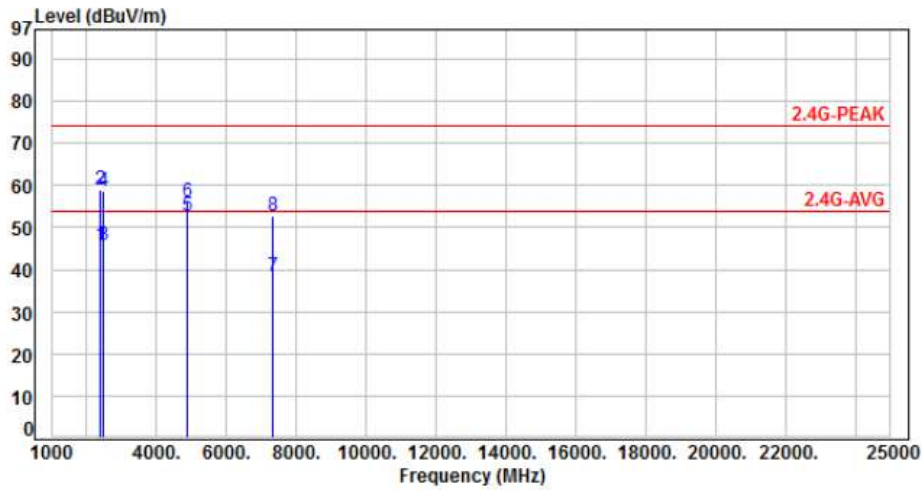


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2376.00	-3.62	53.41	49.79	54.00	-4.21	Average	111	119	P
2	2376.00	-3.62	65.90	62.28	74.00	-11.72	Peak	111	119	P
3	4824.00	3.76	46.39	50.15	54.00	-3.85	Average	325	114	P
4	4824.00	3.76	50.79	54.55	74.00	-19.45	Peak	325	114	P
5	12060.00	13.45	29.86	43.31	54.00	-10.69	Average	100	311	P
6	12060.00	13.45	43.40	56.85	74.00	-17.15	Peak	100	311	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH06		:



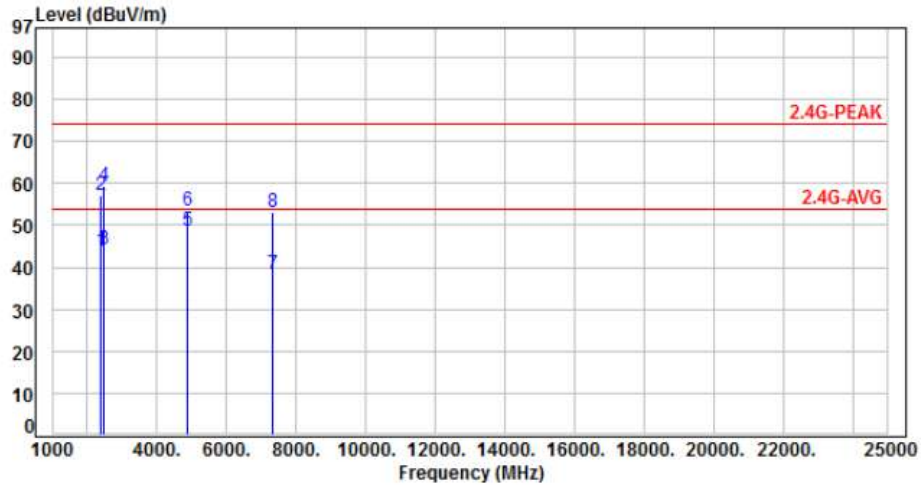
No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	49.30	45.66	54.00	-8.34	Average	100	115	P
2	2390.00	-3.64	62.50	58.86	74.00	-15.14	Peak	100	115	P
3	2483.50	-3.30	48.98	45.68	54.00	-8.32	Average	100	115	P
4	2483.50	-3.30	61.85	58.55	74.00	-15.45	Peak	100	115	P
5	4874.00	3.95	48.76	52.71	54.00	-1.29	Average	160	111	P
6	4874.00	3.95	52.20	56.15	74.00	-17.85	Peak	160	111	P
7	7311.00	8.84	29.67	38.51	54.00	-15.49	Average	100	105	P
8	7311.00	8.84	43.81	52.65	74.00	-21.35	Peak	100	105	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH06		:

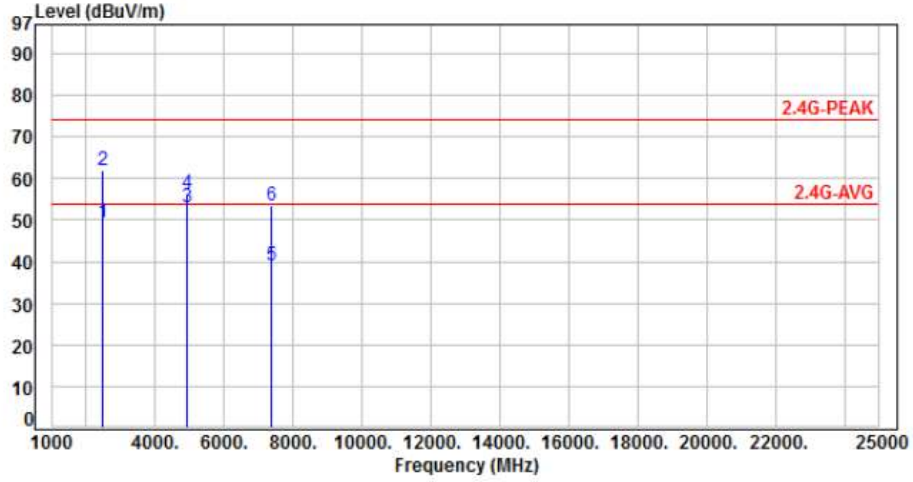


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	47.68	44.04	54.00	-9.96	Average	320	122	P
2	2390.00	-3.64	60.90	57.26	74.00	-16.74	Peak	320	122	P
3	2483.50	-3.30	47.63	44.33	54.00	-9.67	Average	320	122	P
4	2483.50	-3.30	62.59	59.29	74.00	-14.71	Peak	320	122	P
5	4874.00	3.95	44.70	48.65	54.00	-5.35	Average	317	113	P
6	4874.00	3.95	49.58	53.53	74.00	-20.47	Peak	317	113	P
7	7311.00	8.84	29.55	38.39	54.00	-15.61	Average	100	317	P
8	7311.00	8.84	44.21	53.05	74.00	-20.95	Peak	100	317	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 1, CH11		:

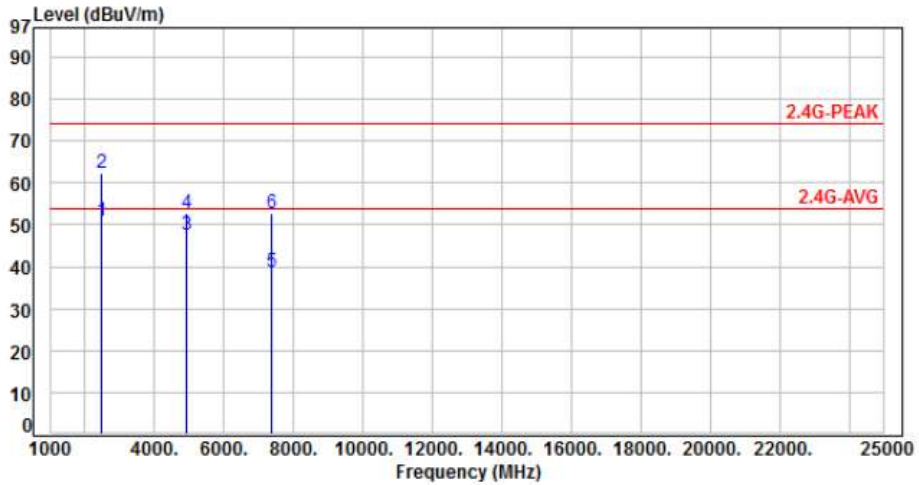


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-3.30	52.59	49.29	54.00	-4.71	Average	133	130	P
2	2483.50	-3.30	65.20	61.90	74.00	-12.10	Peak	133	130	P
3	4924.00	4.10	48.90	53.00	54.00	-1.00	Average	100	110	P
4	4924.00	4.10	52.34	56.44	74.00	-17.56	Peak	100	110	P
5	7386.00	8.94	30.22	39.16	54.00	-14.84	Average	100	73	P
6	7386.00	8.94	44.58	53.52	74.00	-20.48	Peak	100	73	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1, CH11		:

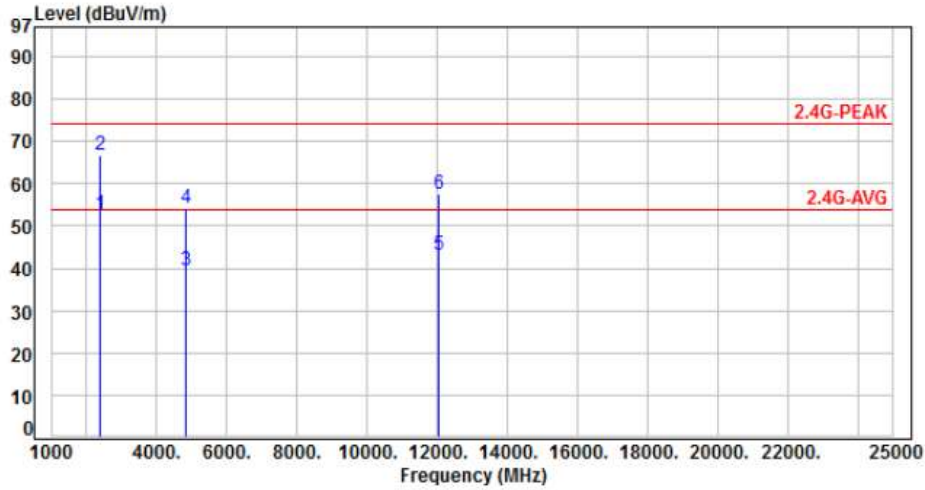


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2498.70	-3.26	54.13	50.87	54.00	-3.13	Average	100	85	P
2	2498.70	-3.26	65.70	62.44	74.00	-11.56	Peak	100	85	P
3	4924.00	4.10	43.60	47.70	54.00	-6.30	Average	351	111	P
4	4924.00	4.10	48.80	52.90	74.00	-21.10	Peak	351	111	P
5	7386.00	8.94	29.78	38.72	54.00	-15.28	Average	100	302	P
6	7386.00	8.94	43.72	52.66	74.00	-21.34	Peak	100	302	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH01		:

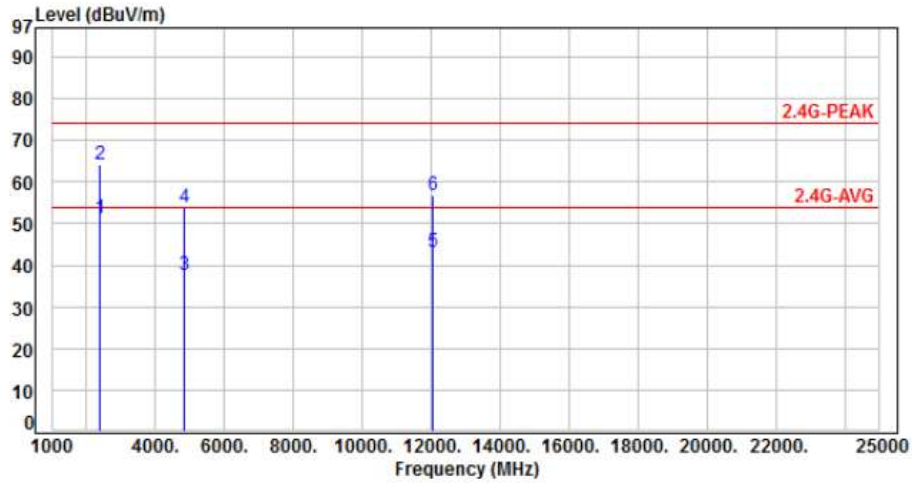


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2370.00	-3.61	56.40	52.79	54.00	-1.21	Average	100	120	P
2	2370.00	-3.61	70.50	66.89	74.00	-7.11	Peak	100	120	P
3	4824.00	3.76	35.69	39.45	54.00	-14.55	Average	100	100	P
4	4824.00	3.76	50.59	54.35	74.00	-19.65	Peak	100	100	P
5	12060.00	13.45	29.67	43.12	54.00	-10.88	Average	100	85	P
6	12060.00	13.45	44.23	57.68	74.00	-16.32	Peak	100	85	P

Note: Level=Reading+Factor  
Margin=Level-Limit  
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH01		:

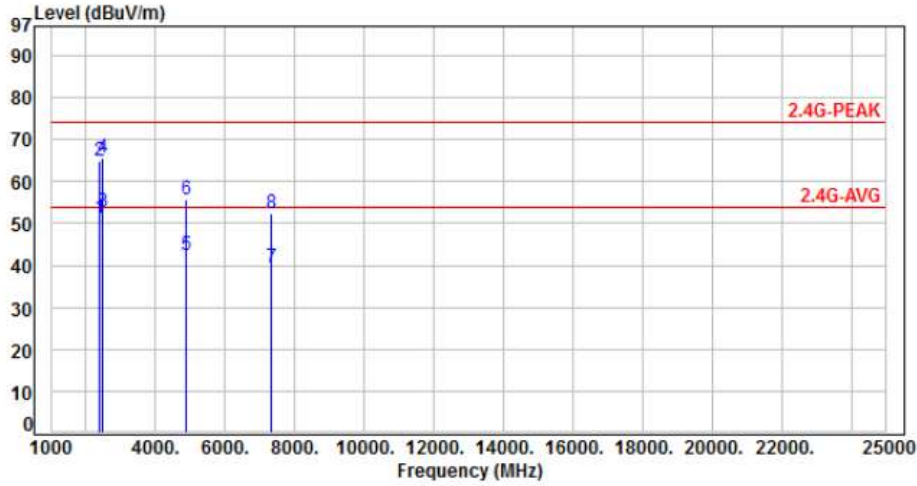


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2370.00	-3.61	55.00	51.39	54.00	-2.61	Average	348	72	P
2	2370.00	-3.61	67.80	64.19	74.00	-9.81	Peak	348	72	P
3	4824.00	3.76	33.94	37.70	54.00	-16.30	Average	257	116	P
4	4824.00	3.76	50.09	53.85	74.00	-20.15	Peak	257	116	P
5	12060.00	13.45	29.88	43.33	54.00	-10.67	Average	100	315	P
6	12060.00	13.45	43.23	56.68	74.00	-17.32	Peak	100	315	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH06		:

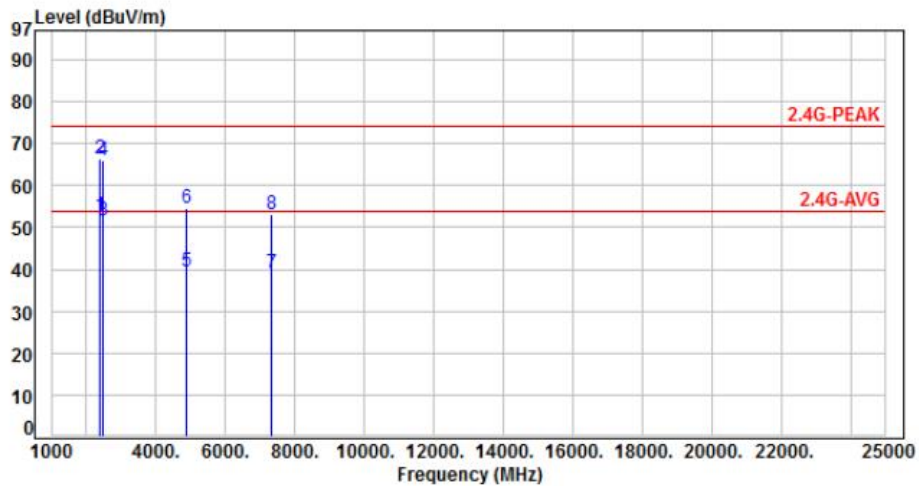


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	55.03	51.39	54.00	-2.61	Average	100	117	P
2	2390.00	-3.64	68.60	64.96	74.00	-9.04	Peak	100	117	P
3	2483.50	-3.30	56.19	52.89	54.00	-1.11	Average	100	117	P
4	2483.50	-3.30	69.09	65.79	74.00	-8.21	Peak	100	117	P
5	4874.00	3.95	38.56	42.51	54.00	-11.49	Average	135	106	P
6	4874.00	3.95	51.80	55.75	74.00	-18.25	Peak	135	106	P
7	7311.00	8.84	30.45	39.29	54.00	-14.71	Average	100	91	P
8	7311.00	8.84	43.57	52.41	74.00	-21.59	Peak	100	91	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH06		:

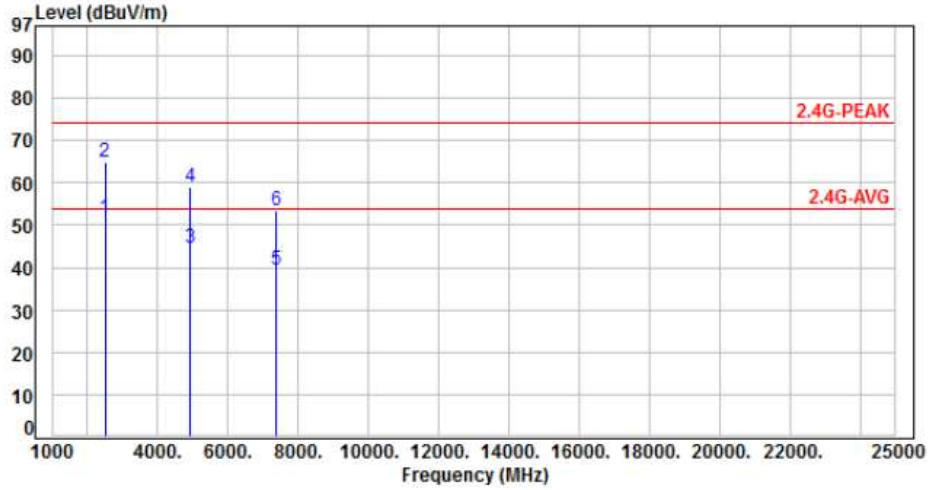


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	56.23	52.59	54.00	-1.41	Average	236	233	P
2	2390.00	-3.64	69.88	66.24	74.00	-7.76	Peak	236	233	P
3	2483.50	-3.30	54.75	51.45	54.00	-2.55	Average	236	233	P
4	2483.50	-3.30	69.49	66.19	74.00	-7.81	Peak	236	233	P
5	4874.00	3.95	35.60	39.55	54.00	-14.45	Average	111	115	P
6	4874.00	3.95	50.70	54.65	74.00	-19.35	Peak	111	115	P
7	7311.00	8.84	30.24	39.08	54.00	-14.92	Average	100	345	P
8	7311.00	8.84	44.35	53.19	74.00	-20.81	Peak	100	345	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2, CH11		:



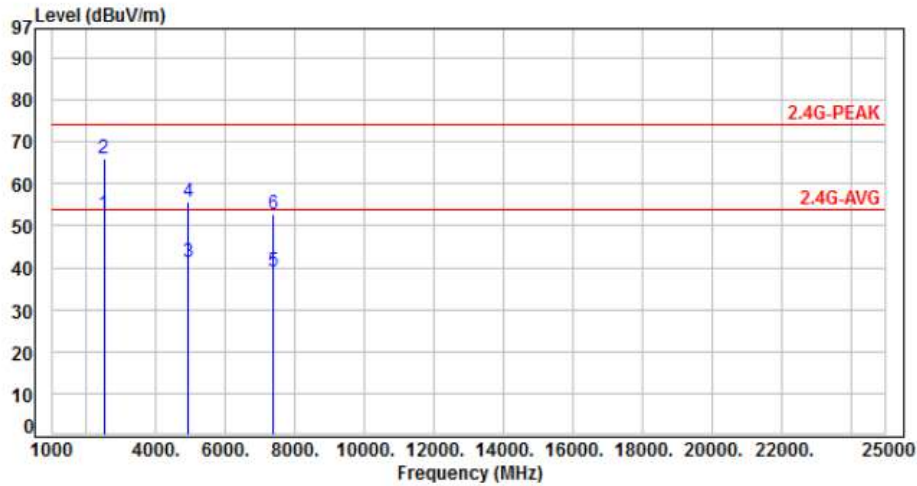
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2500.00	-3.26	54.92	51.66	54.00	-2.34	Average	100	115	P
2	2500.00	-3.26	68.30	65.04	74.00	-8.96	Peak	100	115	P
3	4924.00	4.10	40.60	44.70	54.00	-9.30	Average	121	108	P
4	4924.00	4.10	54.90	59.00	74.00	-15.00	Peak	121	108	P
5	7386.00	8.94	30.42	39.36	54.00	-14.64	Average	100	81	P
6	7386.00	8.94	44.36	53.30	74.00	-20.70	Peak	100	81	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2, CH11		:

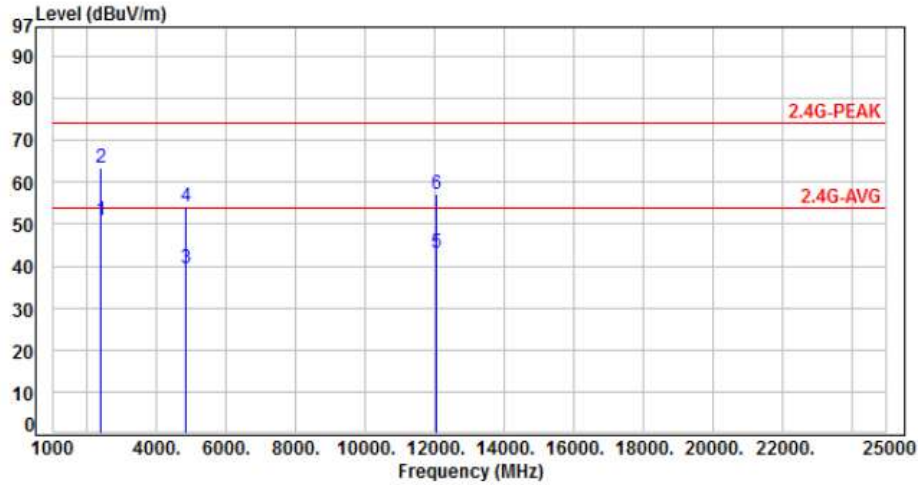


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2500.00	-3.26	55.94	52.68	54.00	-1.32	Average	225	66	P
2	2500.00	-3.26	69.32	66.06	74.00	-7.94	Peak	225	66	P
3	4924.00	4.10	37.20	41.30	54.00	-12.70	Average	247	114	P
4	4924.00	4.10	51.50	55.60	74.00	-18.40	Peak	247	114	P
5	7386.00	8.94	30.01	38.95	54.00	-15.05	Average	100	312	P
6	7386.00	8.94	43.68	52.62	74.00	-21.38	Peak	100	312	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH01		:

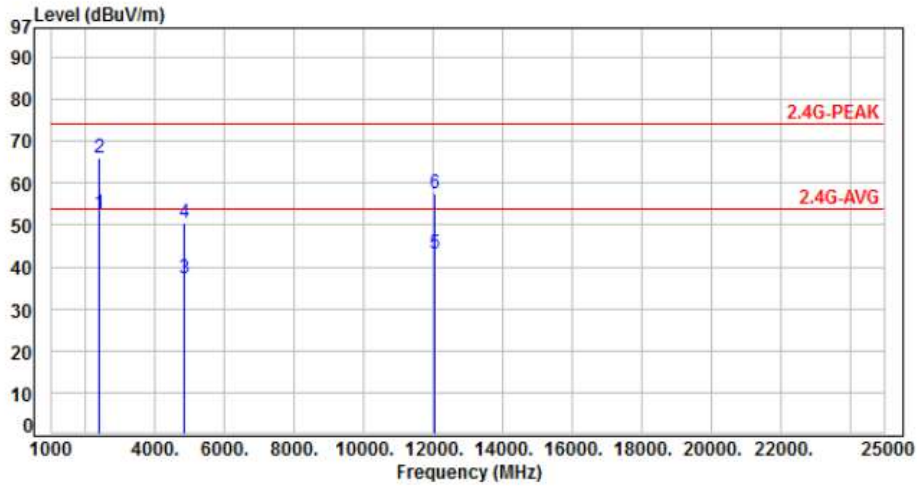


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2370.00	-3.61	54.66	51.05	54.00	-2.95	Average	120	121	P
2	2370.00	-3.61	67.20	63.59	74.00	-10.41	Peak	120	121	P
3	4824.00	3.76	35.79	39.55	54.00	-14.45	Average	122	105	P
4	4824.00	3.76	50.59	54.35	74.00	-19.65	Peak	122	105	P
5	12060.00	13.45	29.73	43.18	54.00	-10.82	Average	100	62	P
6	12060.00	13.45	43.67	57.12	74.00	-16.88	Peak	100	62	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH01		:

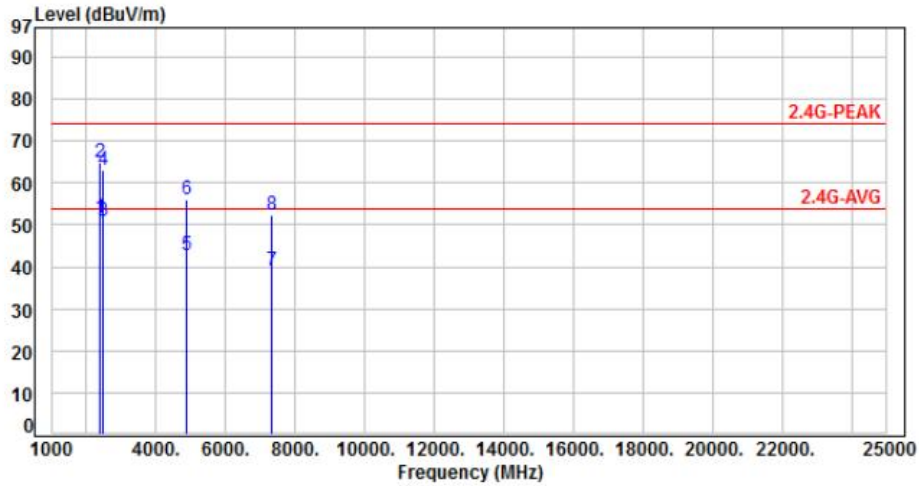


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2370.00	-3.61	56.30	52.69	54.00	-1.31	Average	280	65	P
2	2370.00	-3.61	69.70	66.09	74.00	-7.91	Peak	280	65	P
3	4824.00	3.76	33.49	37.25	54.00	-16.75	Average	100	109	P
4	4824.00	3.76	46.69	50.45	74.00	-23.55	Peak	100	109	P
5	12060.00	13.45	29.75	43.20	54.00	-10.80	Average	100	322	P
6	12060.00	13.45	44.18	57.63	74.00	-16.37	Peak	100	322	P

Note: Level=Reading+Factor  
Margin=Level-Limit  
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH06		:

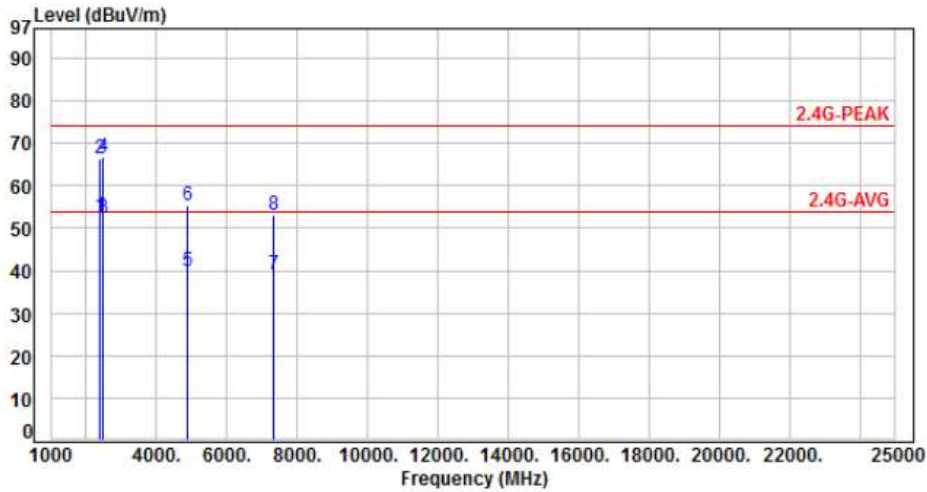


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	55.10	51.46	54.00	-2.54	Average	149	119	P
2	2390.00	-3.64	68.70	65.06	74.00	-8.94	Peak	149	119	P
3	2483.50	-3.30	54.12	50.82	54.00	-3.18	Average	149	119	P
4	2483.50	-3.30	66.49	63.19	74.00	-10.81	Peak	149	119	P
5	4874.00	3.95	38.66	42.61	54.00	-11.39	Average	153	166	P
6	4874.00	3.95	52.12	56.07	74.00	-17.93	Peak	153	166	P
7	7311.00	8.84	30.34	39.18	54.00	-14.82	Average	100	84	P
8	7311.00	8.84	43.52	52.36	74.00	-21.64	Peak	100	84	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH06		:

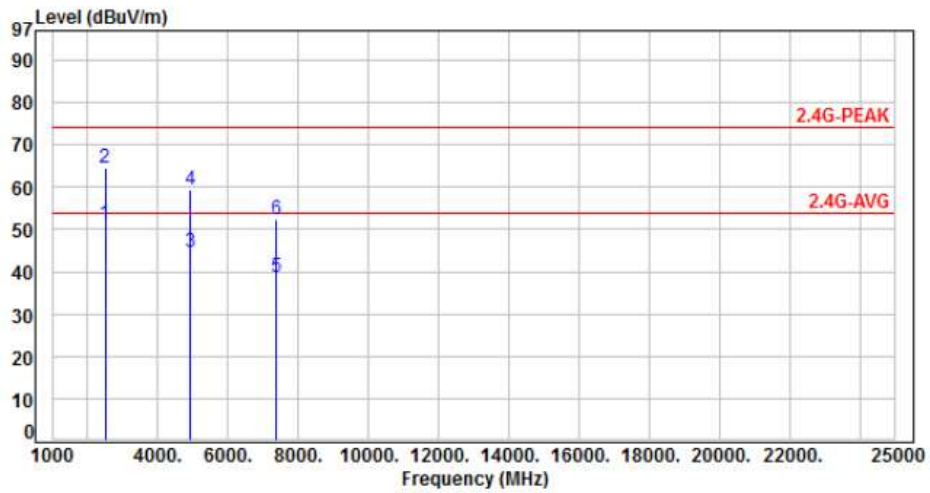


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	56.21	52.57	54.00	-1.43	Average	237	223	P
2	2390.00	-3.64	70.20	66.56	74.00	-7.44	Peak	237	223	P
3	2483.50	-3.30	55.72	52.42	54.00	-1.58	Average	237	223	P
4	2483.50	-3.30	70.07	66.77	74.00	-7.23	Peak	237	223	P
5	4874.00	3.95	36.03	39.98	54.00	-14.02	Average	100	152	P
6	4874.00	3.95	51.30	55.25	74.00	-18.75	Peak	100	152	P
7	7311.00	8.84	30.35	39.19	54.00	-14.81	Average	100	308	P
8	7311.00	8.84	44.22	53.06	74.00	-20.94	Peak	100	308	P

Note: Level=Reading+Factor  
Margin=Level-Limit  
Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 3, CH11		:

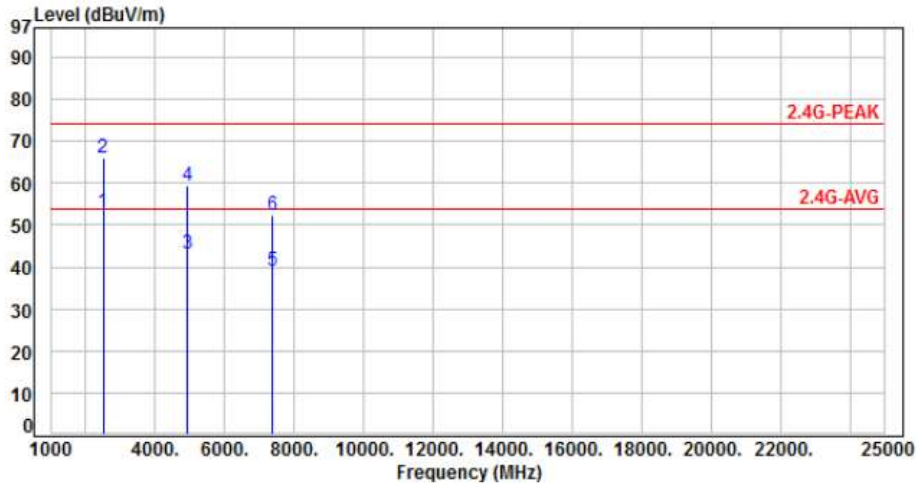


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2500.00	-3.26	54.62	51.36	54.00	-2.64	Average	100	113	P
2	2500.00	-3.26	67.90	64.64	74.00	-9.36	Peak	100	113	P
3	4924.00	4.10	40.36	44.46	54.00	-9.54	Average	137	105	P
4	4924.00	4.10	55.11	59.21	74.00	-14.79	Peak	137	105	P
5	7386.00	8.94	29.86	38.80	54.00	-15.20	Average	100	76	P
6	7386.00	8.94	43.52	52.46	74.00	-21.54	Peak	100	76	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 3, CH11		:

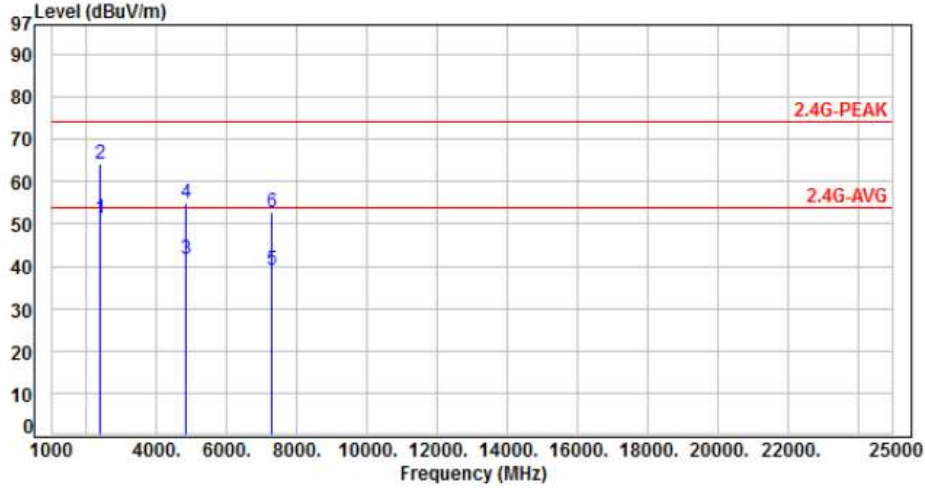


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2500.00	-3.26	56.20	52.94	54.00	-1.06	Average	254	70	P
2	2500.00	-3.26	69.22	65.96	74.00	-8.04	Peak	254	70	P
3	4924.00	4.10	38.99	43.09	54.00	-10.91	Average	244	163	P
4	4924.00	4.10	55.28	59.38	74.00	-14.62	Peak	244	163	P
5	7386.00	8.94	30.34	39.28	54.00	-14.72	Average	100	342	P
6	7386.00	8.94	43.28	52.22	74.00	-21.78	Peak	100	342	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH03		:



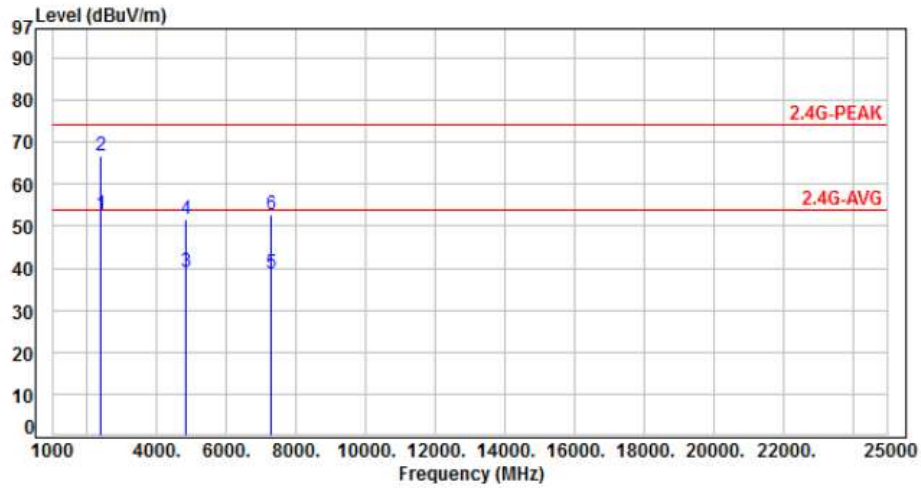
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	54.79	51.15	54.00	-2.85	Average	146	117	P
2	2390.00	-3.64	67.95	64.31	74.00	-9.69	Peak	146	117	P
3	4844.00	3.85	37.85	41.70	54.00	-12.30	Average	115	110	P
4	4844.00	3.85	51.20	55.05	74.00	-18.95	Peak	115	110	P
5	7266.00	8.62	30.35	38.97	54.00	-15.03	Average	100	88	P
6	7266.00	8.62	44.20	52.82	74.00	-21.18	Peak	100	88	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor





Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH03		:

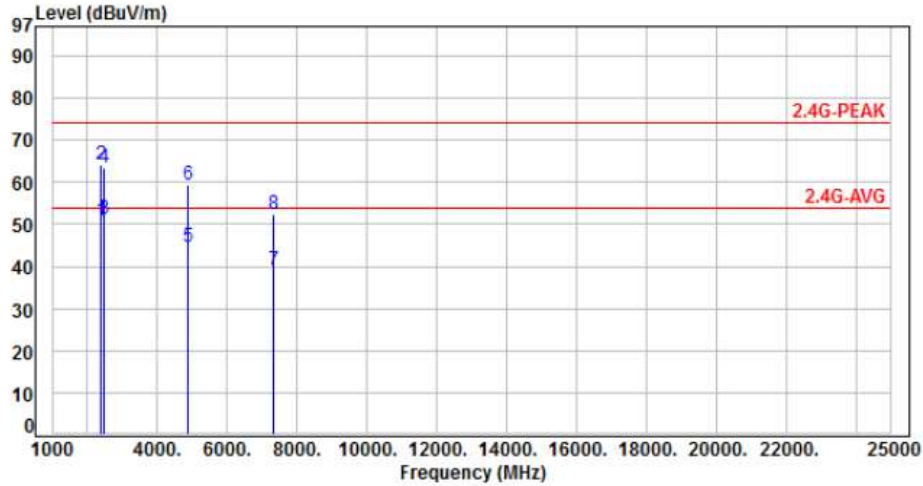


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	56.56	52.92	54.00	-1.08	Average	351	63	P
2	2390.00	-3.64	70.30	66.66	74.00	-7.34	Peak	351	63	P
3	4844.00	3.85	35.34	39.19	54.00	-14.81	Average	188	113	P
4	4844.00	3.85	47.80	51.65	74.00	-22.35	Peak	188	113	P
5	7266.00	8.62	30.07	38.69	54.00	-15.31	Average	100	322	P
6	7266.00	8.62	43.94	52.56	74.00	-21.44	Peak	100	322	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH06		:

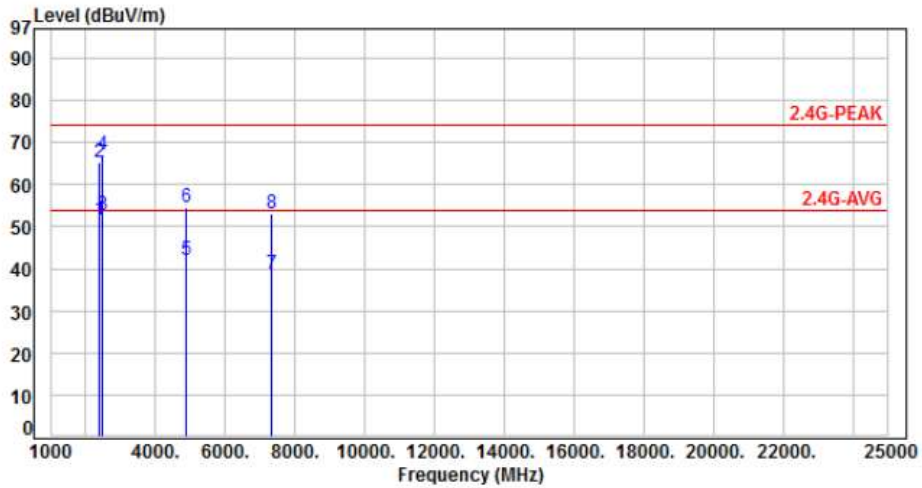


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	54.65	51.01	54.00	-2.99	Average	150	120	P
2	2390.00	-3.64	67.80	64.16	74.00	-9.84	Peak	150	120	P
3	2483.50	-3.30	54.65	51.35	54.00	-2.65	Average	150	120	P
4	2483.50	-3.30	66.91	63.61	74.00	-10.39	Peak	150	120	P
5	4874.00	3.95	40.52	44.47	54.00	-9.53	Average	100	103	P
6	4874.00	3.95	55.41	59.36	74.00	-14.64	Peak	100	103	P
7	7311.00	8.84	30.31	39.15	54.00	-14.85	Average	100	85	P
8	7311.00	8.84	43.67	52.51	74.00	-21.49	Peak	100	85	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH06		:

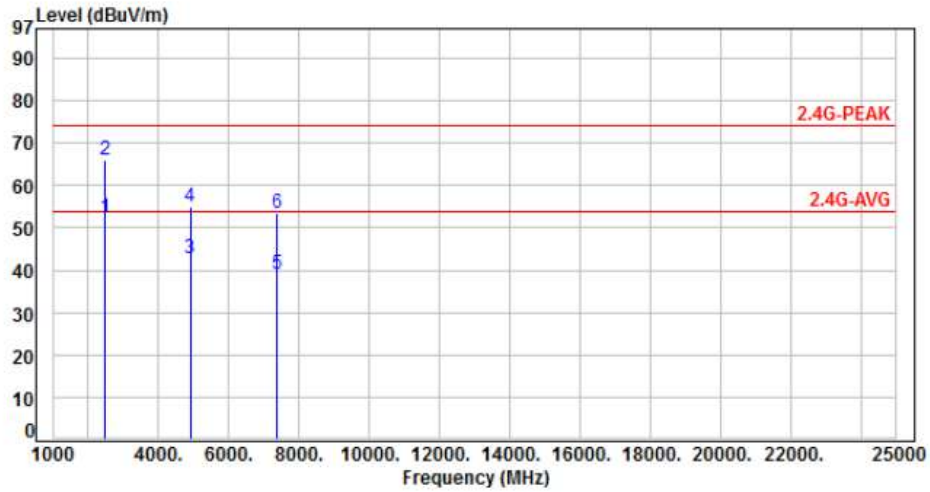


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-3.64	55.10	51.46	54.00	-2.54	Average	313	39	P
2	2390.00	-3.64	68.80	65.16	74.00	-8.84	Peak	313	39	P
3	2483.50	-3.30	56.20	52.90	54.00	-1.10	Average	313	39	P
4	2483.50	-3.30	70.31	67.01	74.00	-6.99	Peak	313	39	P
5	4874.00	3.95	38.20	42.15	54.00	-11.85	Average	235	104	P
6	4874.00	3.95	50.68	54.63	74.00	-19.37	Peak	235	104	P
7	7311.00	8.84	29.87	38.71	54.00	-15.29	Average	100	318	P
8	7311.00	8.84	44.24	53.08	74.00	-20.92	Peak	100	318	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 4, CH09		:

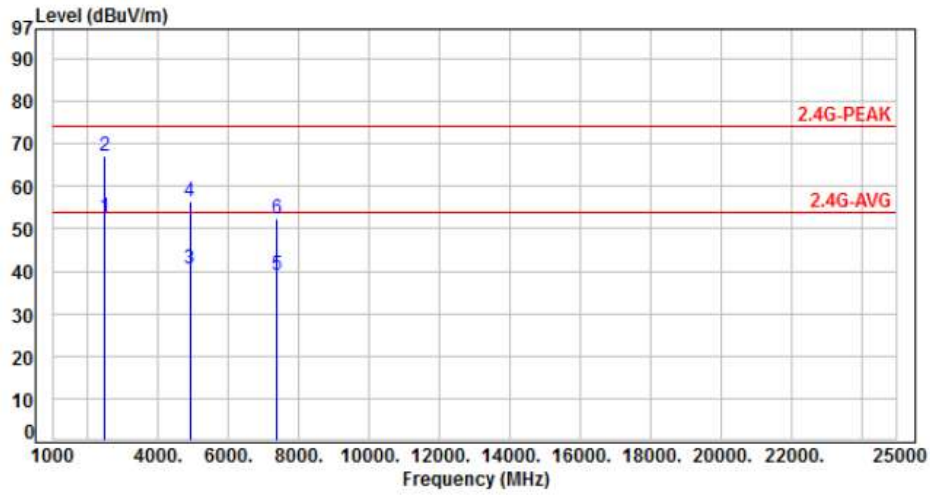


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-3.30	55.72	52.42	54.00	-1.58	Average	100	120	P
2	2483.50	-3.30	69.31	66.01	74.00	-7.99	Peak	100	120	P
3	4904.00	4.05	38.91	42.96	54.00	-11.04	Average	113	158	P
4	4904.00	4.05	51.01	55.06	74.00	-18.94	Peak	113	158	P
5	7356.00	8.86	30.23	39.09	54.00	-14.91	Average	100	61	P
6	7356.00	8.86	44.52	53.38	74.00	-20.62	Peak	100	61	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 4, CH09		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-3.30	56.19	52.89	54.00	-1.11	Average	400	31	P
2	2483.50	-3.30	70.34	67.04	74.00	-6.96	Peak	400	31	P
3	4904.00	4.05	36.53	40.58	54.00	-13.42	Average	167	139	P
4	4904.00	4.05	52.43	56.48	74.00	-17.52	Peak	167	139	P
5	7356.00	8.86	30.11	38.97	54.00	-15.03	Average	100	328	P
6	7356.00	8.86	43.51	52.37	74.00	-21.63	Peak	100	328	P

Note: Level=Reading+Factor  
 Margin=Level-Limit  
 Factor=Antenna Factor + cable loss - Amplifier Factor



### 6.7 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

\*\* : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz



## 7. Test of Conducted Spurious Emission

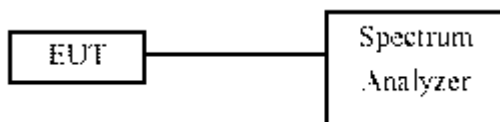
### 7.1 Test Limit

Below -30dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

### 7.2 Test Procedure

- a. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- c. Average conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 30dB relative to the maximum measured in-band peak PSD level.
- d. The band edges was measured and recorded.

### 7.3 Test Setup Layout



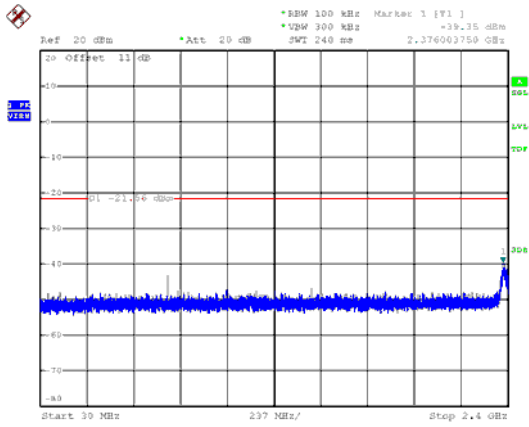
### 7.4 Test Result and Data

Note: Test plots refers to the following pages.

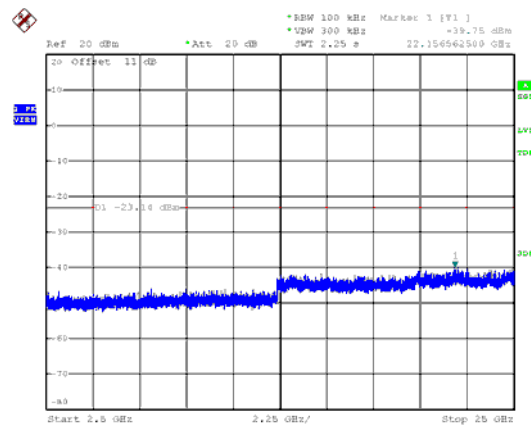
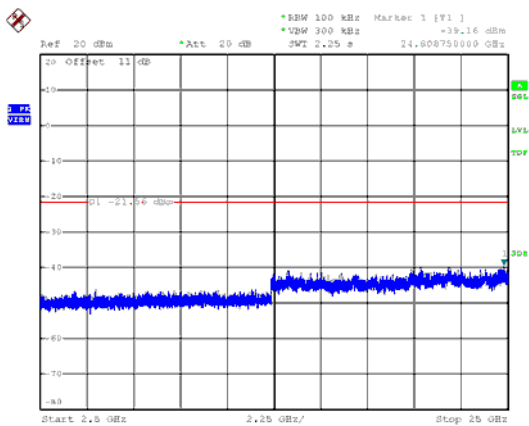
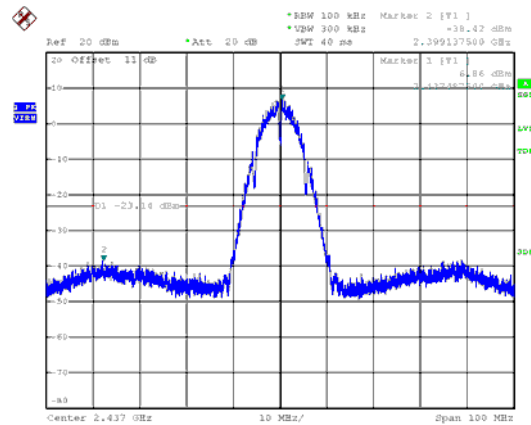
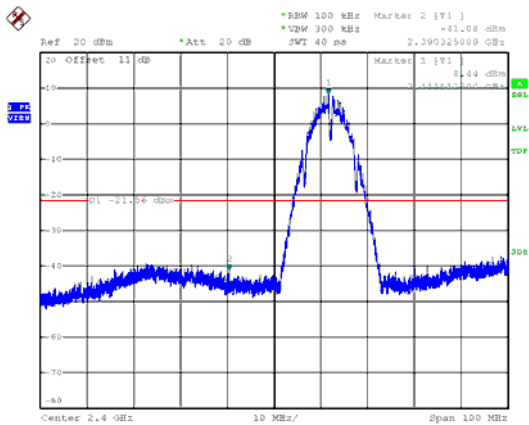
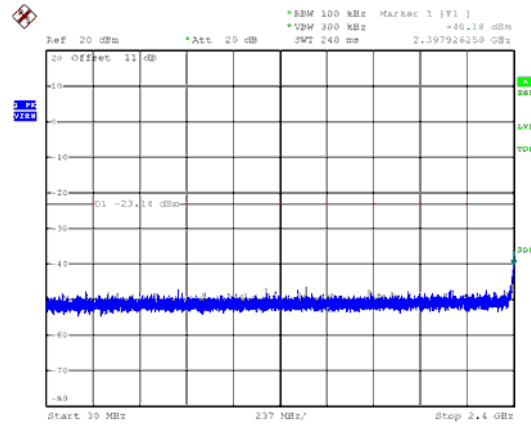


ANT A

Modulation Type: 802.11b, CH 01



Modulation Type: 802.11b, CH 06

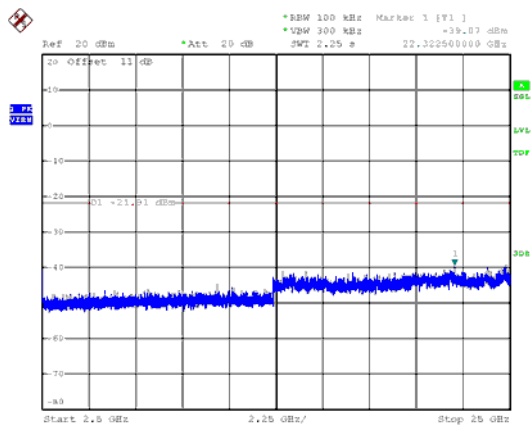
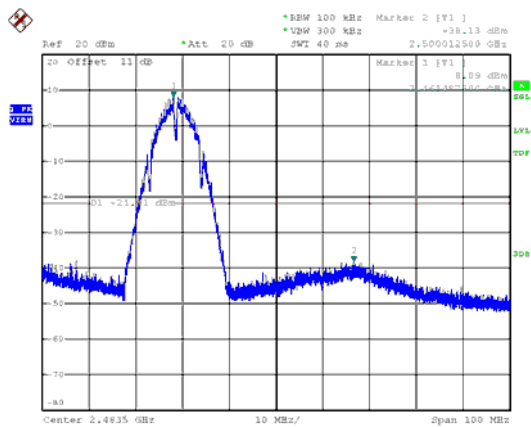
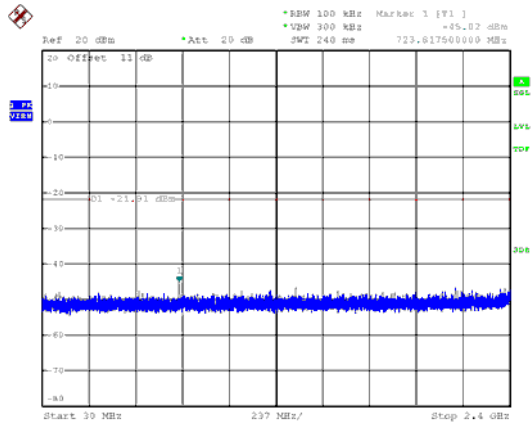






ANT A

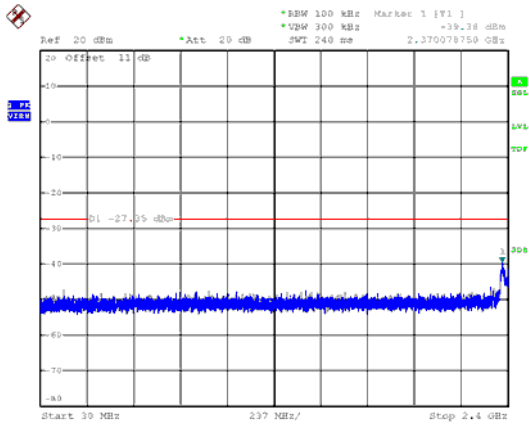
Modulation Type: 802.11b, CH 11



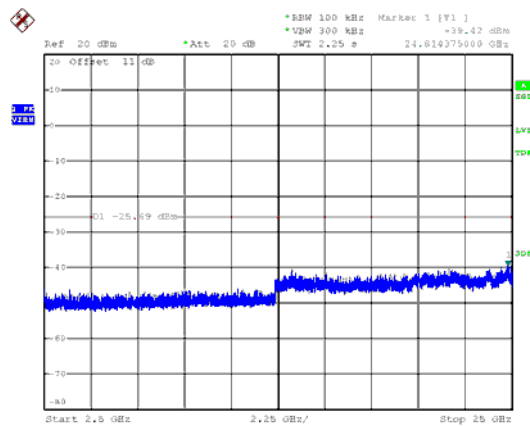
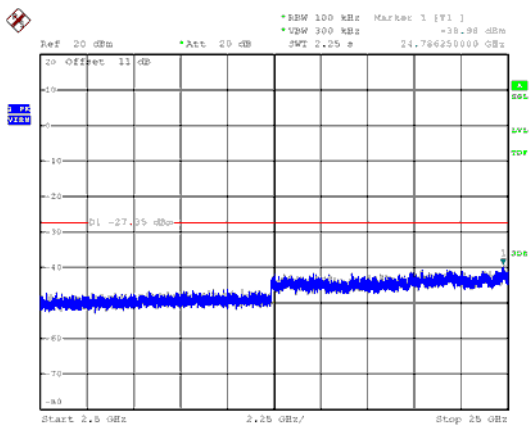
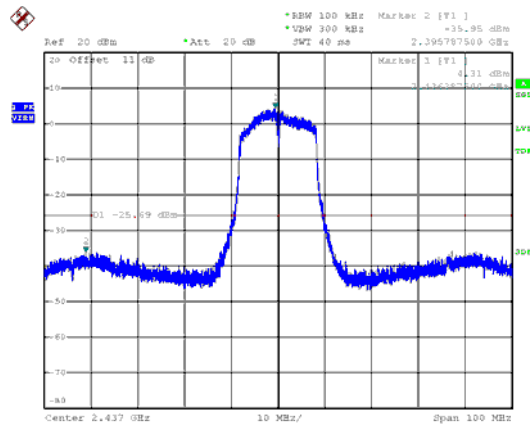
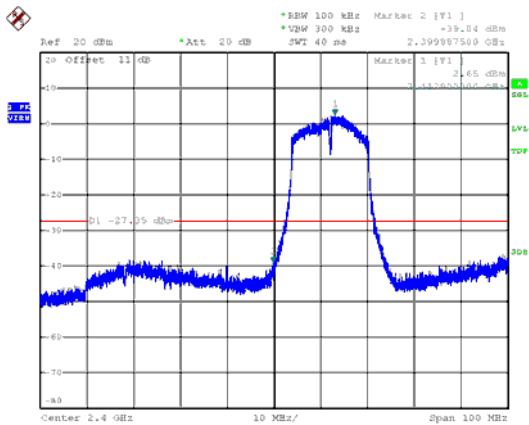
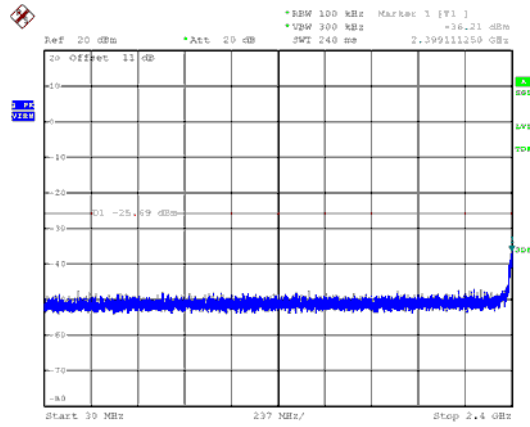


ANT A

Modulation Type: 802.11g, CH 01



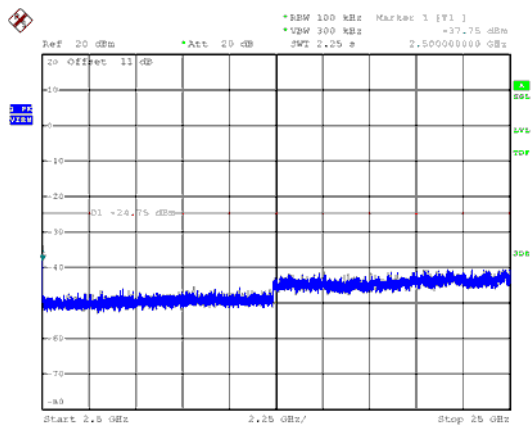
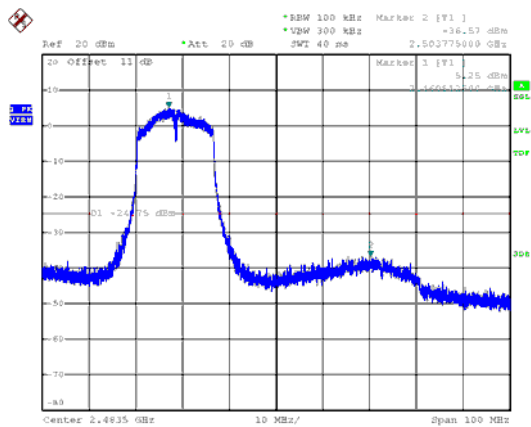
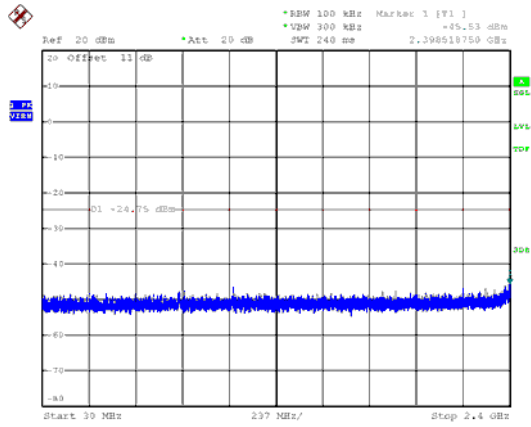
Modulation Type: 802.11g, CH 06





ANT A

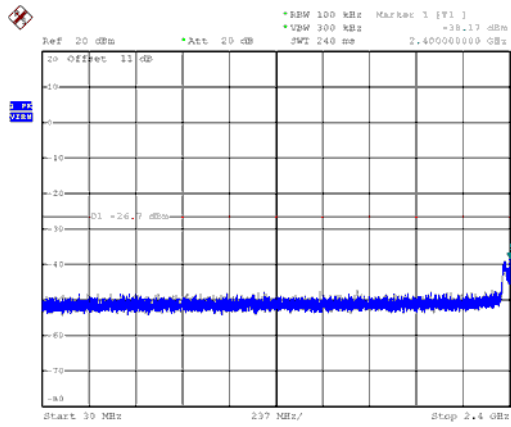
Modulation Type: 802.11g, CH 11



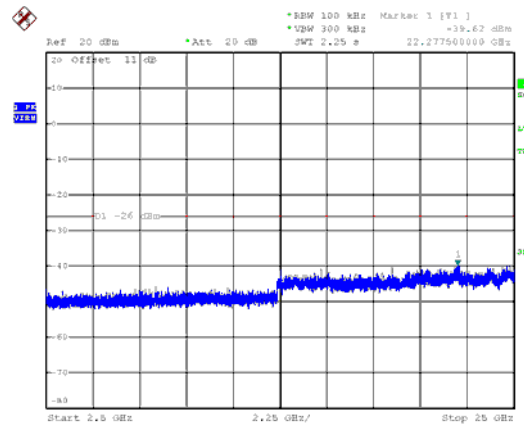
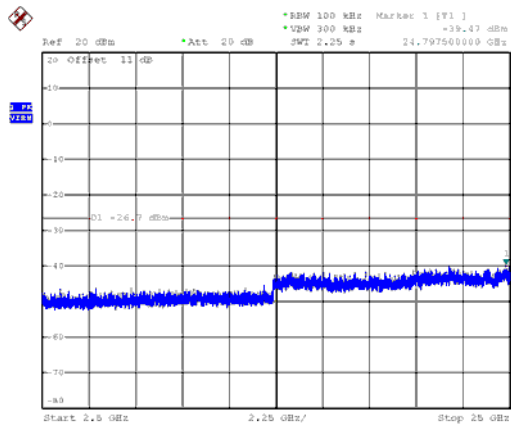
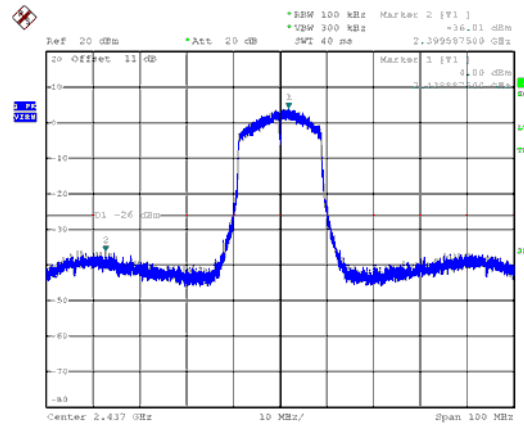
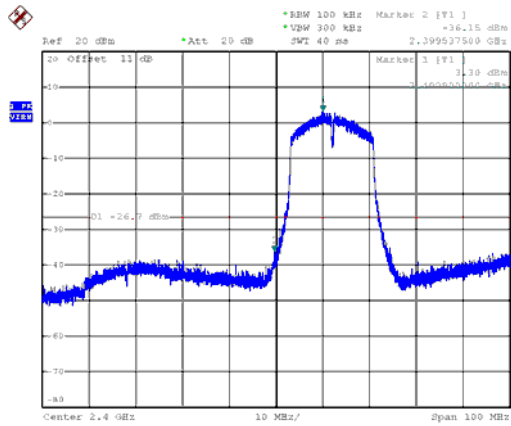
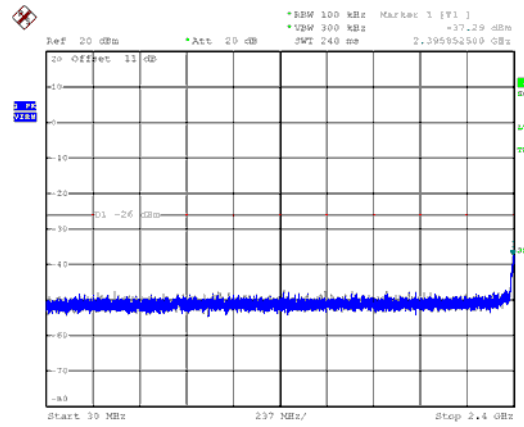


ANT A

Modulation Type: 802.11n HT20, CH01



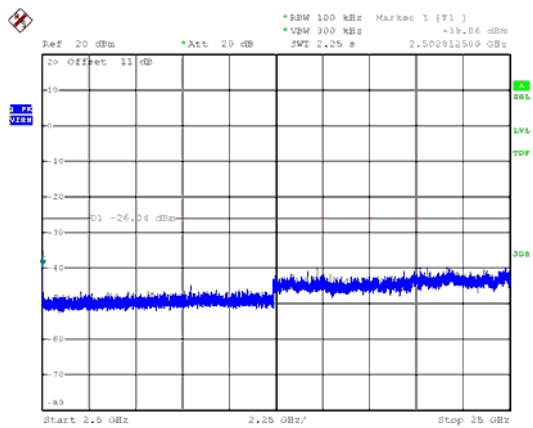
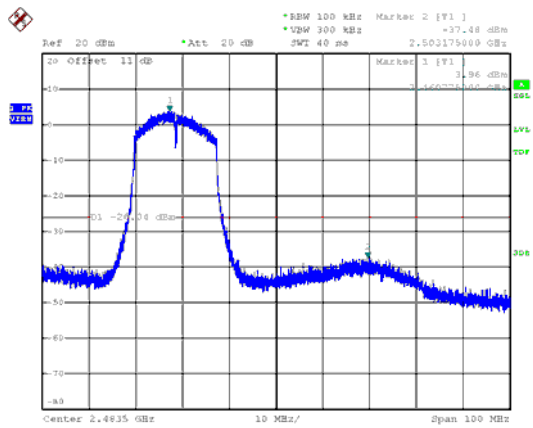
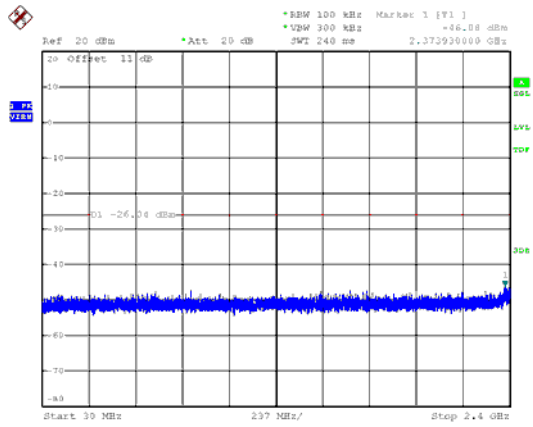
Modulation Type: 802.11n HT20, CH06





ANT A

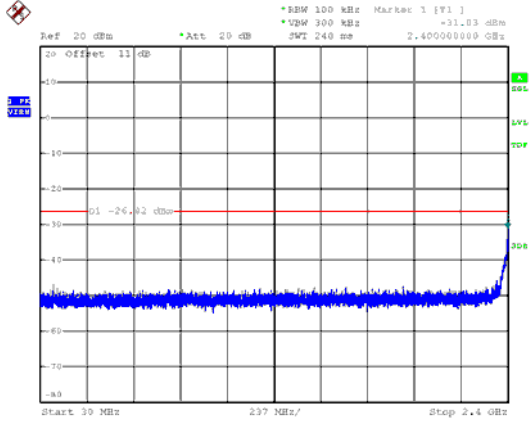
Modulation Type: 802.11n HT20, CH11



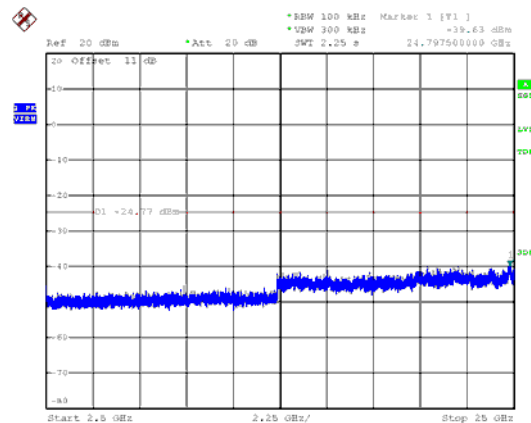
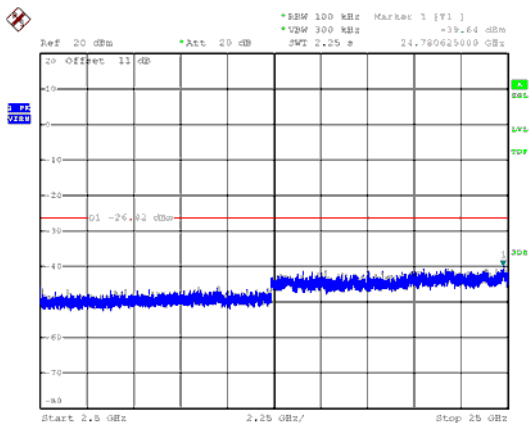
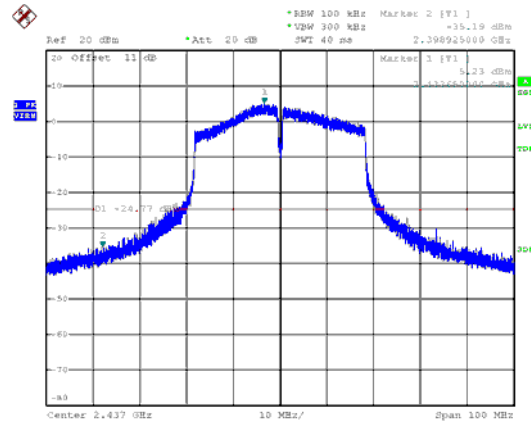
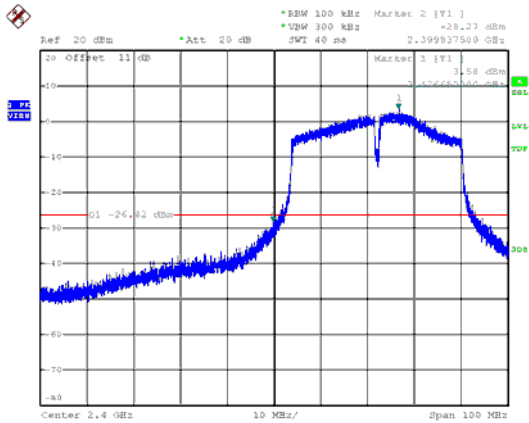
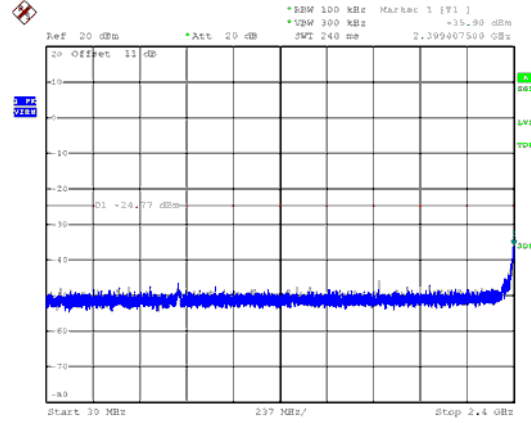


ANT A

Modulation Type: 802.11n HT40, CH03



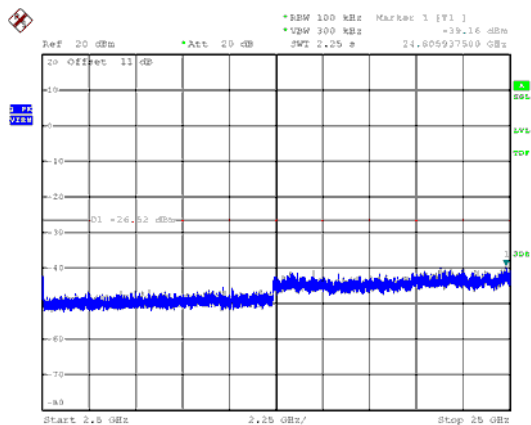
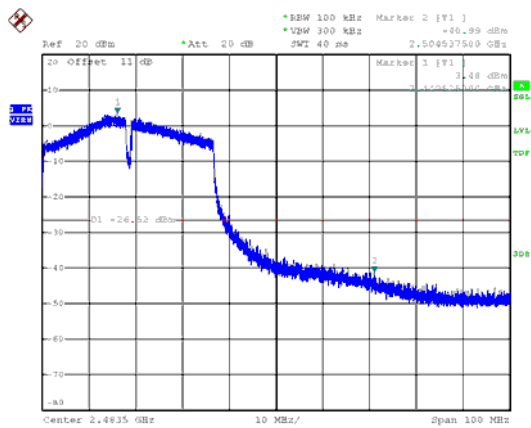
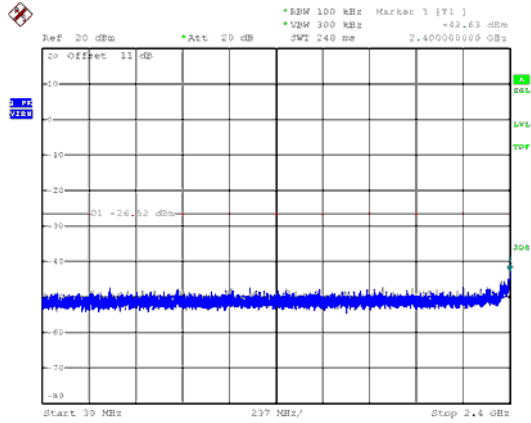
Modulation Type: 802.11n HT40, CH06





ANT A

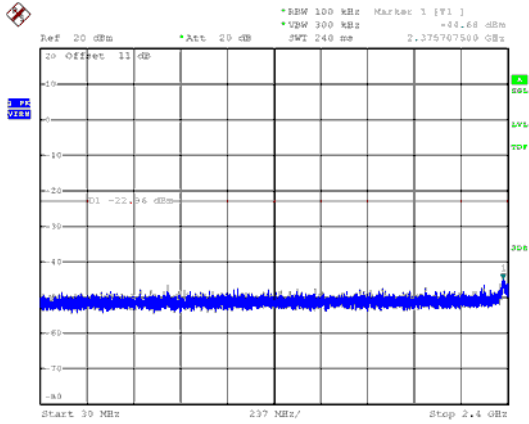
Modulation Type: 802.11n HT40, CH09



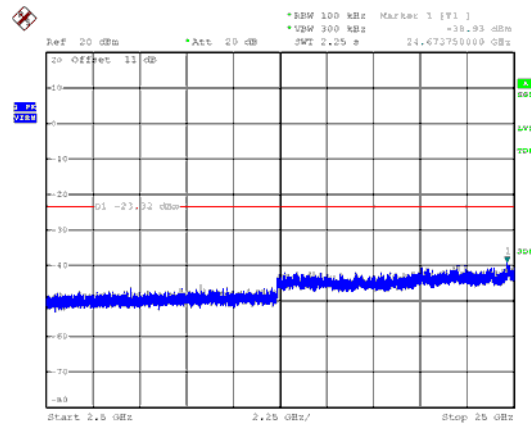
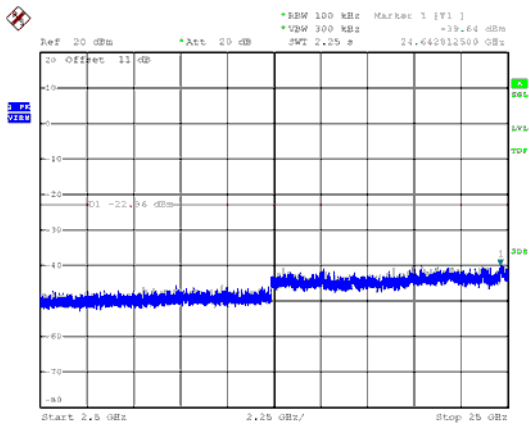
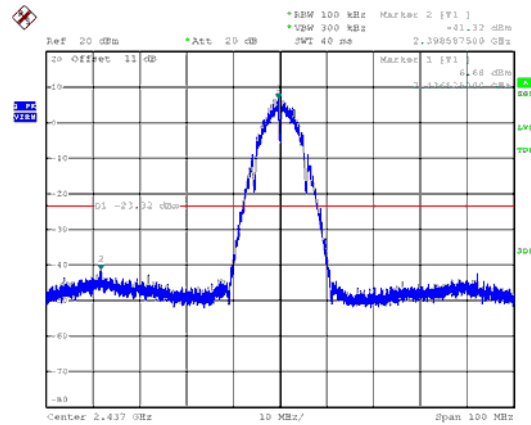
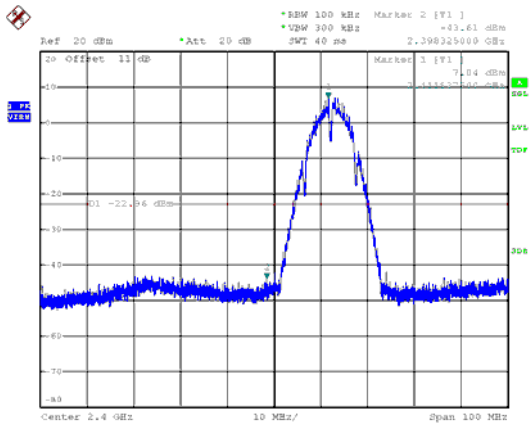
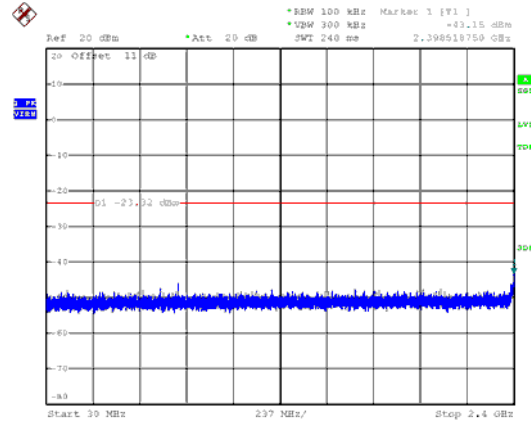


ANT B

Modulation Type: 802.11b, CH 01



Modulation Type: 802.11b, CH 06



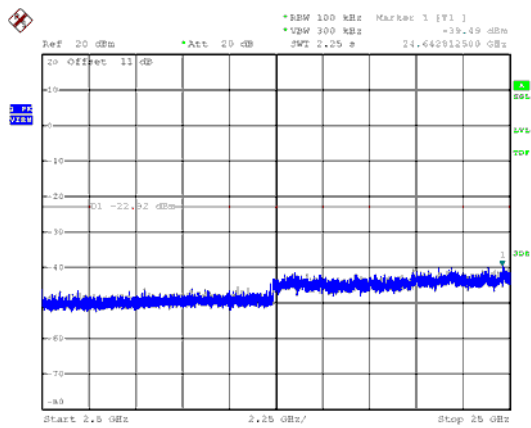
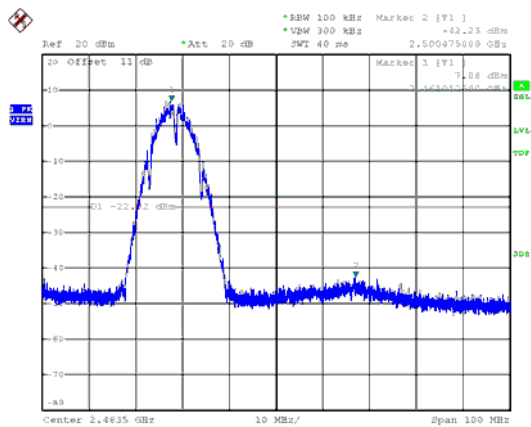
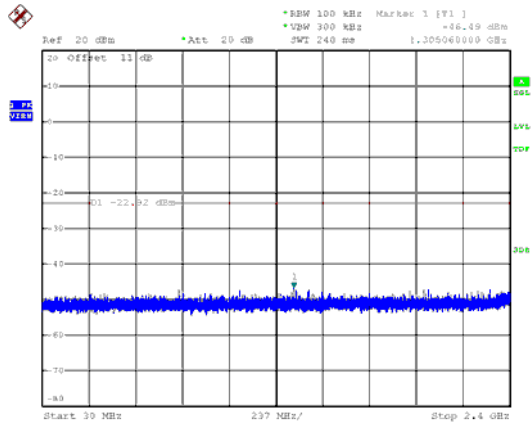






ANT B

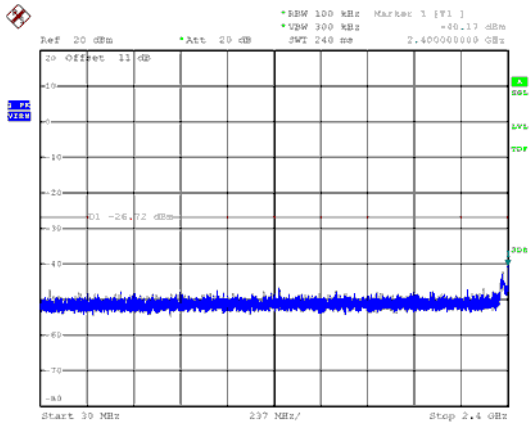
Modulation Type: 802.11b, CH 11



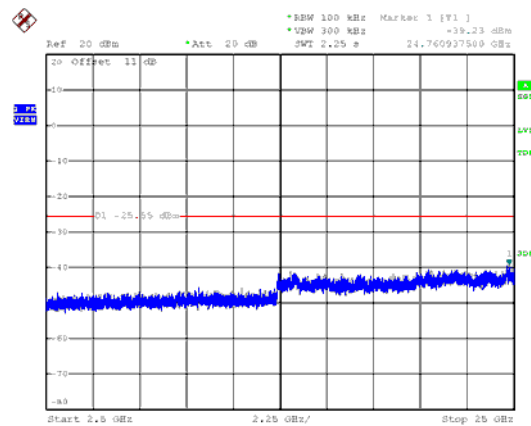
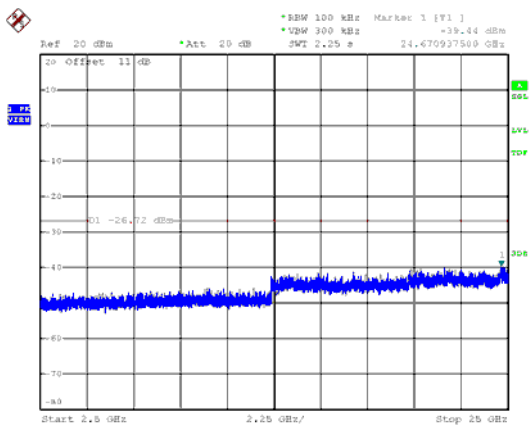
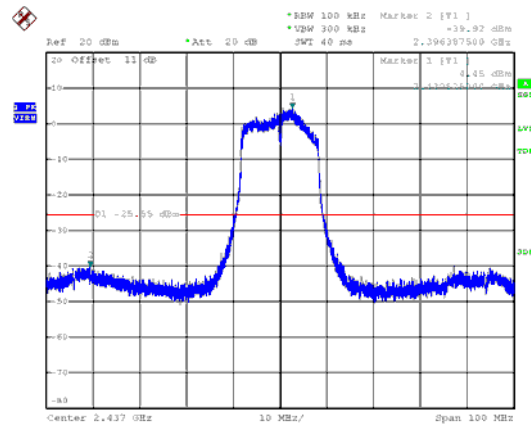
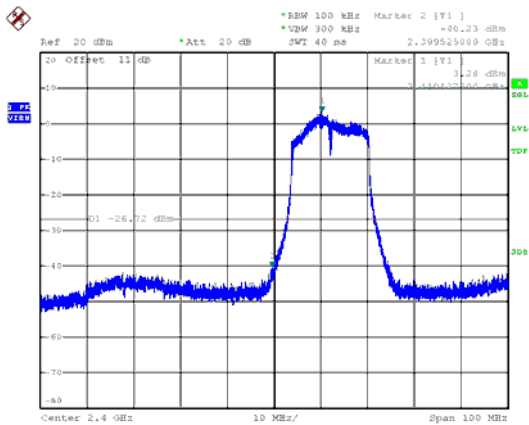
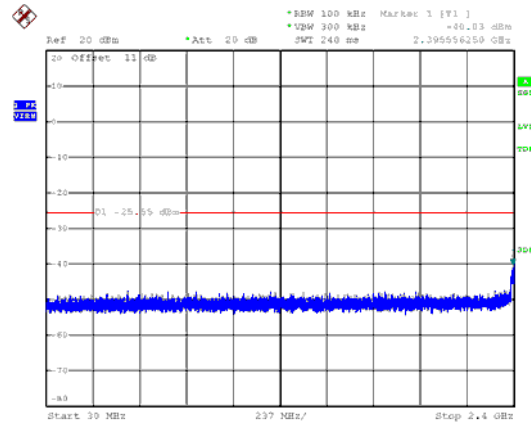


ANT B

Modulation Type: 802.11g, CH 01



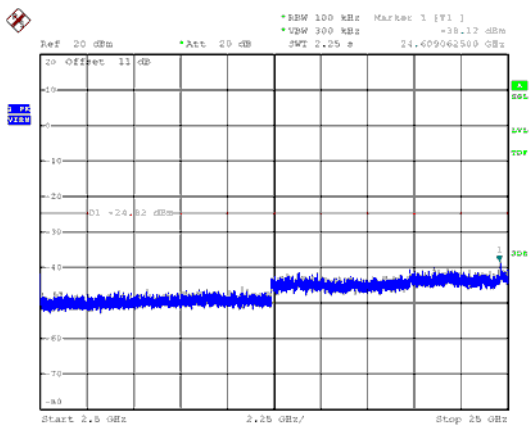
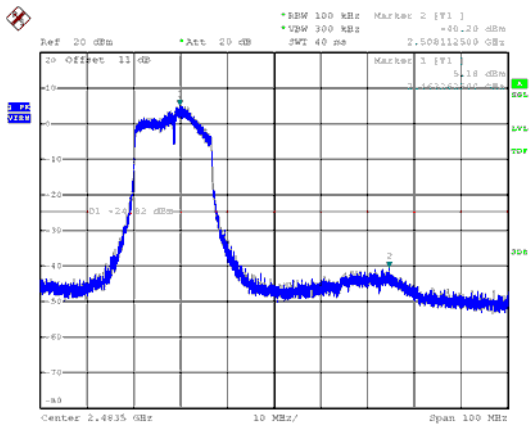
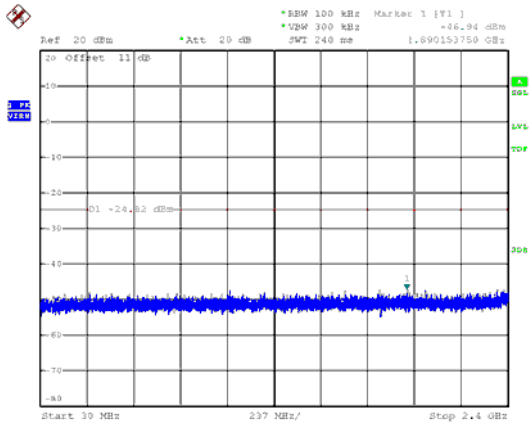
Modulation Type: 802.11g, CH 06





ANT B

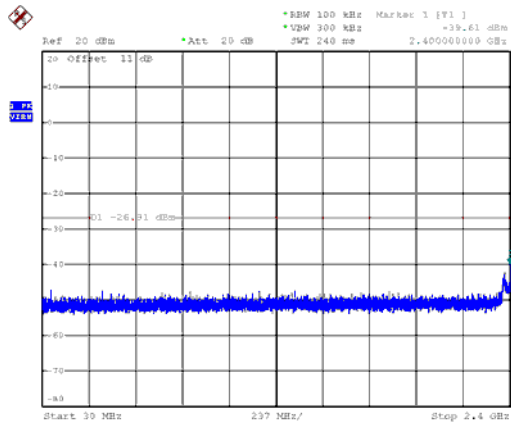
Modulation Type: 802.11g, CH 11



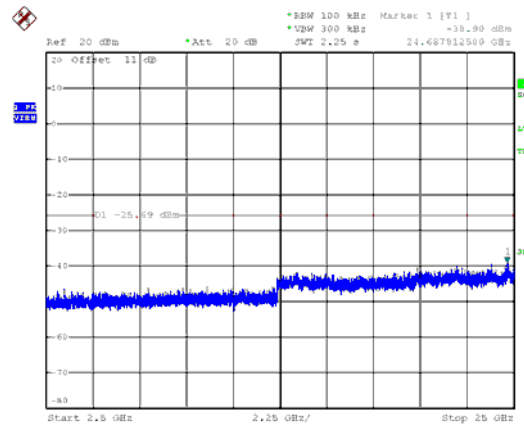
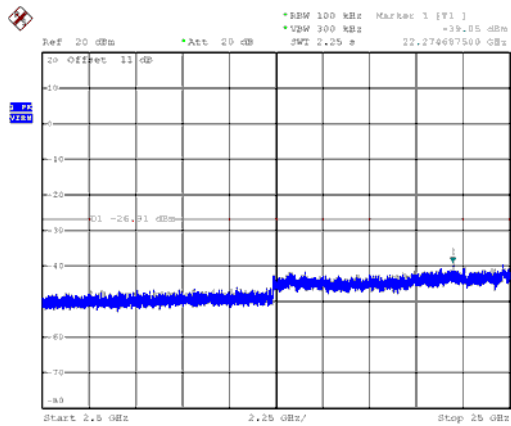
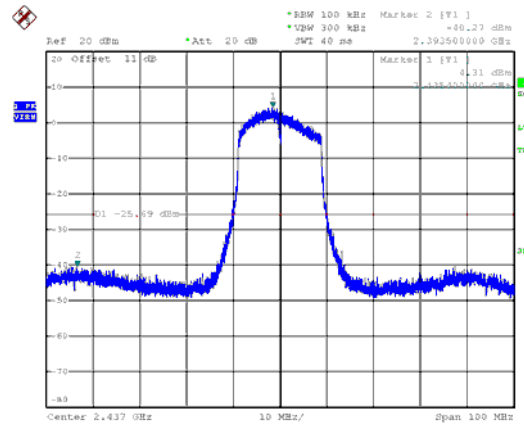
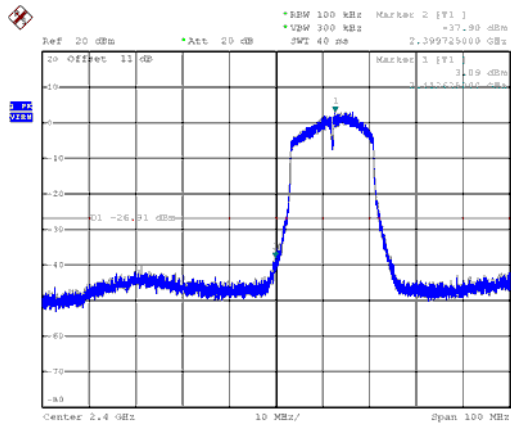
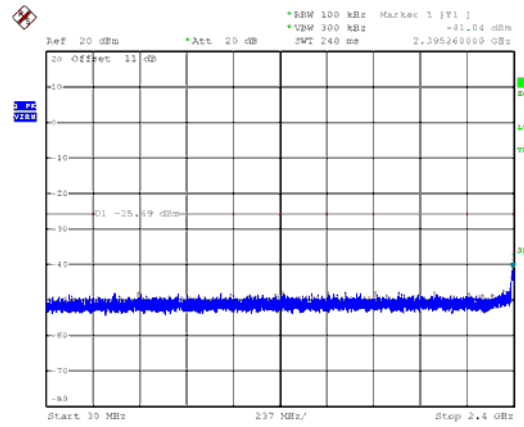


ANT B

Modulation Type: 802.11n HT20, CH01



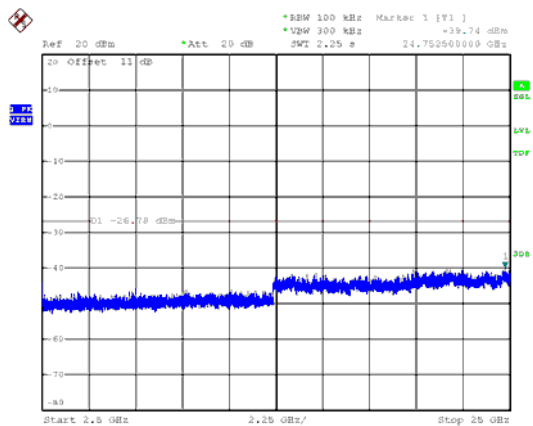
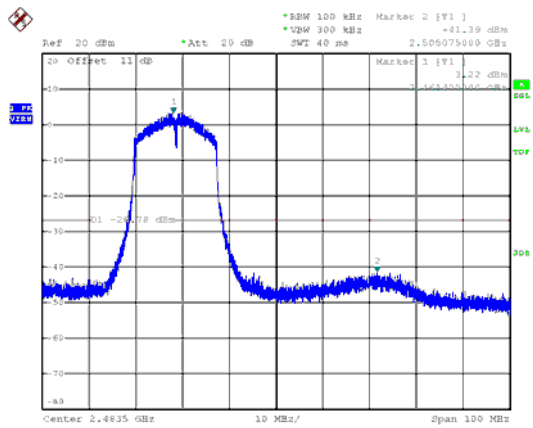
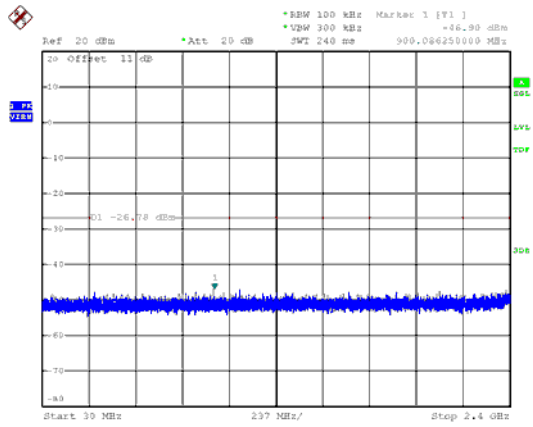
Modulation Type: 802.11n HT20, CH06





ANT B

Modulation Type: 802.11n HT20, CH11

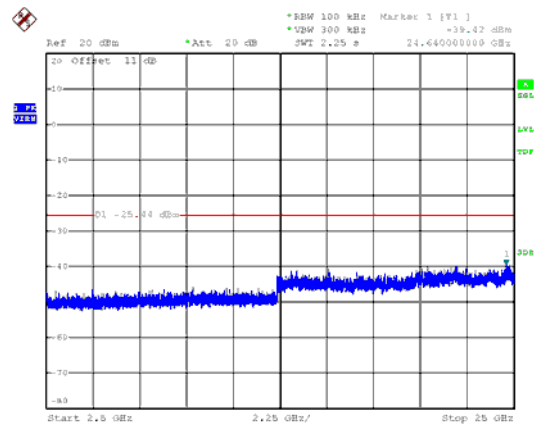
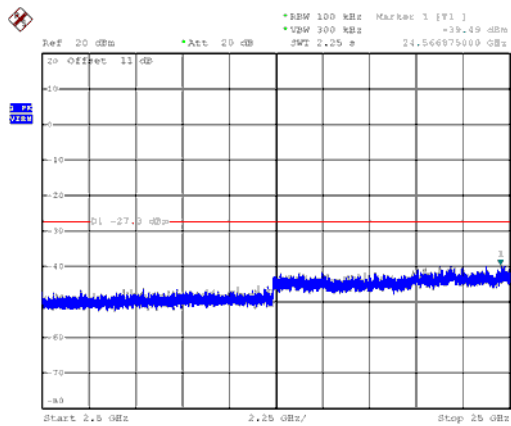
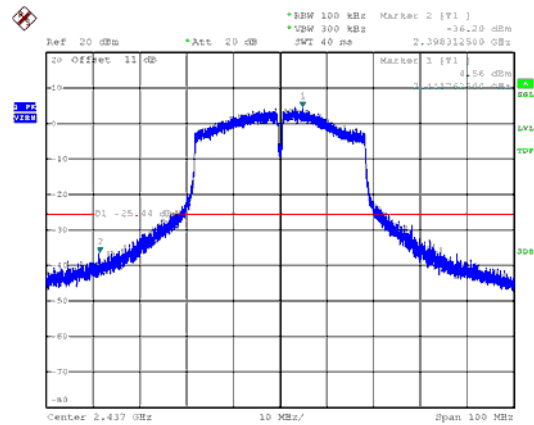
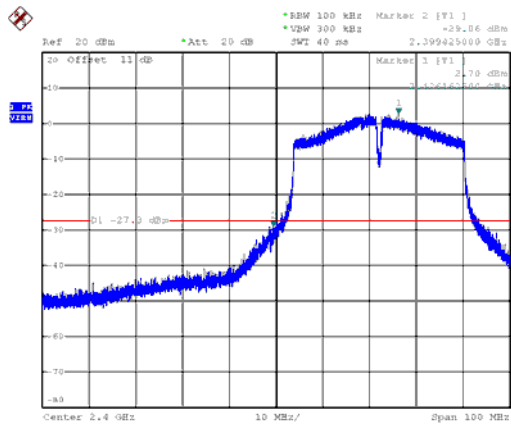
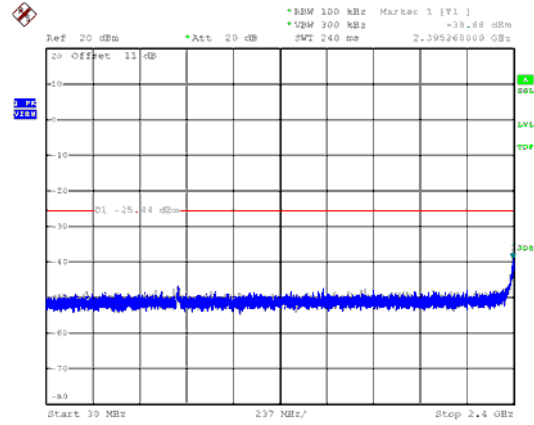
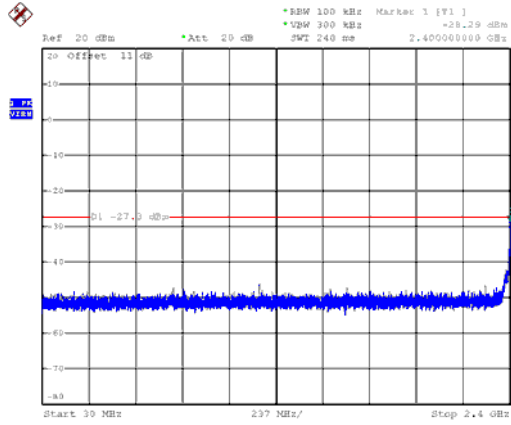




ANT B

Modulation Type: 802.11n HT40, CH03

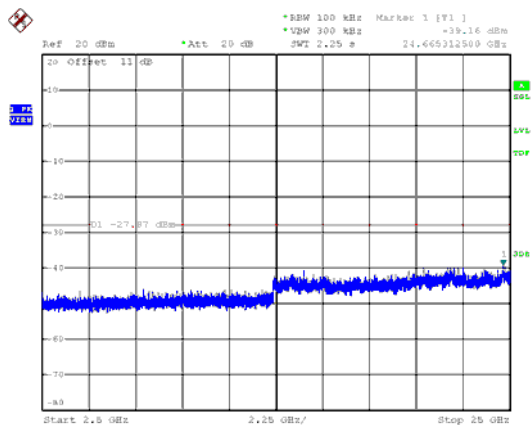
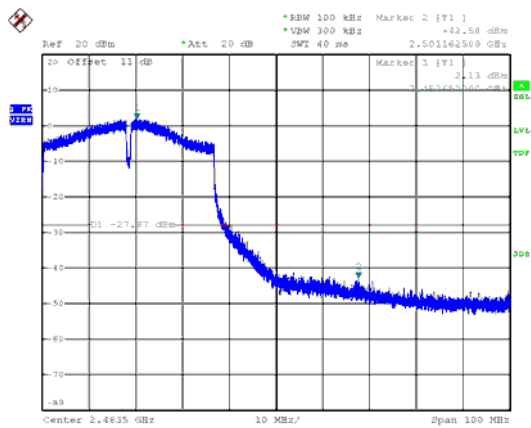
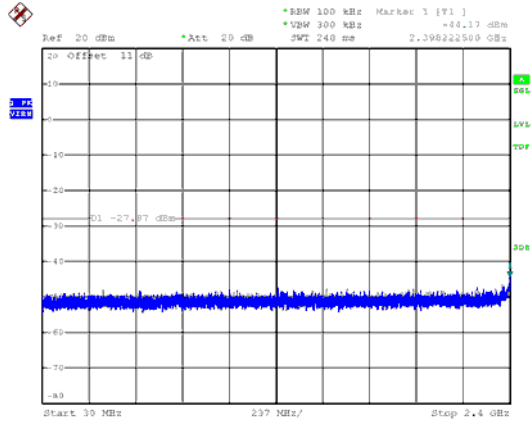
Modulation Type: 802.11n HT40, CH06





ANT B

Modulation Type: 802.11n HT40, CH09

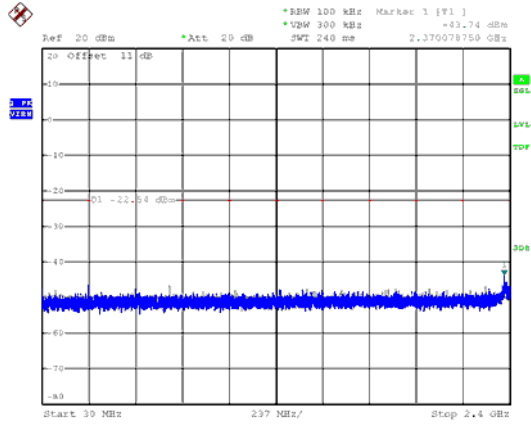




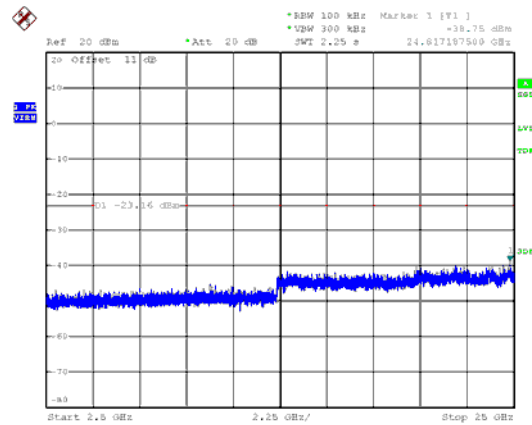
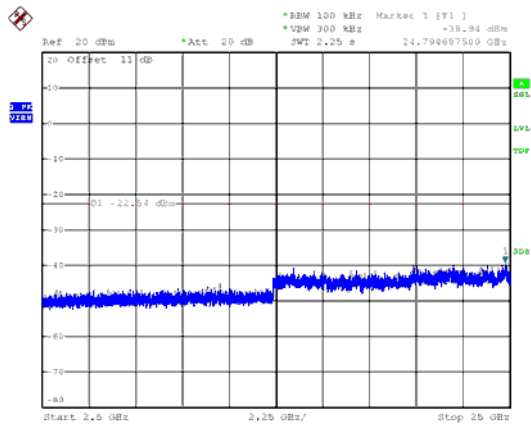
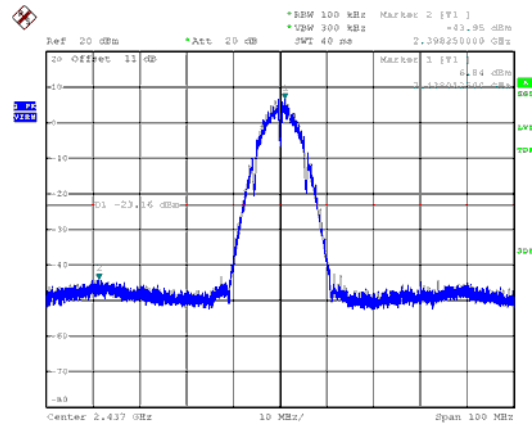
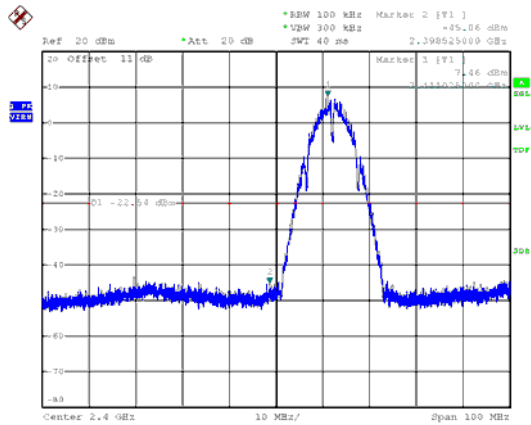
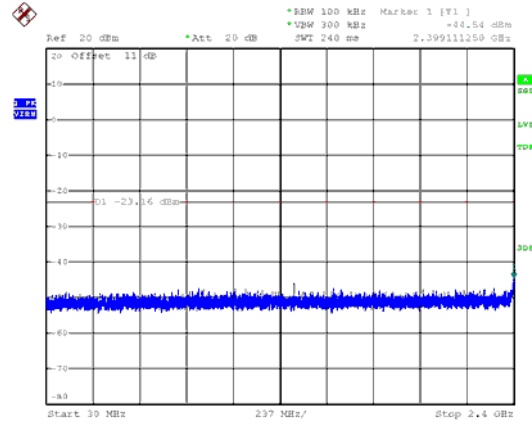


ANT C

Modulation Type: 802.11b, CH 01



Modulation Type: 802.11b, CH 06

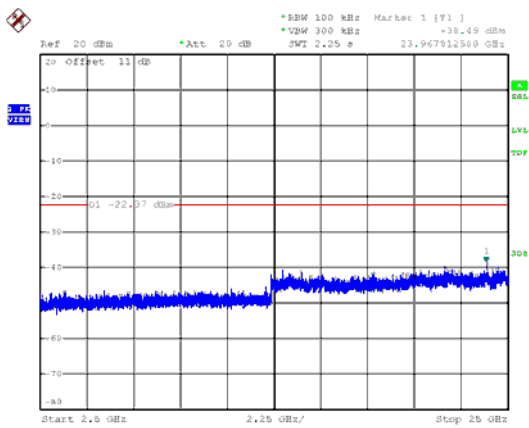
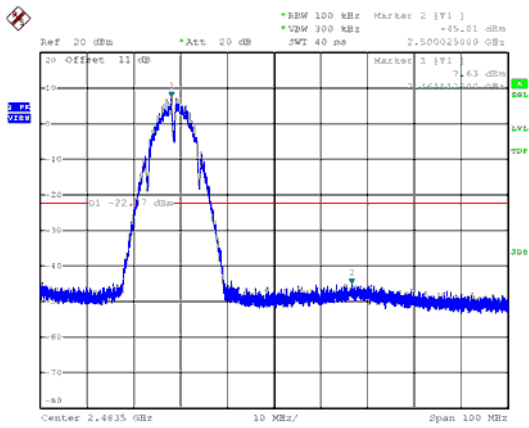
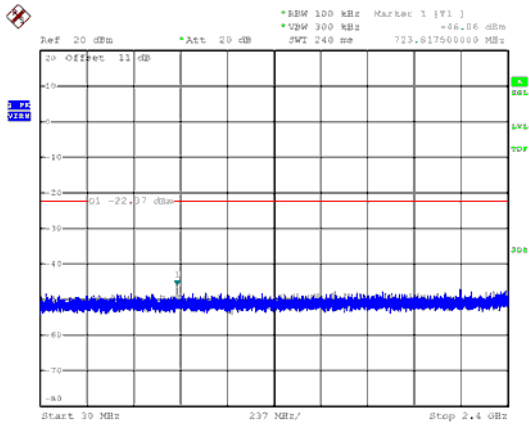






ANT C

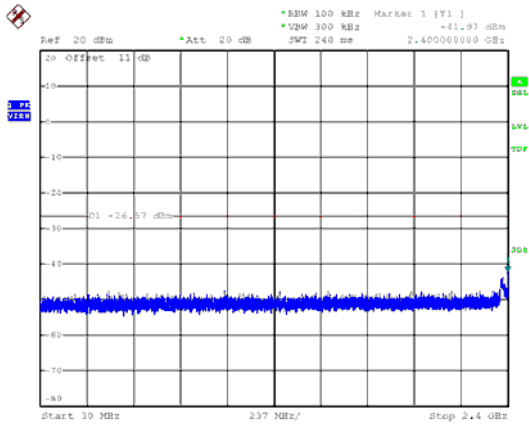
Modulation Type: 802.11b, CH 11



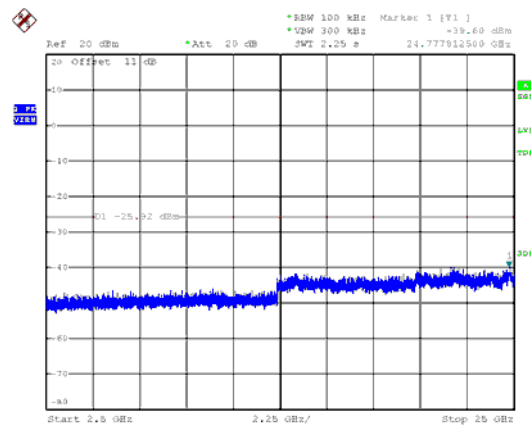
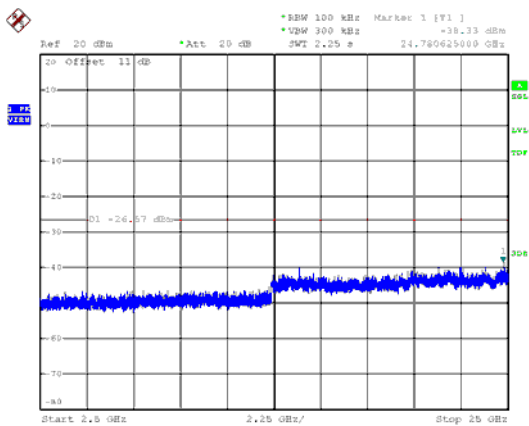
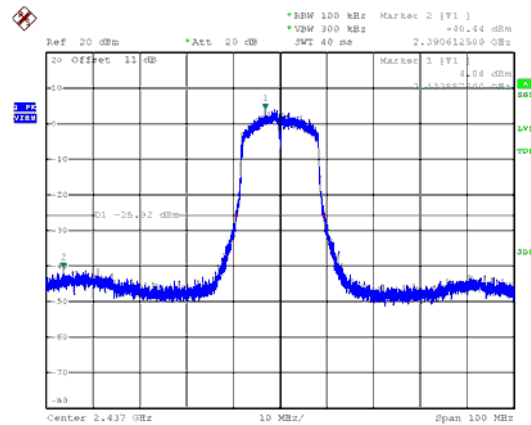
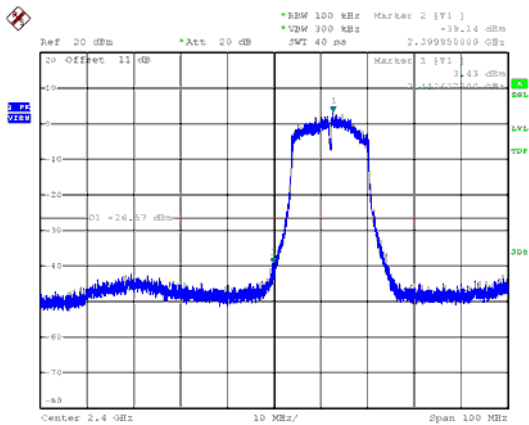
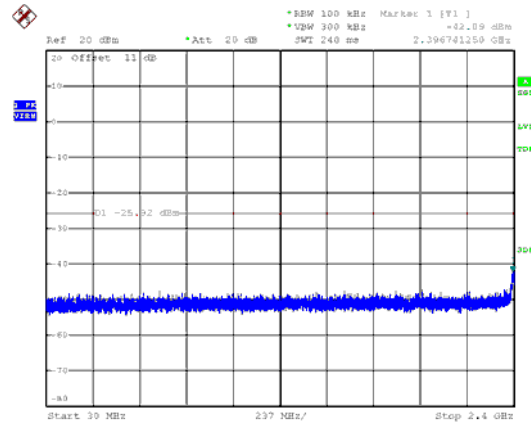


ANT C

Modulation Type: 802.11g, CH 01



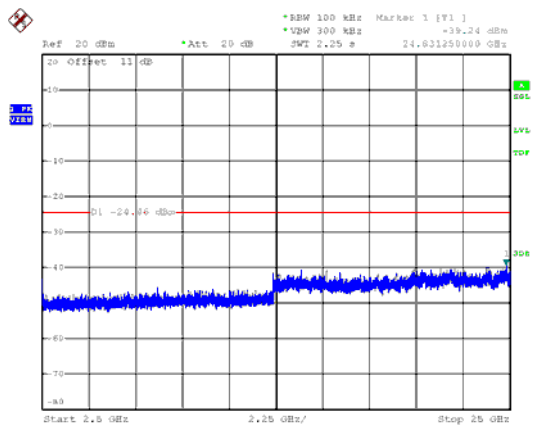
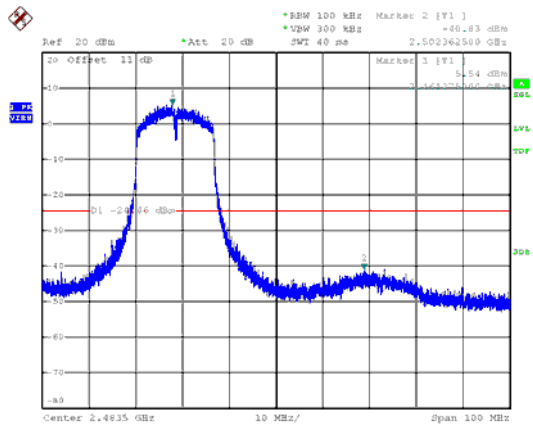
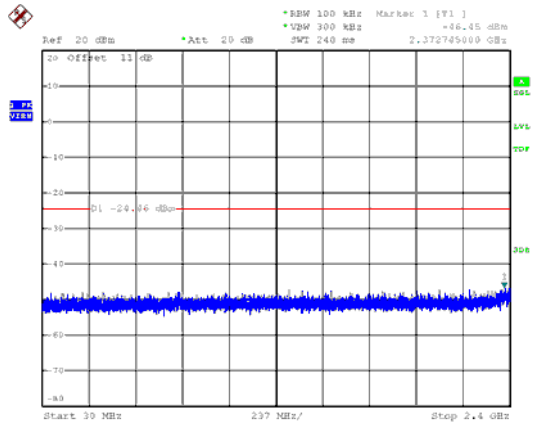
Modulation Type: 802.11g, CH 06





ANT C

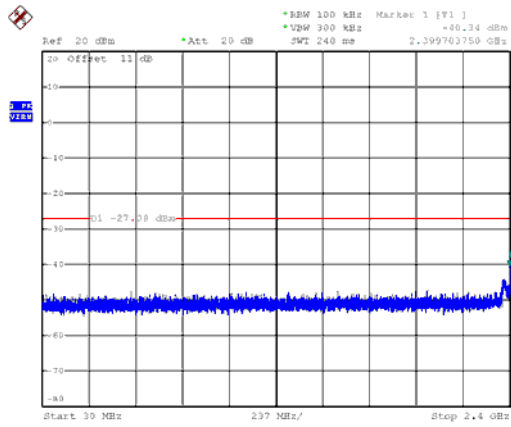
Modulation Type: 802.11g, CH 11



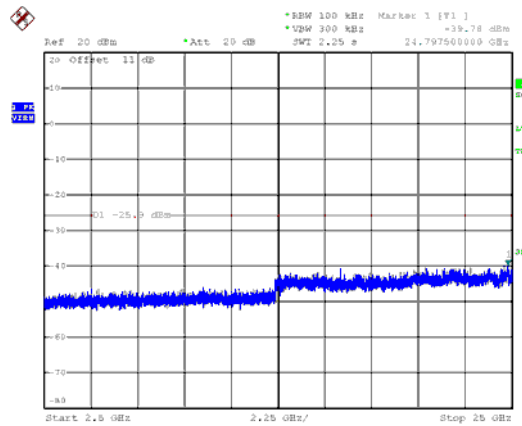
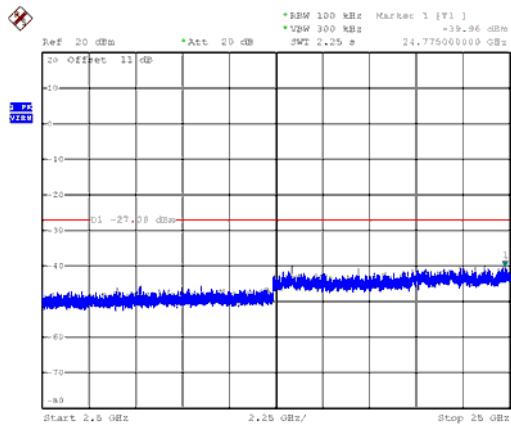
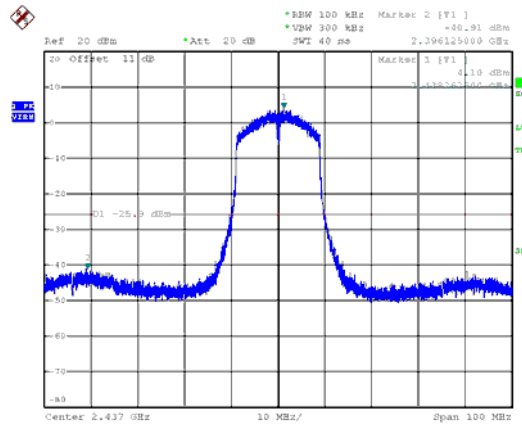
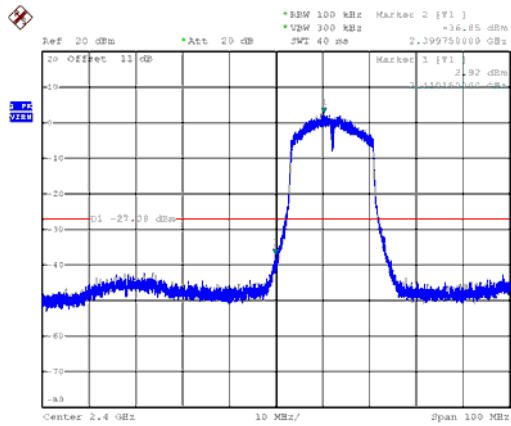
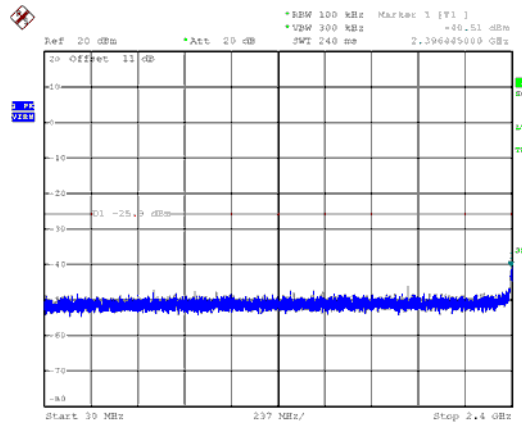


ANT C

Modulation Type: 802.11n HT20, CH01



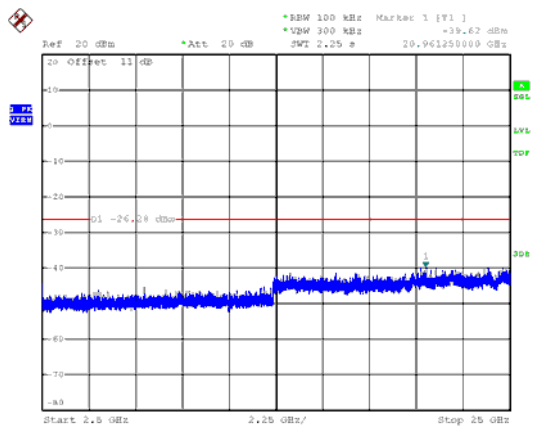
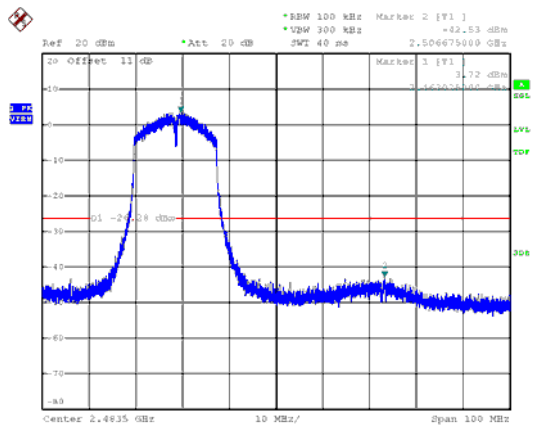
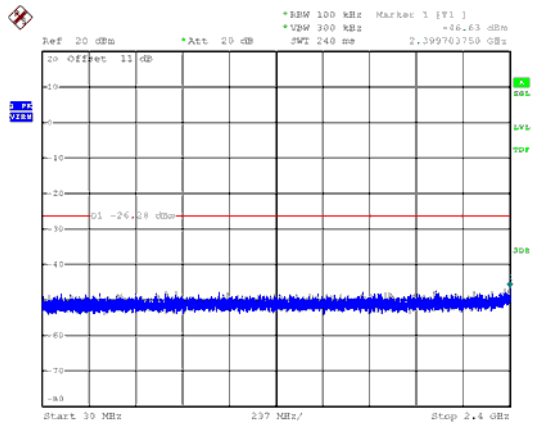
Modulation Type: 802.11n HT20, CH06





ANT C

Modulation Type: 802.11n HT20, CH11

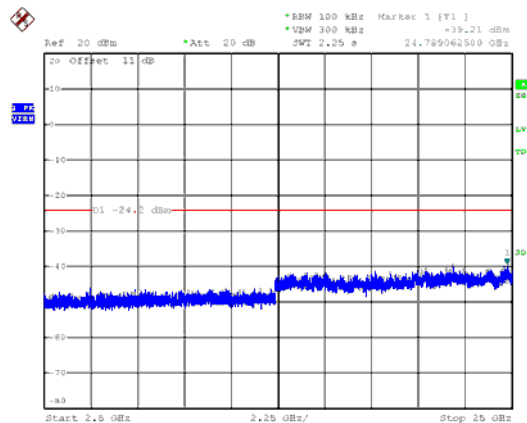
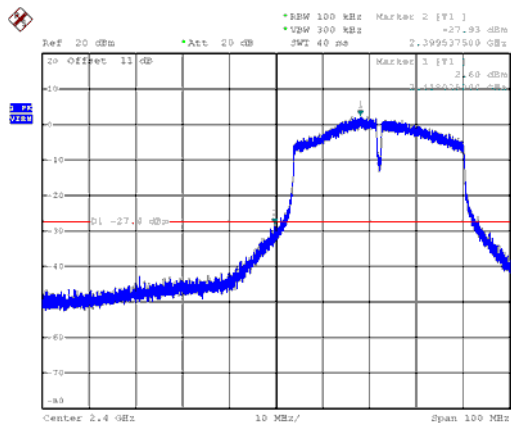
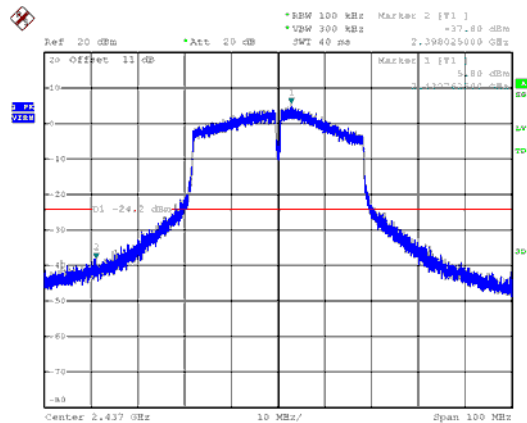
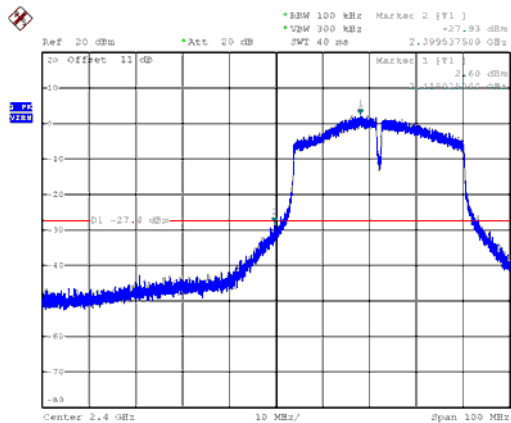
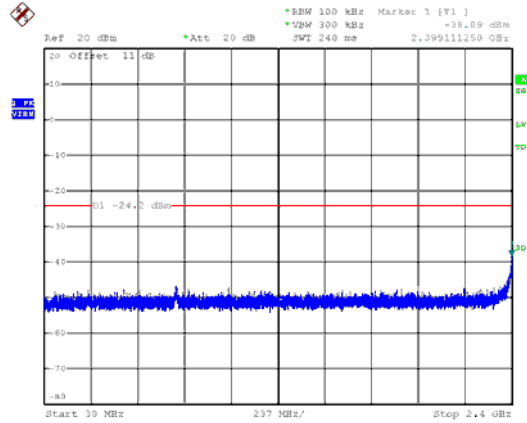
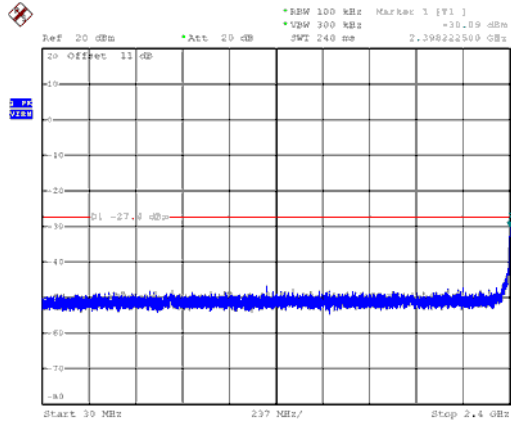




ANT C

Modulation Type: 802.11n HT40, CH03

Modulation Type: 802.11n HT40, CH06

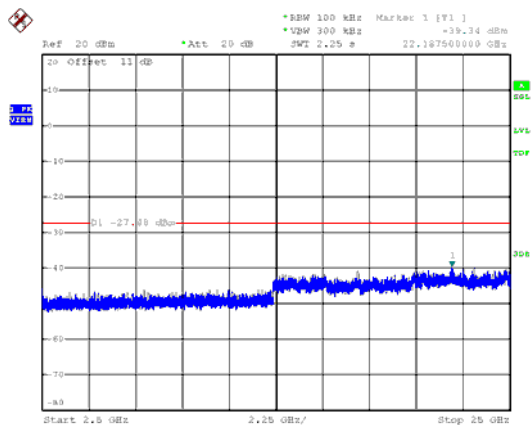
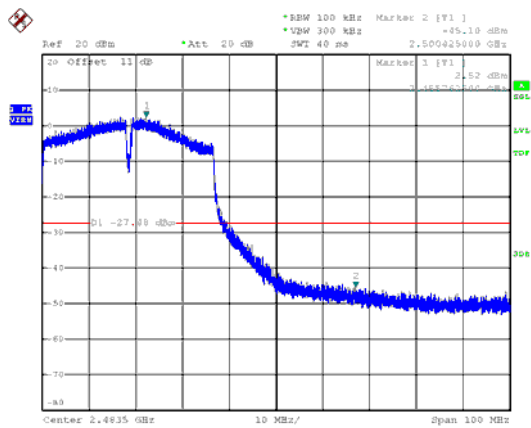
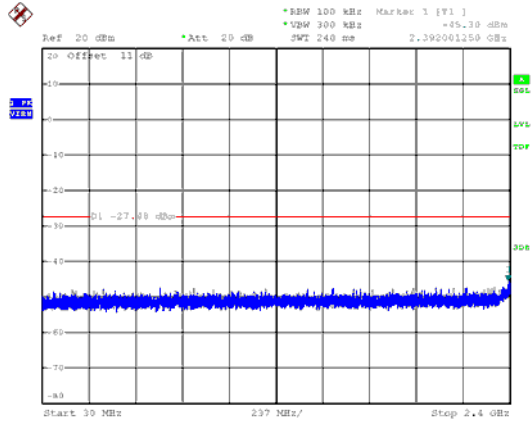






ANT C

Modulation Type: 802.11n HT40, CH9







## 8. On Time, Duty Cycle and Measurement methods

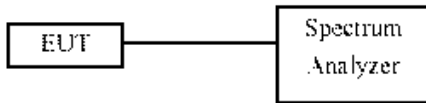
### 8.1 Test Limit

None; for reporting purposes only.

### 8.2 Test Procedure

Zero-Span Spectrum Analyzer Method.

### 8.3 Test Setup Layout

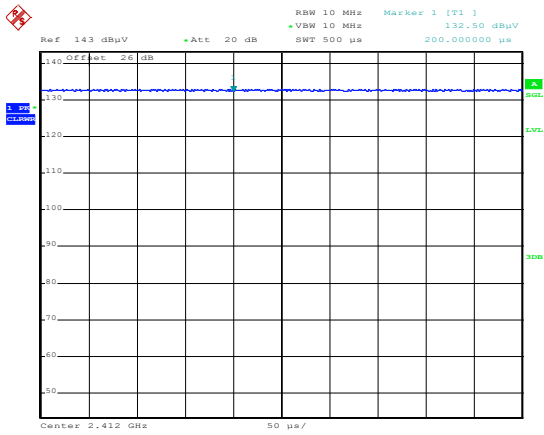


### 8.4 Test Result and Data

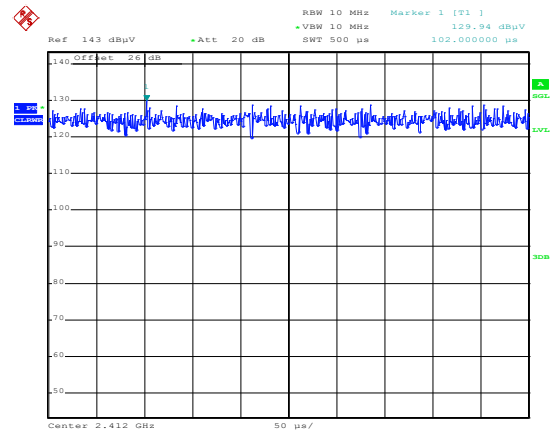
Modulation Type	On Time (msec)	Period Time (msec)	Duty Cycle (%)
802.11b	100.00	100.00	100.00%
802.11g	100.00	100.00	100.00%
802.11n HT20	100.00	100.00	100.00%
802.11n HT40	100.00	100.00	100.00%



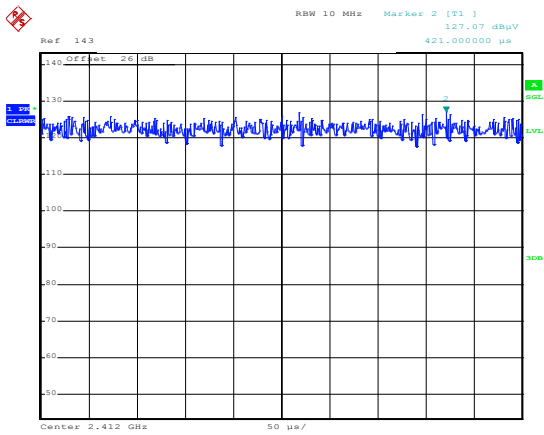
Modulation Type: 802.11b (1Mbps)



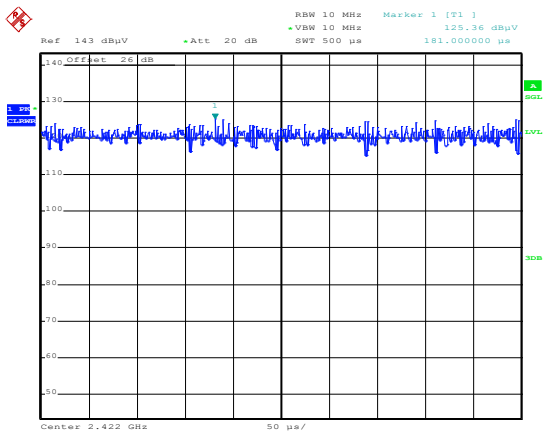
Modulation Type: 802.11g (6Mbps)



Modulation Type: 802.11n HT20 (6.5Mbps)



Modulation Type: 802.11n HT40 (13.5Mbps)





## 9. 6dB Bandwidth Measurement Data

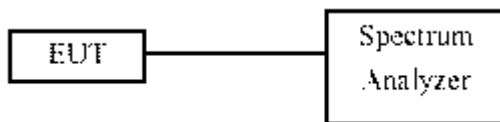
### 9.1 Test Limit

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

### 9.2 Test Procedures

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 100 KHz and VBW to 300 KHz.
- The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.
- The 6dB Bandwidth was measured and recorded.

### 9.3 Test Setup Layout



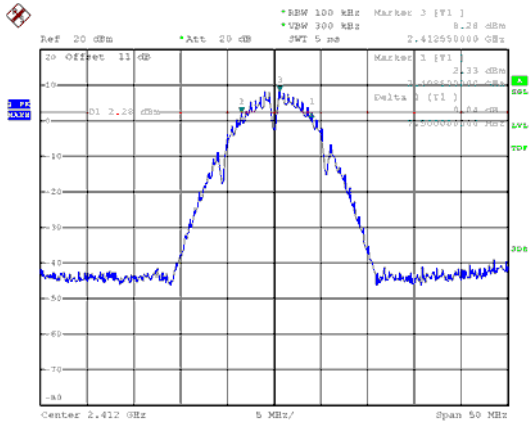
### 9.4 Test Result and Data

Modulation Type	Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Limit (MHz)
			ANT A	ANT B	ANT C	ANT D	
11b	1	2412	7.50	<b>6.50</b>	7.10	---	0.5
	6	2437	6.60	7.05	7.55	---	0.5
	11	2462	6.60	7.05	6.55	---	0.5
11g	1	2412	15.30	15.30	15.65	---	0.5
	6	2437	15.05	15.60	15.70	---	0.5
	11	2462	15.30	14.45	15.35	---	0.5
11n HT20	1	2412	16.55	14.50	16.50	---	0.5
	6	2437	16.25	15.00	16.30	---	0.5
	11	2462	15.45	15.95	15.65	---	0.5
11n HT40	3	2422	30.00	27.20	30.70	---	0.5
	6	2437	29.80	29.90	29.40	---	0.5
	9	2452	30.70	32.60	31.30	---	0.5

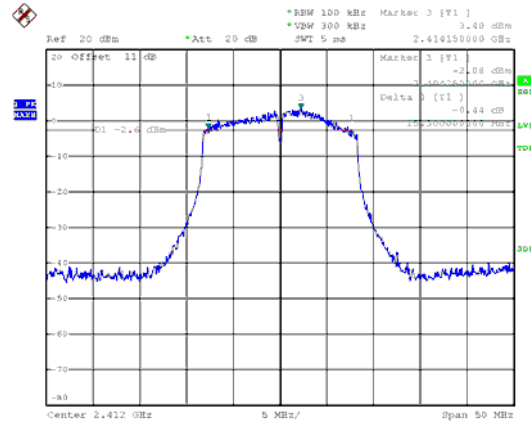


ANT A

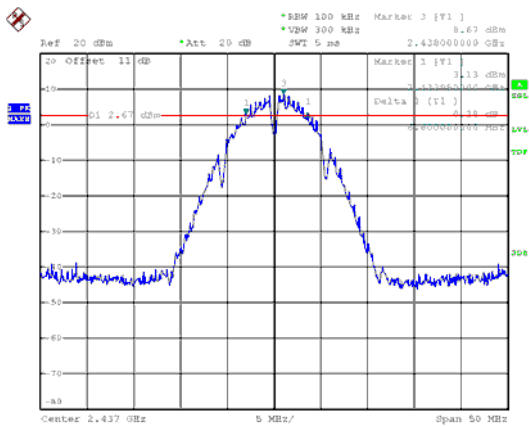
Modulation Type: 802.11b  
CH01



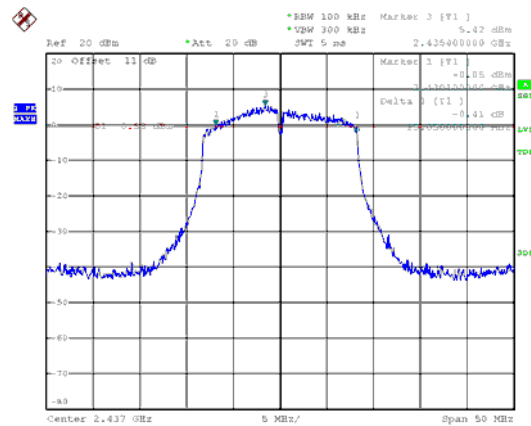
Modulation Type: 802.11g  
CH01



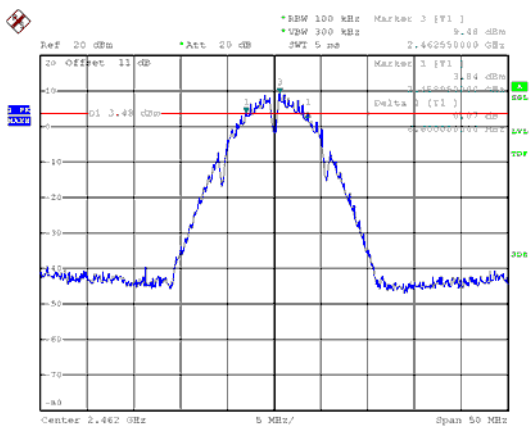
CH06



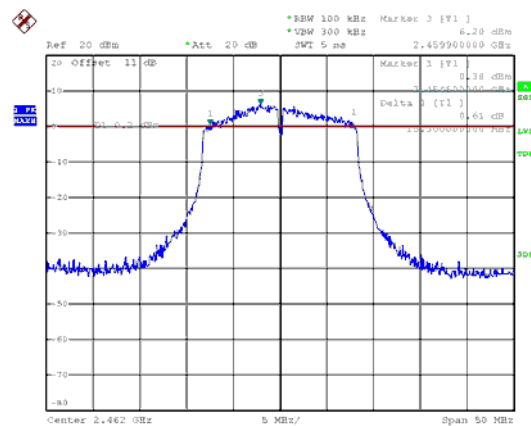
CH06



CH11



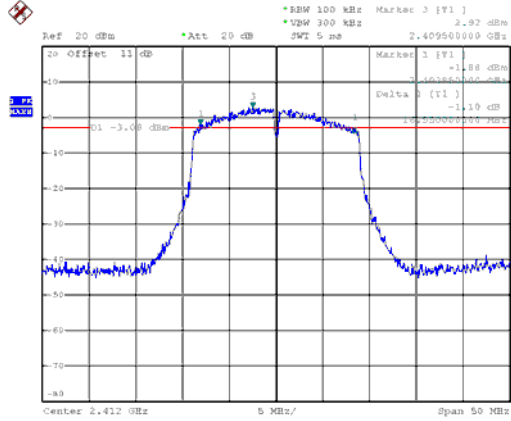
CH11



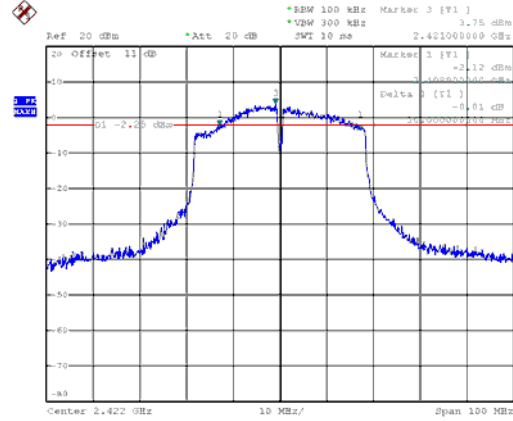


ANT A

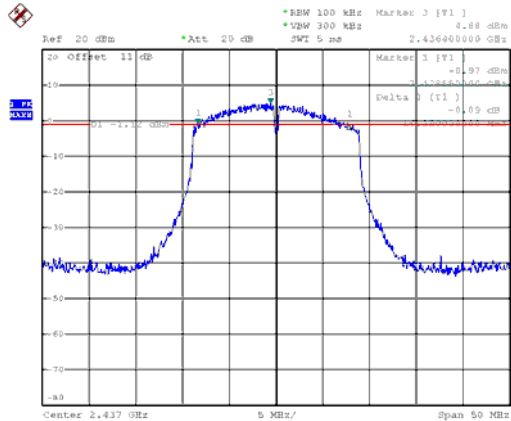
Modulation Type: 802.11n VHT20  
CH01



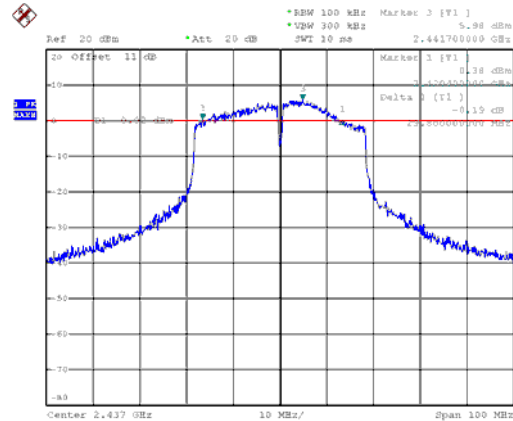
Modulation Type: 802.11n HT40  
CH03



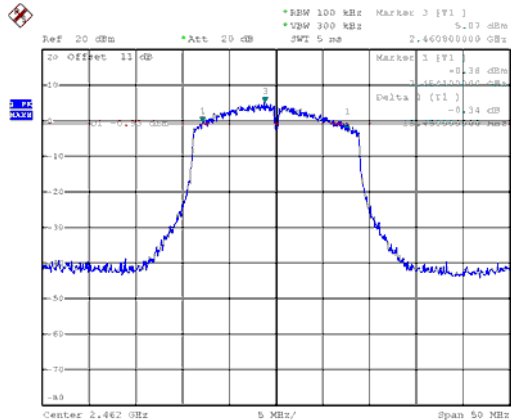
CH06



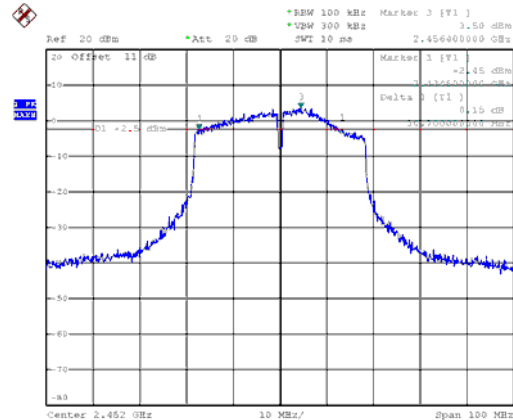
CH06



CH11



CH09

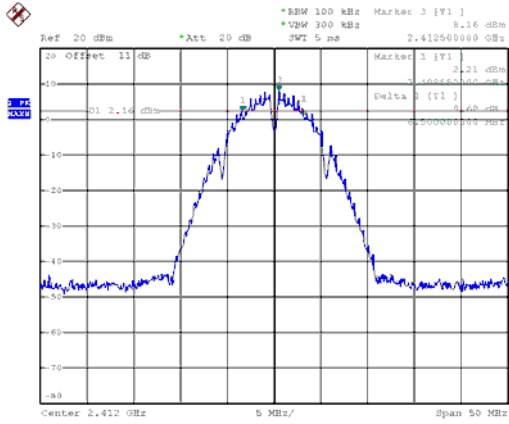




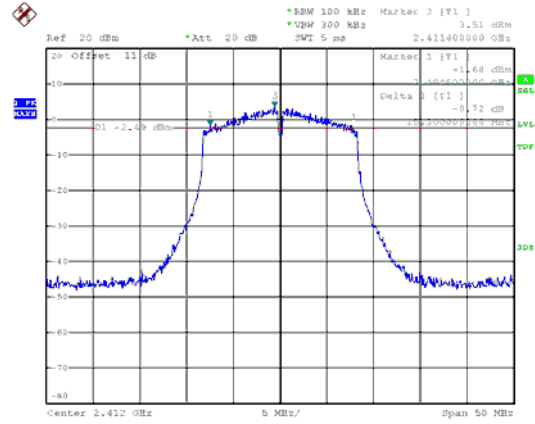




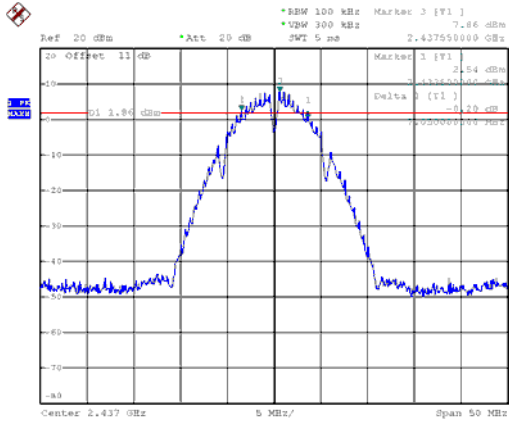
ANT B  
Modulation Type: 802.11b  
CH01



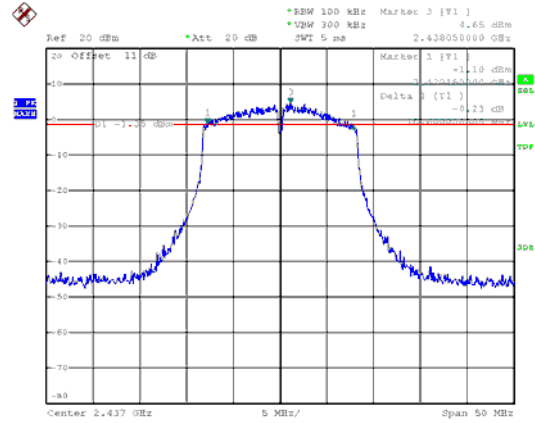
Modulation Type: 802.11g  
CH01



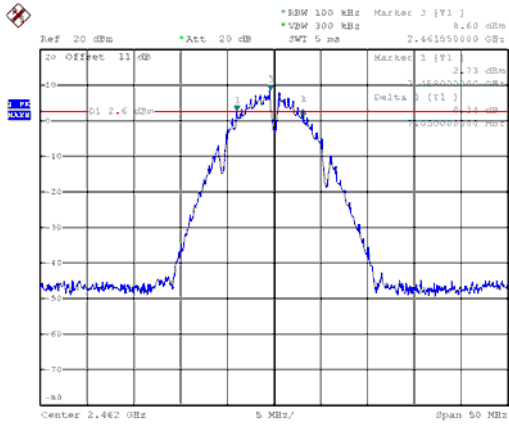
CH06



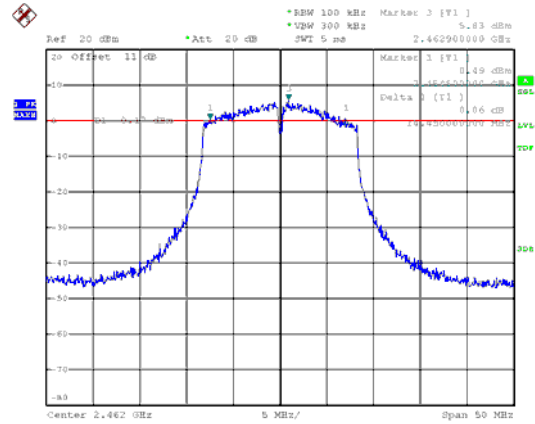
CH06



CH11



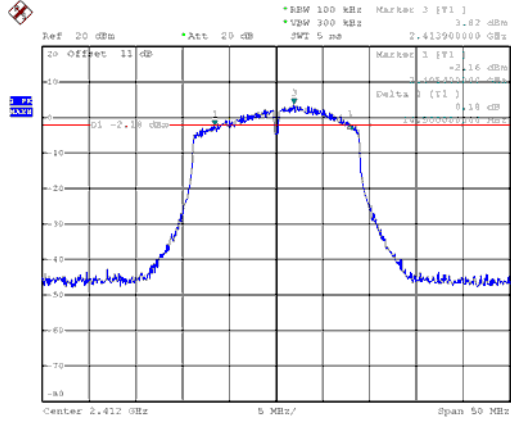
CH11



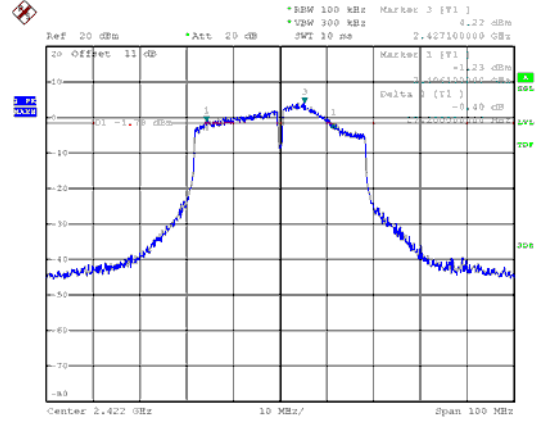


ANT B

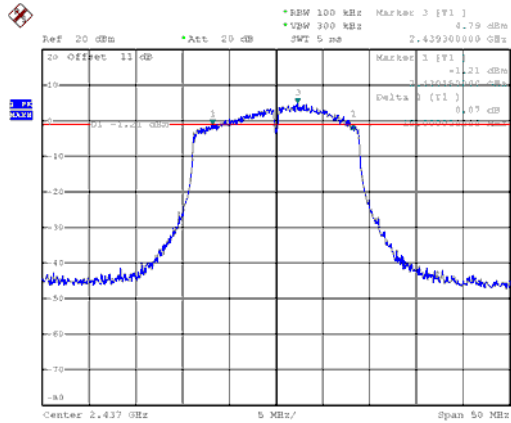
Modulation Type: 802.11n HT20  
CH01



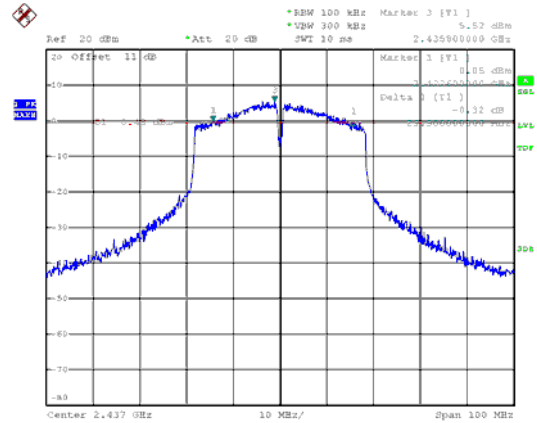
Modulation Type: 802.11n HT40  
CH03



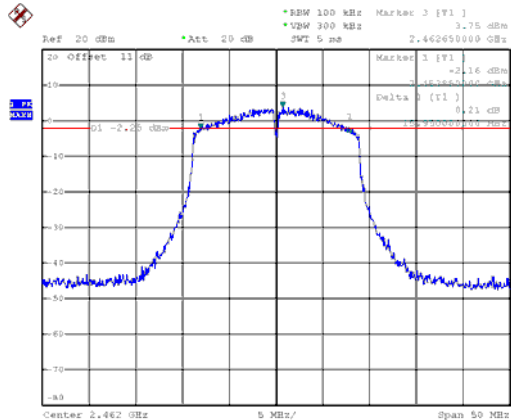
CH06



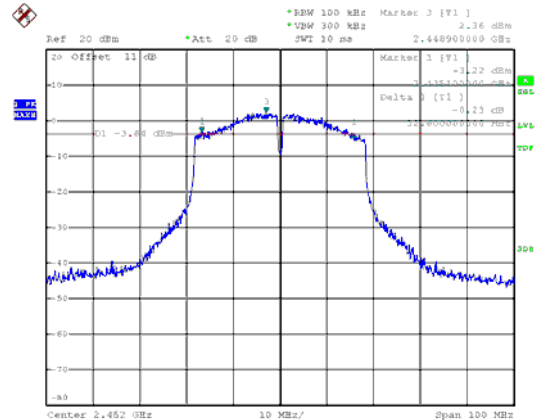
CH06



CH11



CH09

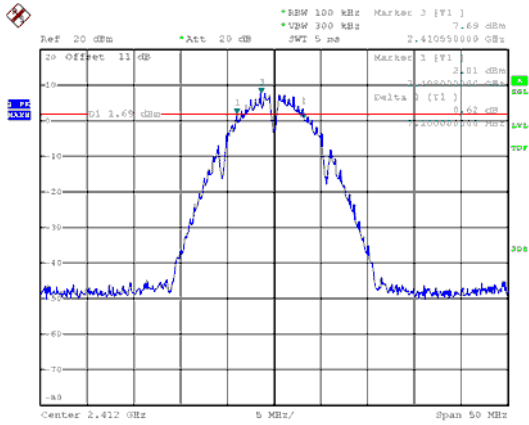




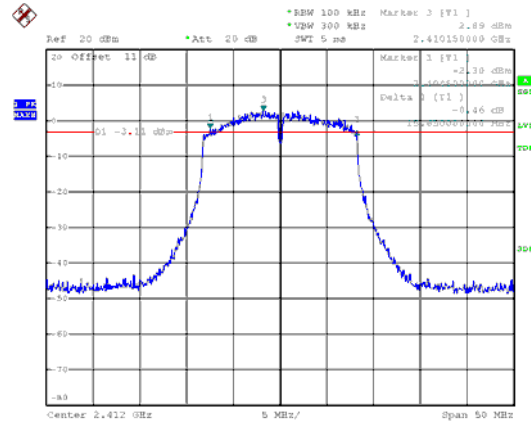


ANT C

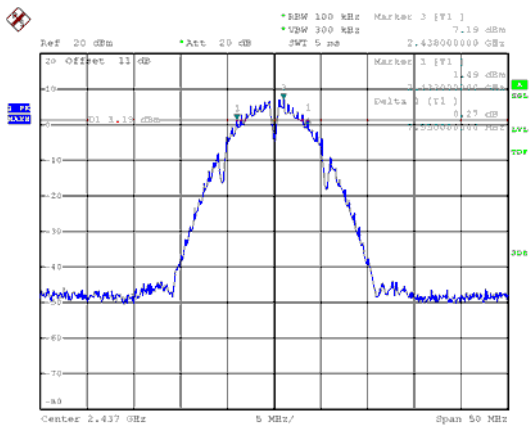
Modulation Type: 802.11b  
CH01



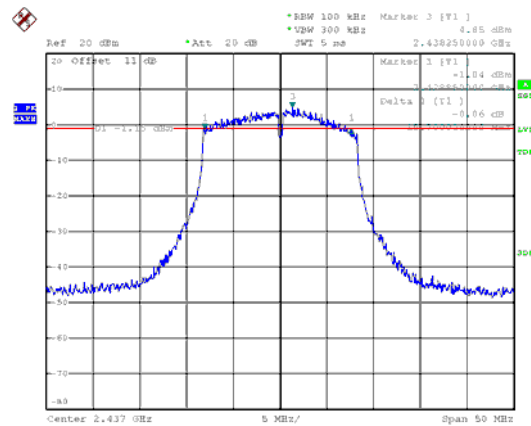
Modulation Type: 802.11g  
CH01



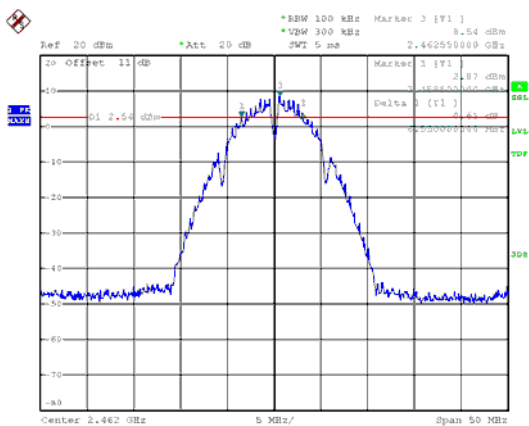
CH06



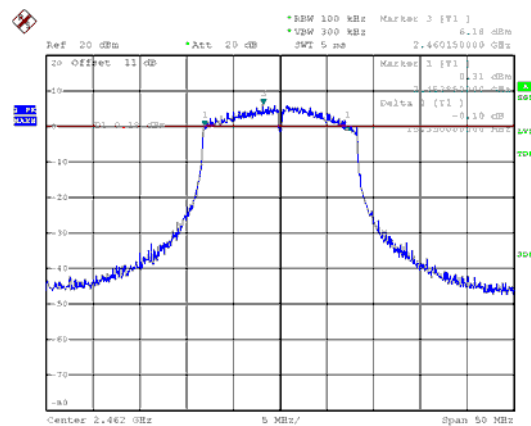
CH06



CH11



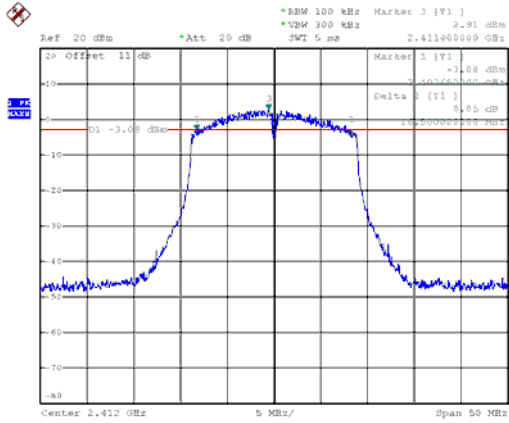
CH11



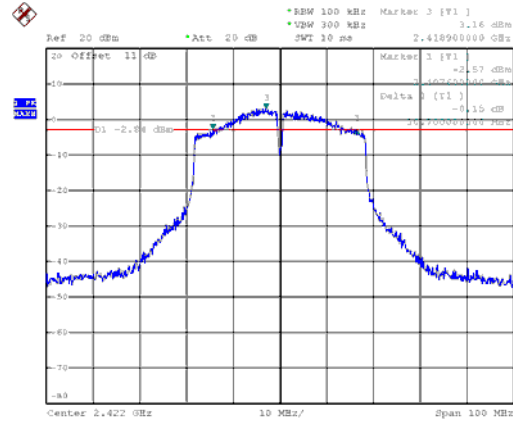


ANT C

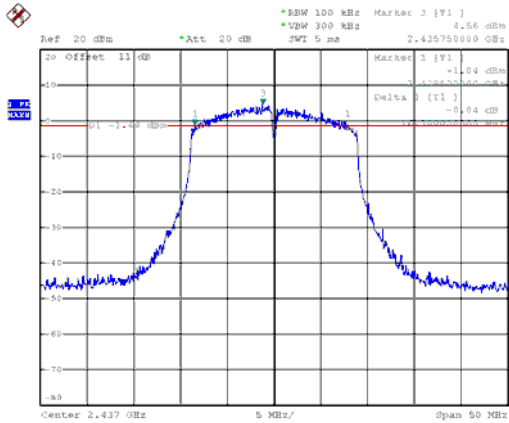
Modulation Type: 802.11n HT20  
CH01



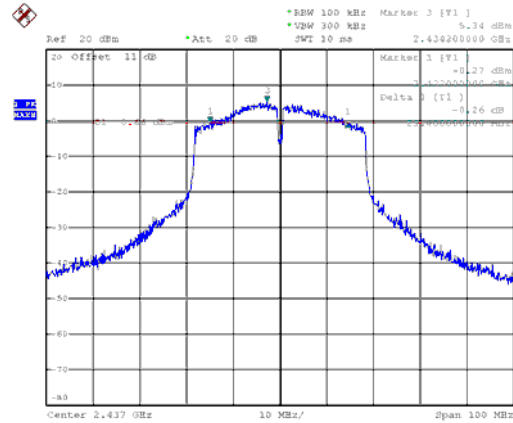
Modulation Type: 802.11n HT40  
CH03



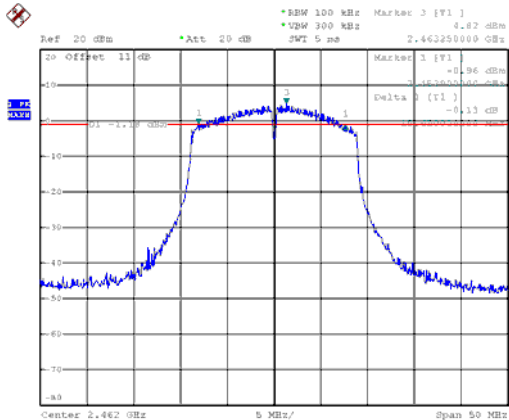
CH06



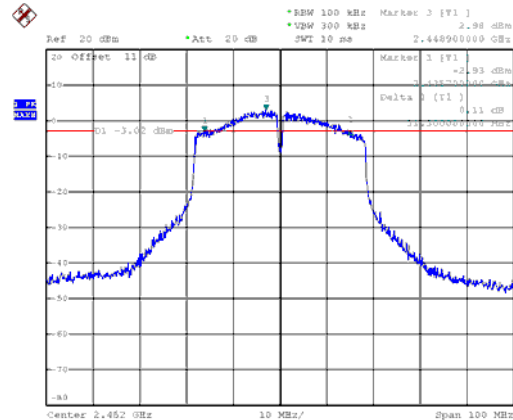
CH06



CH11



CH09







### 10. Maximum Average Output Power

#### 10.1 Test Limit

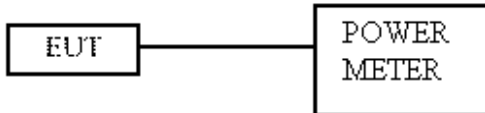
The Maximum Average Output Power Measurement is 30dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the Average output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

#### 10.2 Test Procedures

The antenna port (RF output) of the EUT was connected to the input (RF input) of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

#### 10.3 Test Setup Layout



#### 10.4 Test Result and Data

Modulation Type	Channel	Frequency (MHz)	Average Power Output (dBm)				Total AV Power (mW)	Total AV Power (dBm)	Limit (dBm)
			ANT A	ANT B	ANT C	ANT D			
IEEE 802.11b (1Mbps)	1	2412	15.57	15.27	15.46	---	<b>20.21</b>	104.865	30.00
	6	2437	14.71	14.57	14.48	---	19.36	86.276	30.00
	11	2462	15.87	15.15	15.04	---	20.14	103.286	30.00
IEEE 802.11g (6Mbps)	1	2412	14.82	15.03	14.67	---	19.61	91.490	30.00
	6	2437	16.82	16.41	16.03	---	21.20	131.923	30.00
	11	2462	17.54	17.02	17.20	---	<b>22.03</b>	159.585	30.00
IEEE 802.11n HT20 (6.5Mbps)	1	2412	15.08	15.22	14.75	---	19.79	95.330	30.00
	6	2437	16.77	16.42	16.07	---	<b>21.20</b>	131.844	30.00
	11	2462	16.30	15.80	16.04	---	20.82	120.856	30.00
IEEE 802.11n HT40 (13.5Mbps)	3	2422	17.87	17.78	17.44	---	22.47	176.677	30.00
	6	2437	18.82	18.95	18.57	---	<b>23.55</b>	226.676	30.00
	9	2452	17.76	17.40	17.38	---	22.29	169.359	30.00



## 11. Power Spectral Density

### 11.1 Test Limit

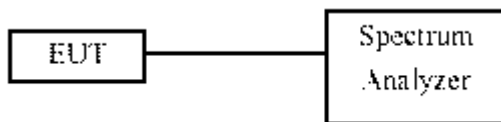
The Maximum of Power Spectral Density Measurement is 8dBm.

If transmitting antennas of directional gain greater than 6 dBi are used, the power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi

### 11.2 Test Procedures

- a. The transmitter output was connected to spectrum analyzer.
- b. The spectrum analyzer’s resolution bandwidth were set at 10kHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
- c. Detector = power averaging (rms).
- d. Employ trace averaging (rms) mode over a minimum of 100 traces.
- e. The power spectral density was measured and recorded.

### 11.3 Test Setup Layout



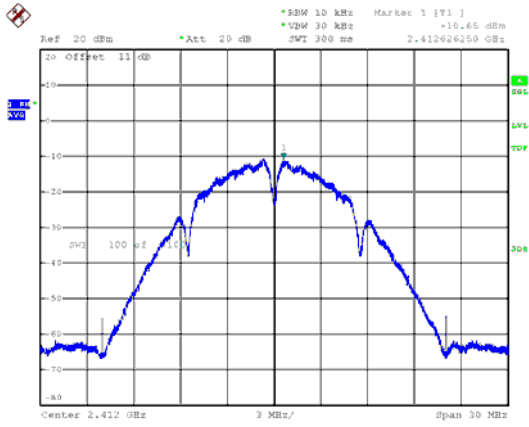
### 11.4 Test Result and Data

Modulation Type	CH	Frequency (MHz)	Maximum Power Density of 3 kHz Bandwidth (dBm)				Sum chain (dBm)	Duty Cycle CF(dB)	Total PSD (dBm)	Limit (dBm)
			ANT A	ANT B	ANT C	ANT D				
IEEE 802.11b (1Mbps)	1	2412	-10.65	-10.81	-11.35	---	-6.16	0.00	-6.16	5.23
	6	2437	-12.16	-12.73	-13.11	---	-7.88	0.00	-7.88	5.23
	11	2462	-10.89	-11.55	-11.37	---	-6.49	0.00	-6.49	5.23
IEEE 802.11g (6Mbps)	1	2412	-13.69	-13.71	-14.04	---	-9.04	0.00	-9.04	5.23
	6	2437	-11.67	-12.15	-13.18	---	-7.52	0.00	-7.52	5.23
	11	2462	-11.06	-11.19	-11.47	---	-6.47	0.00	-6.47	5.23
IEEE 802.11n HT20 (6.5Mbps)	1	2412	-13.59	-13.28	-13.81	---	-8.78	0.00	-8.78	5.23
	6	2437	-11.98	-12.55	-12.95	---	-7.70	0.00	-7.70	5.23
	11	2462	-12.68	-13.25	-12.7	---	-8.10	0.00	-8.10	5.23
IEEE 802.11n HT40 (13.5Mbps)	3	2422	-13.26	-13.65	-14.16	---	-8.90	0.00	-8.90	5.23
	6	2437	-11.08	-12.06	-11.68	---	-6.82	0.00	-6.82	5.23
	9	2452	-13.24	-14.38	-14.09	---	-9.10	0.00	-9.10	5.23

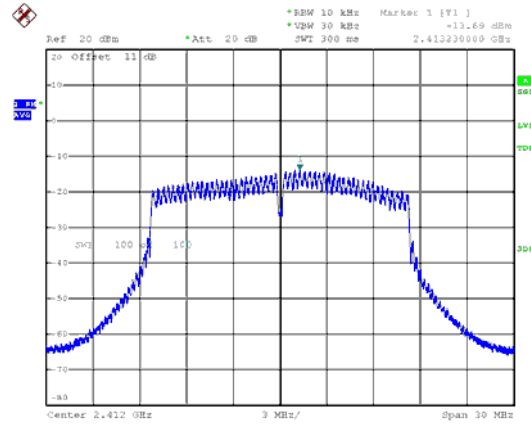




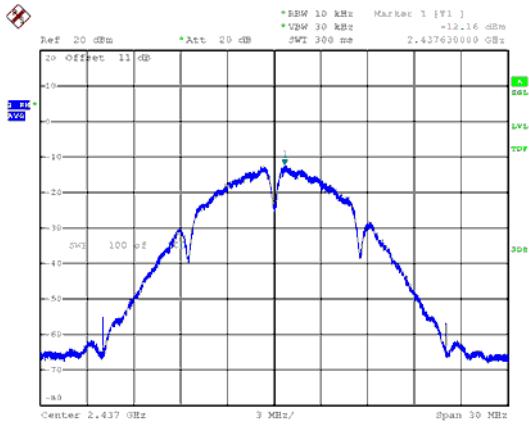
ANT A  
Modulation Type: 802.11b  
CH01



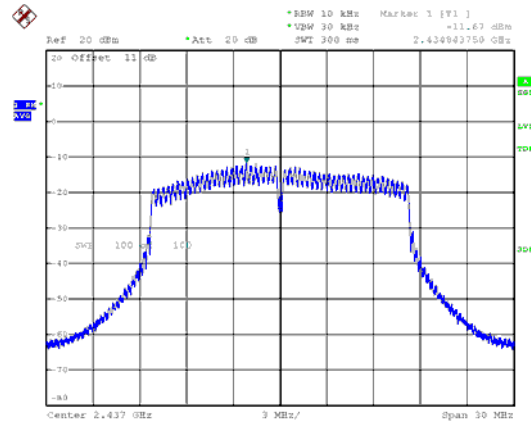
Modulation Type: 802.11b  
CH01



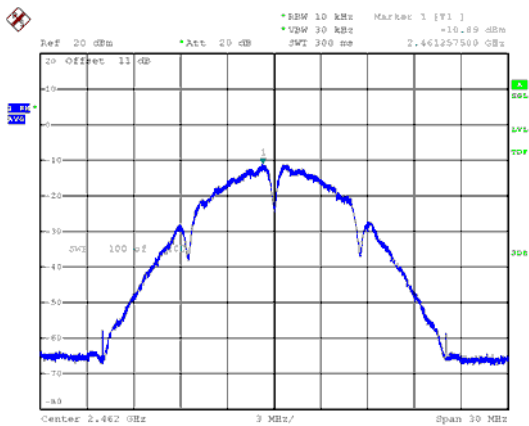
CH06



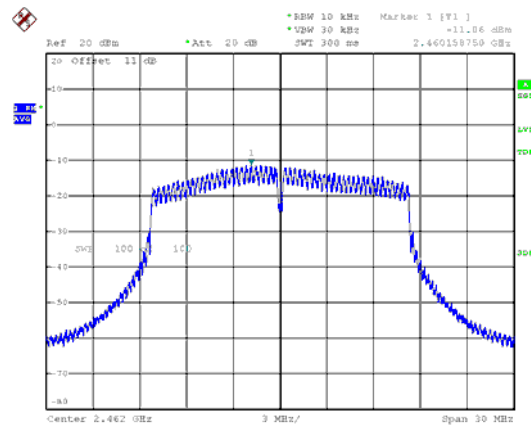
CH06



CH11

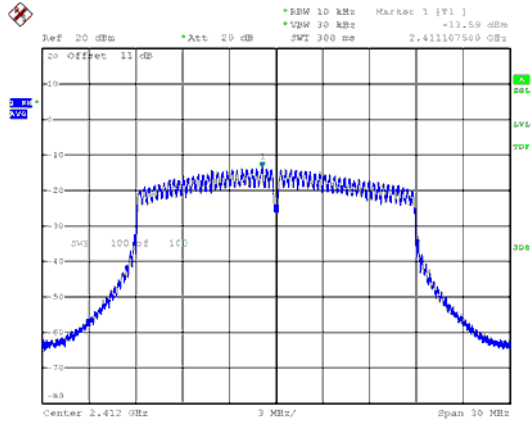


CH11

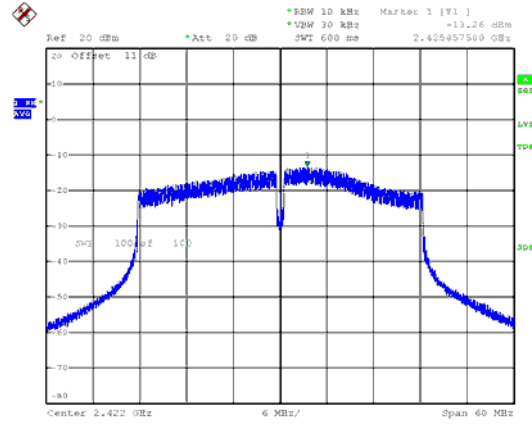




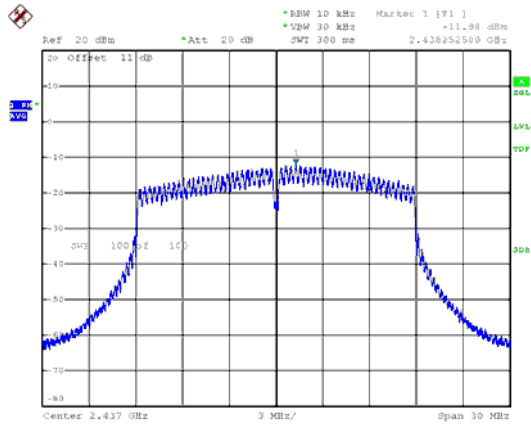
ANT A  
Modulation Type: 802.11n HT20  
CH01



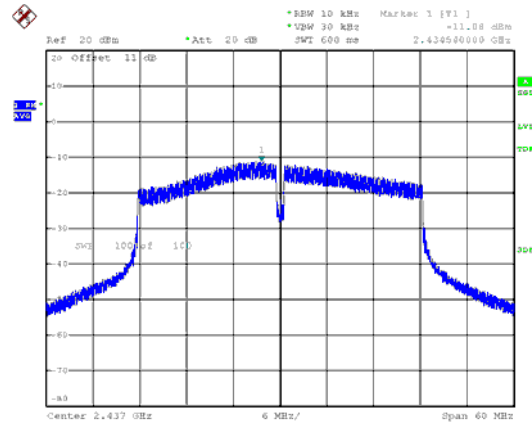
Modulation Type: 802.11n HT40  
CH03



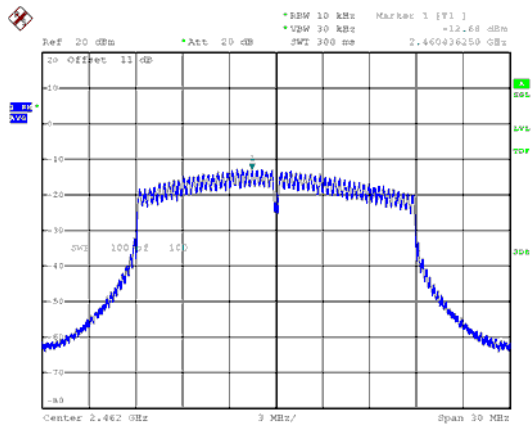
CH06



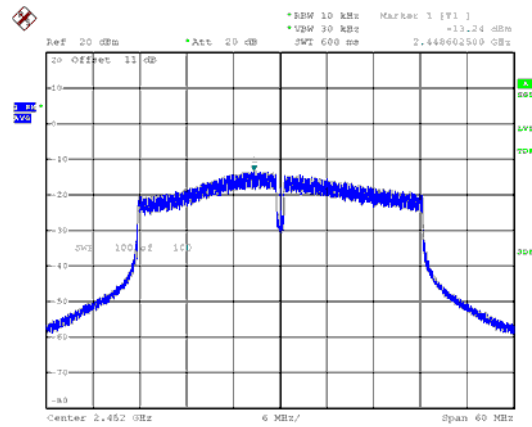
CH06



CH11

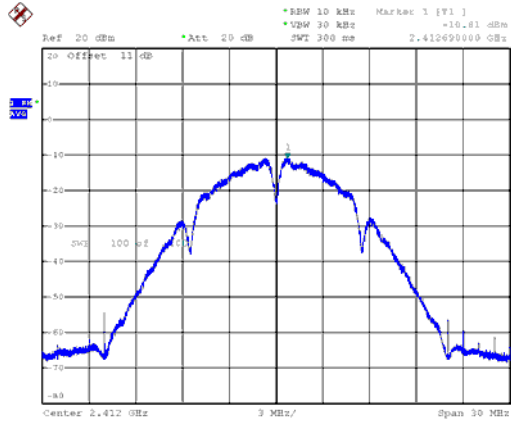


CH09

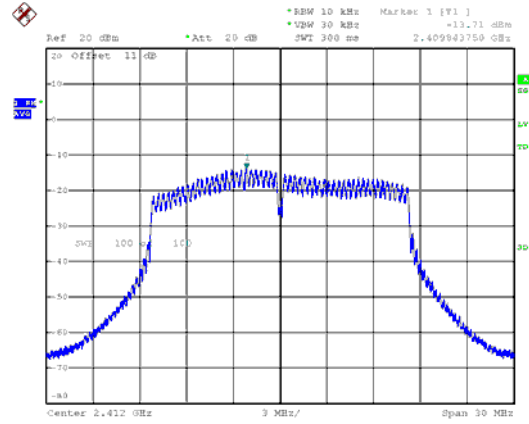




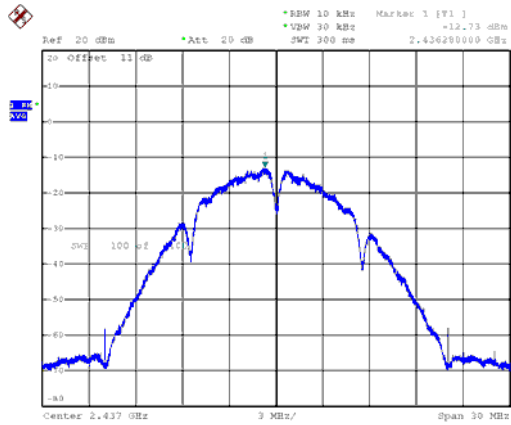
ANT B  
Modulation Type: 802.11b  
CH01



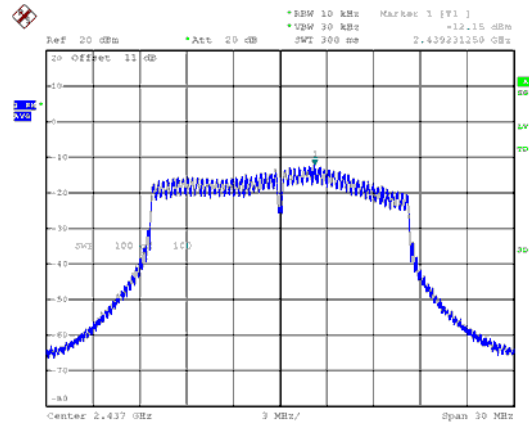
Modulation Type: 802.11g  
CH01



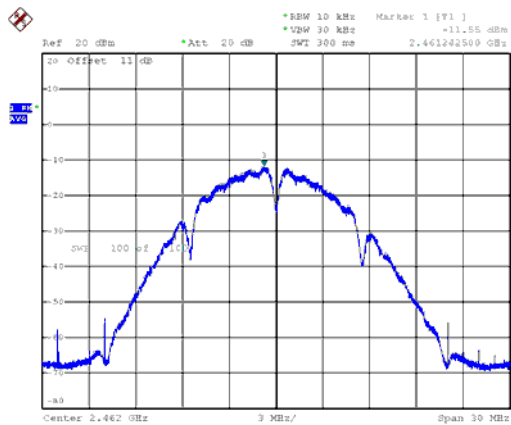
CH06



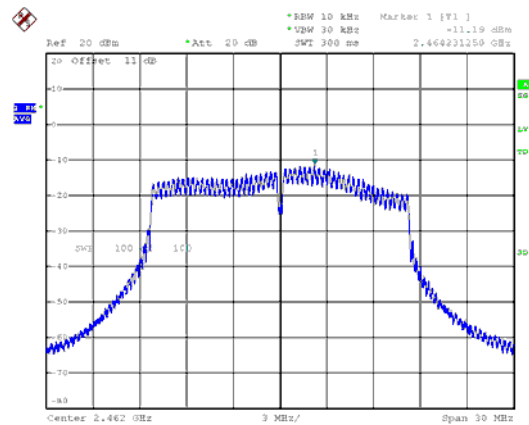
CH06



CH11

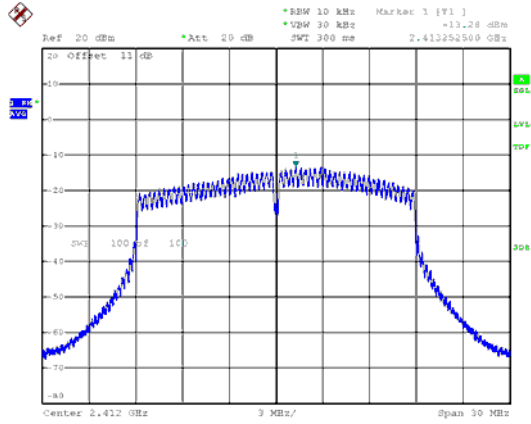


CH11

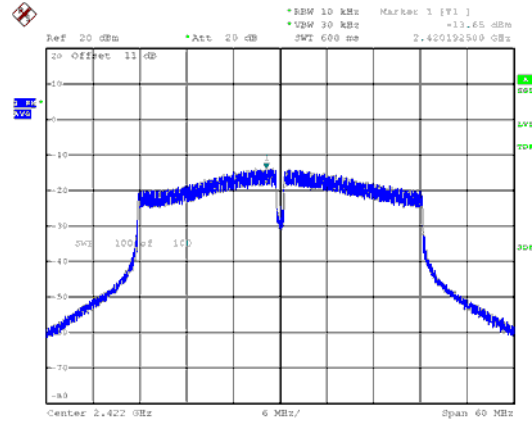




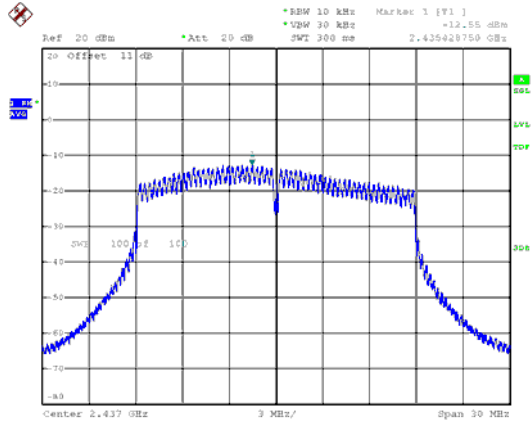
ANT B  
Modulation Type: 802.11n HT20  
CH01



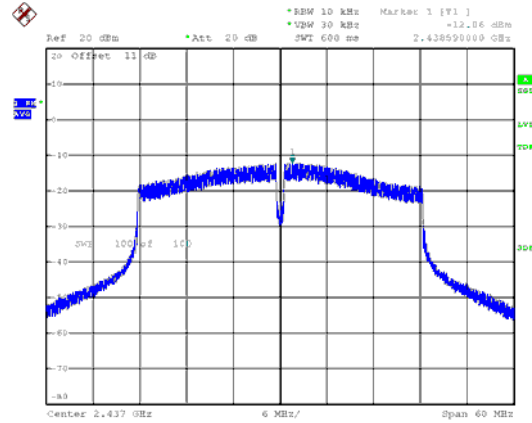
Modulation Type: 802.11n HT40  
CH03



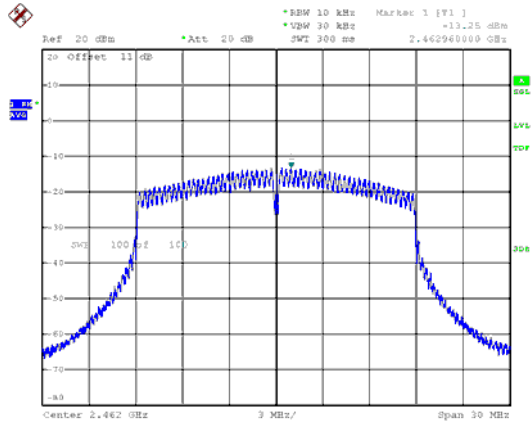
CH06



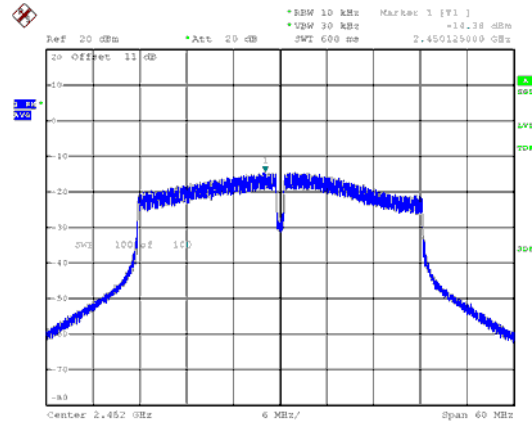
CH06



CH11

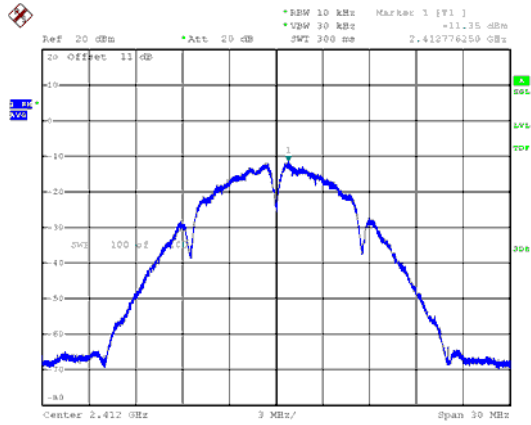


CH09

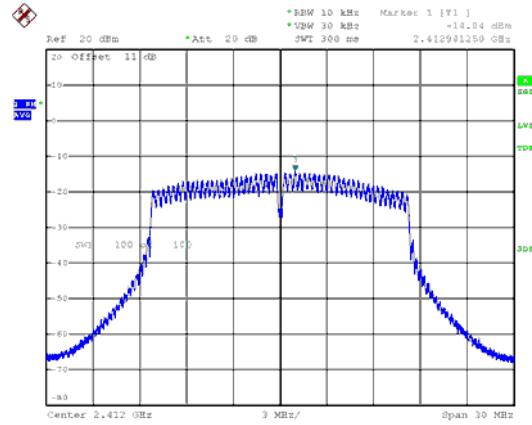




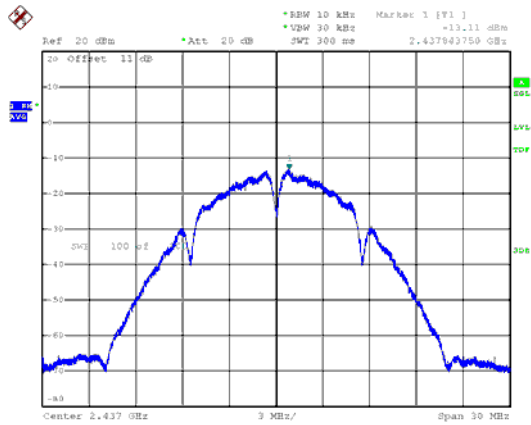
ANT C  
Modulation Type: 802.11b  
CH01



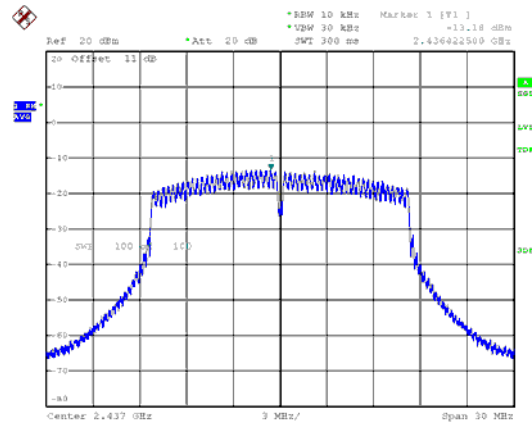
Modulation Type: 802.11g  
CH01



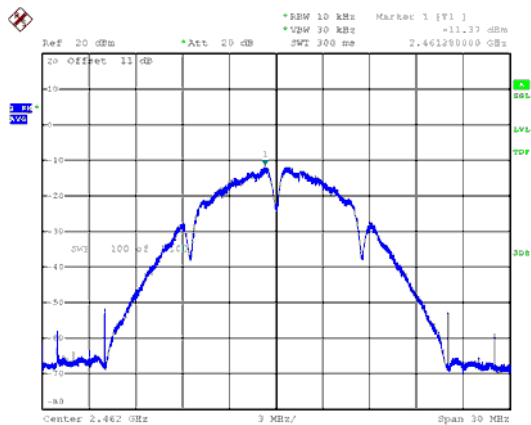
CH06



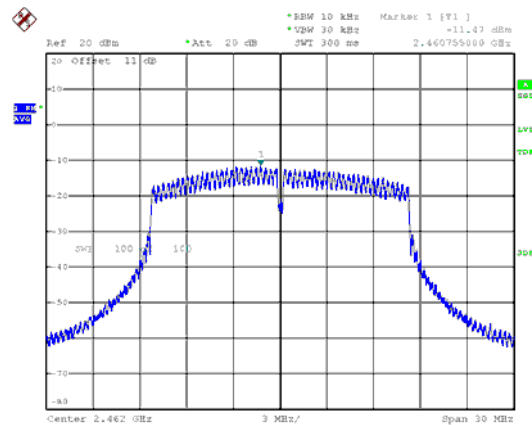
CH06



CH11

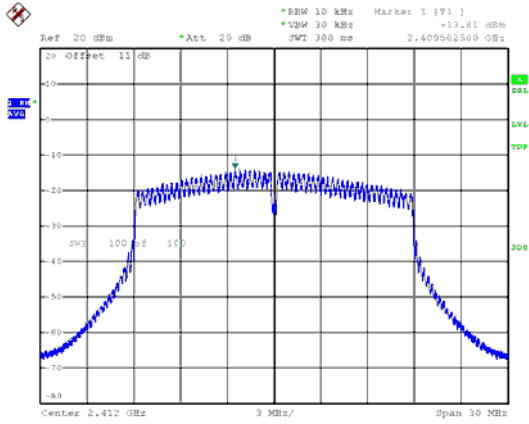


CH11

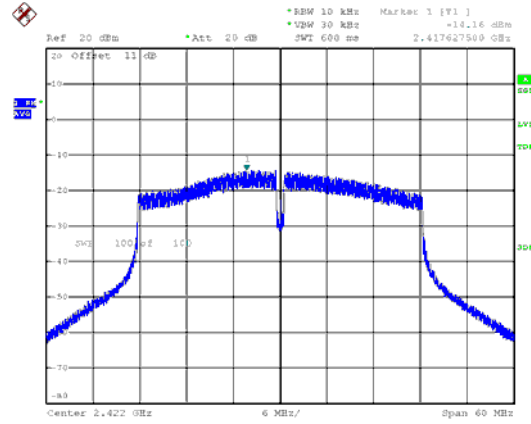




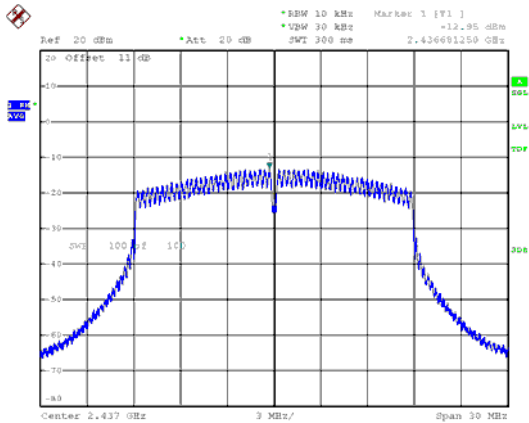
ANT C  
Modulation Type: 802.11n HT20  
CH01



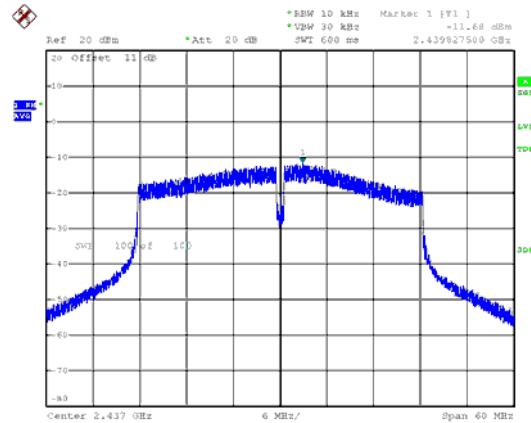
Modulation Type: 802.11n HT40  
CH03



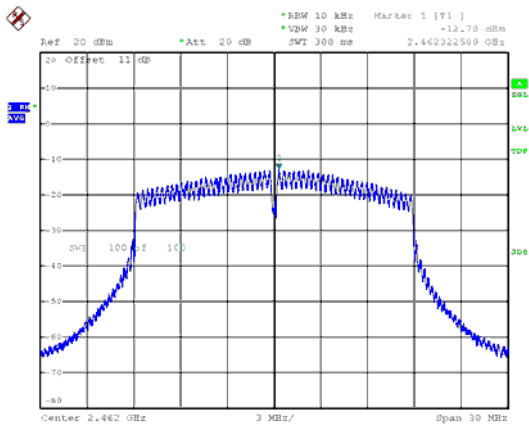
CH06



CH06



CH11



CH09

