

TEST REPORT

Applicant	PEGATRON CORPORATION
Address	5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, Taiwan

Manufacturer or Supplier	PEGATRON CORPORATION
Address	5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY, Taiwan
Product	Tablet PC
Brand Name	Q00Q/SQ00L
Model	MT10UWA116
Additional Model & Model Difference	N/A
Date of tests	Oct. 23, 2015 ~ Nov. 3, 2015 Apr. 10, 2016 ~ May 17, 2016

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Breeze Jiang Project Engineer / EMC Department	Approved by Chris Chen Assistant Manager / EMC Department
	 Date: May 17, 2016

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

TABLE OF CONTENTS

RELEASE CONTROL RECORD.....	4
1 SUMMARY OF TEST RESULTS	5
2 MEASUREMENT UNCERTAINTY	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF EUT.....	6
3.2 DESCRIPTION OF TEST MODES.....	8
3.2.1 CONFIGURATION OF SYSTEM UNDER TEST	9
3.2.2 Test Mode Applicability and tested channel detail.....	9
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS.....	12
3.4 DESCRIPTION OF SUPPORT UNITS.....	12
4 TEST TYPES AND RESULTS	13
4.1 CONDUCTED EMISSION MEASUREMENT	13
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	13
4.1.2 TEST INSTRUMENTS	13
4.1.3 TEST PROCEDURES	14
4.1.4 DEVIATION FROM TEST STANDARD	14
4.1.5 TEST SETUP	15
4.1.6 EUT OPERATING CONDITIONS	15
4.1.7 TEST RESULTS.....	16
4.2 RADIATED EMISSION MEASUREMENT	20
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	20
4.2.2 TEST INSTRUMENTS	21
4.2.3 TEST PROCEDURES	22
4.2.4 DEVIATION FROM TEST STANDARD	26
4.2.5 TEST SETUP	27
4.2.6 EUT OPERATING CONDITIONS	27
4.2.7 TEST RESULTS.....	28
4.3 6dB BANDWIDTH MEASUREMENT	61
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	61
4.3.2 TEST INSTRUMENTS	61
4.3.3 TEST PROCEDURE	61
4.3.4 DEVIATION FROM TEST STANDARD	61
4.3.5 TEST SETUP	62
4.3.6 EUT OPERATING CONDITIONS	62
4.3.7 TEST RESULTS.....	63



4.4	CONDUCTED OUTPUT POWER	71
4.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	71
4.4.2	TEST SETUP	71
4.4.3	TEST INSTRUMENTS	71
4.4.4	TEST PROCEDURES	71
4.4.5	DEVIATION FROM TEST STANDARD	71
4.4.6	EUT OPERATING CONDITIONS	72
4.4.7	TEST RESULTS.....	73
4.4.7.1	MAXIMUM PEAK OUTPUT POWER.....	73
4.5	POWER SPECTRAL DENSITY MEASUREMENT	75
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	75
4.5.2	TEST SETUP	75
4.5.3	TEST INSTRUMENTS	75
4.5.4	TEST PROCEDURE	75
4.5.5	DEVIATION FROM TEST STANDARD	75
4.5.6	EUT OPERATING CONDITION.....	76
4.5.7	TEST RESULTS.....	76
4.6	OUT OF BAND EMISSION MEASUREMENT	84
4.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	84
4.6.2	TEST SETUP	84
4.6.3	TEST INSTRUMENTS	84
4.6.4	TEST PROCEDURE	84
4.6.5	DEVIATION FROM TEST STANDARD	85
4.6.6	EUT OPERATING CONDITION.....	85
4.6.7	TEST RESULTS.....	86
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	97
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	98



Test Report No.: RF151008N004-2R1

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF151008N004-2 R1	Original release	May 17, 2016



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used

2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.66dB
Radiated emissions	9KHz ~ 30MHz	2.74dB
	30MHz ~ 1GMHz	3.55dB
	1GHz ~ 18GHz	4.84dB
	18GHz ~ 40GHz	4.84dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Tablet PC
MODEL NO.	MT10UWA116
ADDITIONAL MODELS	N/A
FCC ID	VUI-MT10UW
NOMINAL VOLTAGE	DC 3.8V by Li-ion Battery, DC 5.0V by Adaptor or USB Host Unit
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM BT-LE(GFSK) for DTS
MODULATION TECHNOLOGY	DSSS, OFDM, DTS
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2402-2480MHz for BT-LE(GFSK)
PEAK POWER	WLAN: 15.02dBm (Maximum Peak Power) BT-LE:7.90dBm (Maximum Peak Power)
ANTENNA TYPE	Monopole Antenna, 3.76dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB Cable : Shielded, detachable, 1.0m

NOTE:

1. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (20MHz)	1TX/1RX

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
4. Please refer to the EUT photo document (Reference No.: 151008N004) for detailed product photo.



5. The EUT was powered by the following adapters:

ADAPTER 1	
BRAND:	N/A
MODEL:	SA69-050200V
INPUT:	AC 100-240V, 50/60HZ, 300MA
OUTPUT:	DC 5V, 2000MA
ADAPTER 2	
BRAND:	N/A
MODEL:	ASSA55E-050200
INPUT:	AC 100-240V, 50/60HZ, 0.45A
OUTPUT:	DC 5V, 2A



3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

40 channels are provided for BT-BLE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	240	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480



3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	-	Powered by adapter with WIFI function
B	-	-	-	√	Powered by battery with WIFI function
C	-	-	-	-	Powered by USB with WIFI function

Where **RE<1G**: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CONDITION
-	BT Link+ WIFI (2.4G) Link + Adapter

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11g	1 to 11	1	OFDM	BPSK	6.0	X
A	BT-LE	0 to 39	39	DTS	GFSK	1.0	X

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)	AXIS
A	802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0	X
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0	X
A	802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5	X
A	BT-LE	0 to 39	0,19, 39	DTS	GFSK	1.0	X

BANDEDGE MEASUREMENT:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11b	1 to 11	1, 11	CCK	DBPSK	1.0
B	802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
B	802.11n HT20	1 to 11	1, 11	OFDM	BPSK	6.5
B	BT-LE	0 to 39	0, 39	DTS	GFSK	1.0

**ANTENNA PORT CONDUCTED MEASUREMENT:**

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
B	802.11n HT20	1 to 11	1,6, 11	OFDM	BPSK	6.5
B	BT-LE	0 to 39	0,19, 39	DTS	GFSK	1.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	26deg. C, 67%RH	DC 5.0V from Adapter	Sen He
RE≥1G	26deg. C, 67%RH	DC 5.0V from Adapter	Sen He
PLC	20deg. C, 56%RH	DC 5.0V from Adapter	Blue Zheng
APCM	20deg. C, 55%RH	DC 3.8V From Battery	Blue Zheng



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

558074 D01 DTS Meas Guidance v03r01

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

NOTE: It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B(DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Mobile Phone	SAMSUNG	GT-S7572	R21D85CCB7N	N/A
2	Wireless Router	TP-LINK	TL-WDR3310	1240431130	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	Adapter DC Line: unshielded, undetachable 1.5m



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCS30	100340	May 11,15	May 10,16
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	May 11,15	May 10,16
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	May 11,15	May 10,16
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A	N/A

NOTE:

1. The test was performed in shielded room 553.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

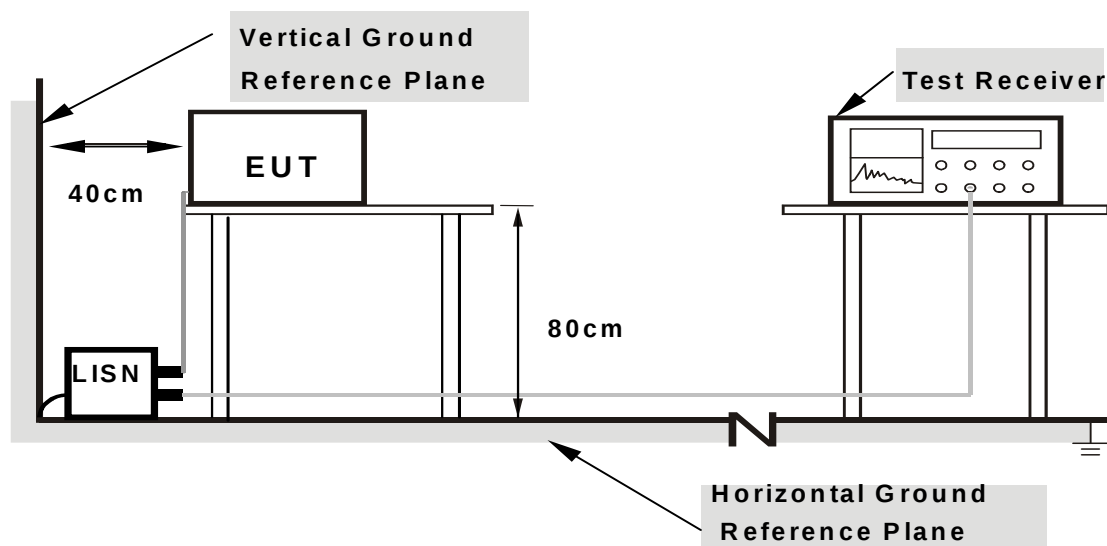
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: BT+WIFI (Adapter: ADP-10HW)

Charger SA69-050200V

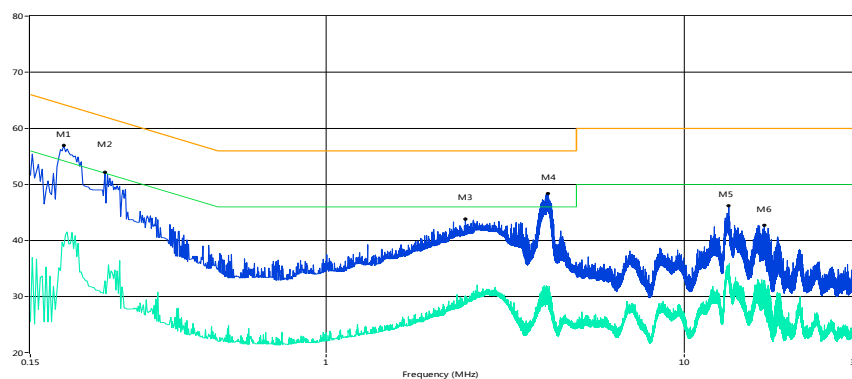
PHASE	Line	6dB BANDWIDTH	9kHz
-------	------	---------------	------

No	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector
1	0.19	57.0	13.00	65.0	-8.00	Peak
1**	0.19	38.9	13.00	55.0	-16.10	AV
2	0.24	52.1	13.00	63.4	-11.30	Peak
2**	0.24	32.8	13.00	53.4	-20.60	AV
3	2.45	43.8	13.00	56.0	-12.20	Peak
3**	2.45	30.1	13.00	46.0	-15.90	AV
4	4.16	48.3	13.00	56.0	-7.70	Peak
4**	4.16	30.3	13.00	46.0	-15.70	AV
5	13.30	46.2	13.00	60.0	-13.80	Peak
5**	13.30	33.8	13.00	50.0	-16.20	AV
6	16.70	42.7	13.00	60.0	-17.30	Peak
6**	16.70	30.5	13.00	50.0	-19.50	AV

REMARKS:

1. The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.

2. Margin value = Results - Limit





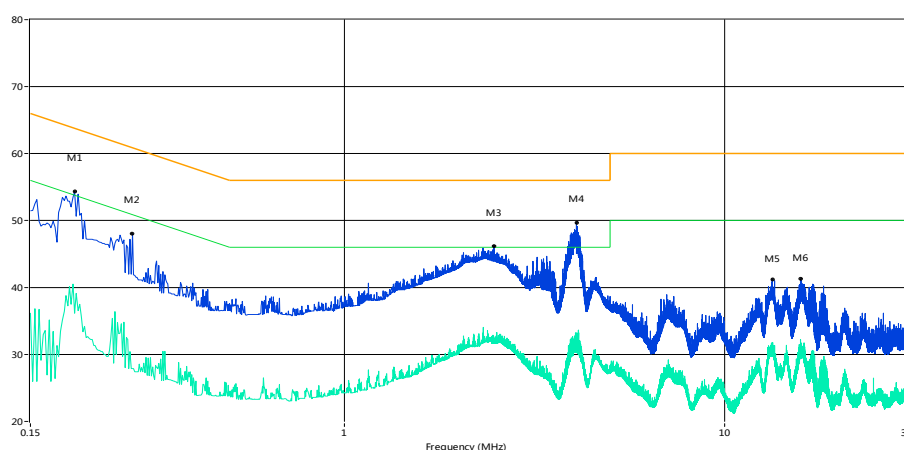
PHASE	Neutral	6dB BANDWIDTH	9kHz
-------	---------	---------------	------

No	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector
1	0.20	54.3	13.00	64.7	-10.40	Peak
1**	0.20	36.2	13.00	54.7	-18.50	AV
2	0.28	48.0	13.00	62.3	-14.30	Peak
2**	0.28	24.8	13.00	52.3	-27.50	AV
3	2.48	46.2	13.00	56.0	-9.80	Peak
3**	2.48	32.0	13.00	46.0	-14.00	AV
4	4.07	49.7	13.00	56.0	-6.30	Peak
4**	4.07	32.2	13.00	46.0	-13.80	AV
5	13.34	41.2	13.00	60.0	-18.80	Peak
5**	13.34	30.1	13.00	50.0	-19.90	AV
6	15.81	41.3	13.00	60.0	-18.70	Peak
6**	15.81	32.2	13.00	50.0	-17.80	AV

REMARKS:

1. The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.

2. Margin value = Results - Limit





BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

Charger ASSA55e-050200

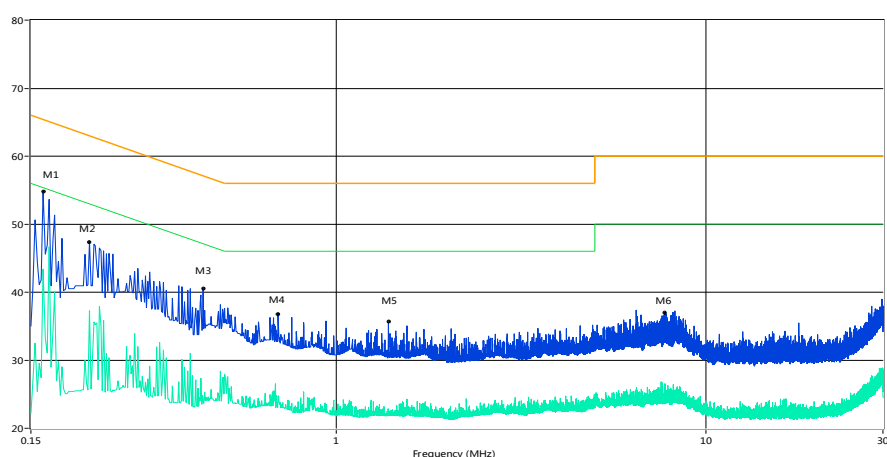
PHASE	Line	6dB BANDWIDTH	9kHz
-------	------	---------------	------

No	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector
1	0.16	54.8	13.00	65.7	10.90	Peak
1**	0.16	43.4	13.00	55.7	12.30	AV
2	0.22	47.3	13.00	64.1	16.80	Peak
2**	0.22	37.2	13.00	54.1	16.90	AV
3	0.44	40.5	13.00	57.8	17.30	Peak
3**	0.44	24.0	13.00	47.8	23.80	AV
4	0.70	36.8	13.00	56.0	19.20	Peak
4**	0.70	24.7	13.00	46.0	21.30	AV
5	1.39	35.6	13.00	56.0	20.40	Peak
5**	1.39	22.0	13.00	46.0	24.00	AV
6	7.73	37.0	13.00	60.0	23.00	Peak
6**	7.73	26.6	13.00	50.0	23.40	AV

REMARKS:

1. The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.

2. Margin value = Results - Limit



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



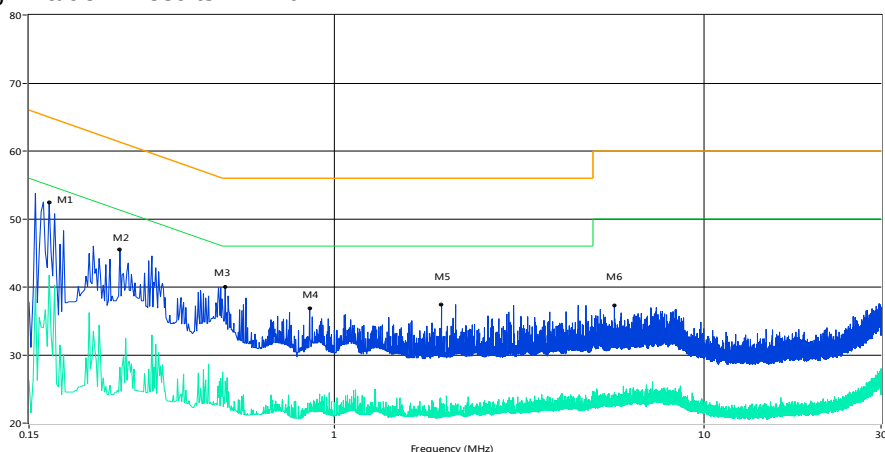
PHASE	Neutral	6dB BANDWIDTH	9kHz
-------	---------	---------------	------

No	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector
1	0.17	52.4	13.00	65.4	13.00	Peak
1**	0.17	41.7	13.00	55.4	13.70	AV
2	0.26	45.5	13.00	62.7	17.20	Peak
2**	0.26	28.2	13.00	52.7	24.50	AV
3	0.51	40.0	13.00	56.0	16.00	Peak
3**	0.51	26.2	13.00	46.0	19.80	AV
4	0.86	36.8	13.00	56.0	19.20	Peak
4**	0.86	22.9	13.00	46.0	23.10	AV
5	1.95	37.4	13.00	56.0	18.60	Peak
5**	1.95	22.8	13.00	46.0	23.20	AV
6	5.72	37.3	13.00	60.0	22.70	Peak
6**	5.72	24.5	13.00	50.0	25.50	AV

REMARKS:

1. The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors.

2. Margin value = Results - Limit





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	Agilent	E4446A	MY46180622	Apr. 29,15	Apr. 28,16
EMI Test Receiver	Rohde&Schwarz	ESVS10	841431/004	May 17,15	May 16,16
Loop antenna (9kHz~30MHz)	Daze	ZN30900A	0708	Dec. 22,15	Dec. 21,16
Bilog Antenna	Teseq	CBL 6111D	30643	Jul. 25, 15	Jul. 24, 16
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 30,14	May 29,16
Horn Antenna (15GHz-40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Jan. 21,15	Jan. 20,16
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,15	Mar. 03, 16
Signal Amplifier	Agilent	8447D	2944A10488	Jun. 25,15	Jun. 24,16
Pre-Amplifier (100MHz-26.5GHz)	Agilent	8449B	3008A00409	May 13,15	May 12,16
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,15	Nov. 19,16
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	Apr. 19,14	Apr. 18,16
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 27,15	Oct. 26,16
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A

NOTE:

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 494399.



4.2.3 TEST PROCEDURES

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

f) Compare the resultant electric field strength level to the applicable limit.

g) Perform radiated spurious emission test.



Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency RBW

9-150 kHz 200-300 Hz

0.15-30 MHz 9-10 kHz

30-1000 MHz 100-120 kHz

> 1000 MHz 1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x, of the transmitter output signal as described in section 6.0.



c) RBW = 1 MHz (unless otherwise specified).

d) VBW $\geq$ 3 x RBW.

e) Detector = RMS, if span/(# of points in sweep) $\leq$ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.

f) Averaging type = power (i.e., RMS).

1) As an alternative, the detector and averaging type may be set for linear voltage averaging.

2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.

g) Sweep time = auto.

h) Perform a trace average of at least 100 traces.

i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.

2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.

3) If a specific emission is demonstrated to be continuous ($\geq$ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on



antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

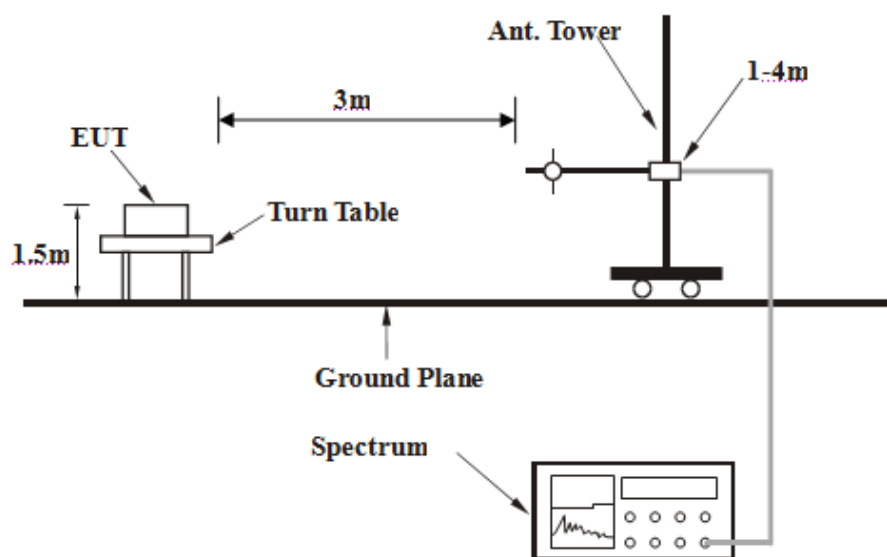


BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

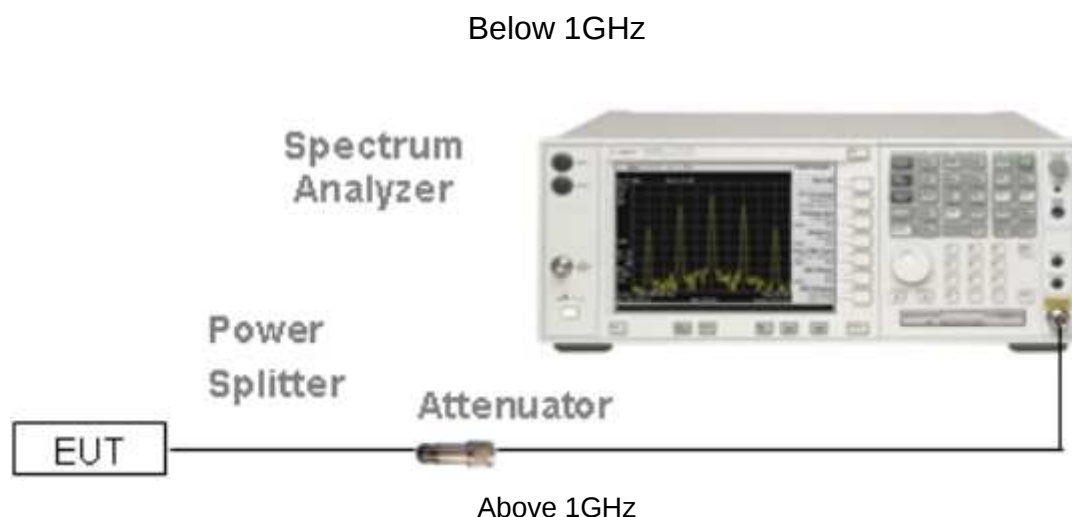
4.2.4 DEVIATION FROM TEST STANDARD

No deviation.





4.2.5 TEST SETUP



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT OPERATING CONDITIONS

- a. Set the EUT under full load condition and placed them on a testing table.
- b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the EUT in full functions.



4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

Charger SA69-050200V

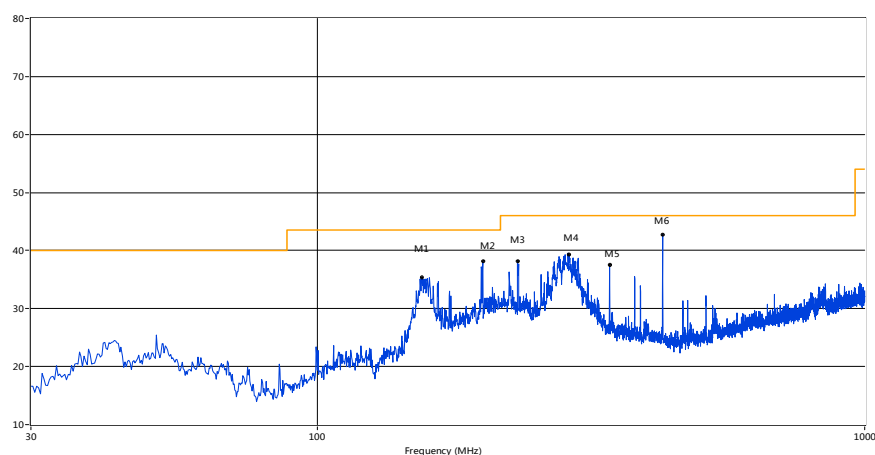
802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	155.34	35.33	-23.28	43.5	-8.17	Peak	222.70	100
2	200.68	38.13	-20.19	43.5	-5.37	Peak	312.10	100
3	232.19	38.19	-19.52	46.0	-7.81	Peak	183.70	100
4	288.20	39.26	-18.10	46.0	-6.74	Peak	194.90	100
5	342.02	37.50	-16.28	46.0	-8.50	Peak	150.40	100
6	427.36	42.74	-14.62	46.0	-3.26	Peak	256.50	100

REMARKS:

1. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
2. Margin value = Results– Limit.





**BUREAU
VERITAS**

Test Report No.: RF151008N004-2R1

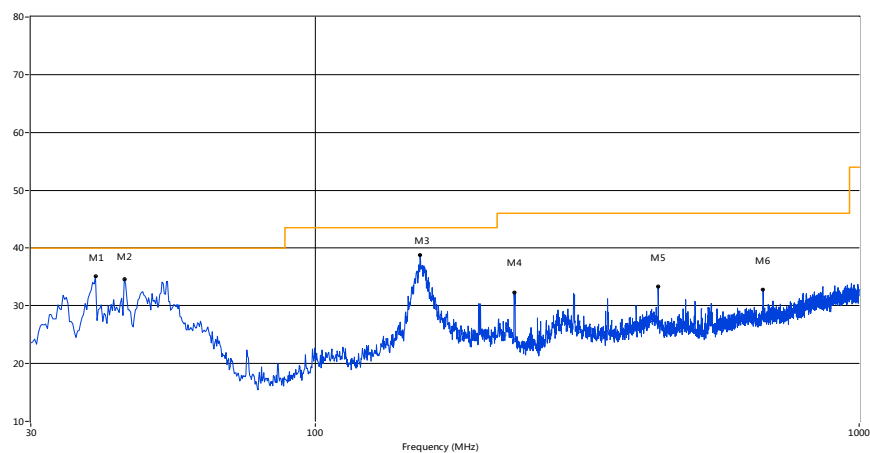
CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	39.46	35.11	-19.91	40.0	-4.89	Peak	5.00	100
2	44.55	34.61	-18.75	40.0	-5.39	Peak	220.00	100
3	155.83	38.75	-23.23	43.5	-4.75	Peak	78.00	100
4	232.19	32.34	-19.52	46.0	-13.66	Peak	171.00	100
5	427.36	33.27	-14.62	46.0	-12.73	Peak	91.00	100
6	666.40	32.77	-9.92	46.0	-13.23	Peak	198.00	100

REMARKS:

1. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.

2. Margin value = Results– Limit.



**Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch**

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



**BUREAU
VERITAS**

Test Report No.: RF151008N004-2R1

Charger ASSA55e-050200

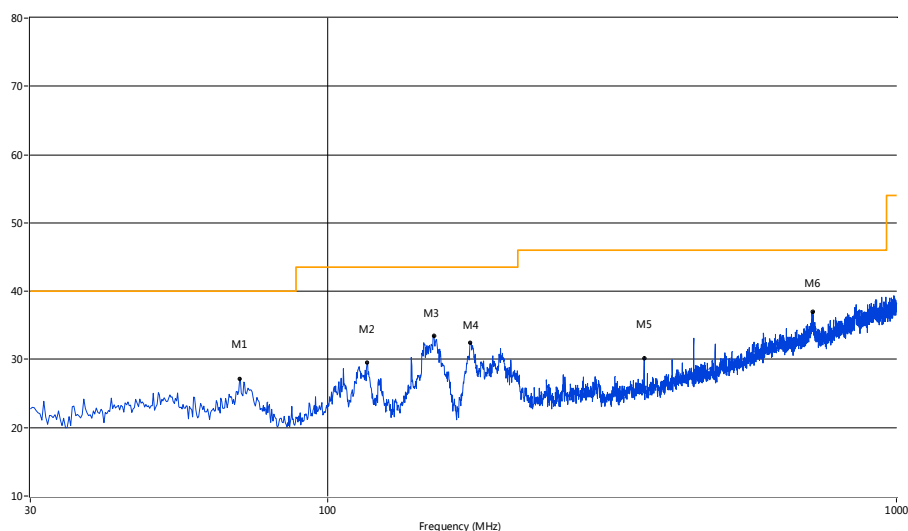
802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	70.00	27.18	-22.69	40.0	12.82	Peak	9.90	100
2	117.28	29.51	-21.30	43.5	13.99	Peak	99.80	100
3	153.64	33.49	-23.38	43.5	10.01	Peak	292.20	100
4	177.89	32.43	-22.17	43.5	11.07	Peak	325.30	100
5	359.96	30.23	-16.15	46.0	15.77	Peak	252.10	100
6	712.71	37.03	-8.99	46.0	8.97	Peak	176.40	100

REMARKS:

1. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
2. Margin value = Results– Limit.



**Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch**

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com



**BUREAU
VERITAS**

Test Report No.: RF151008N004-2R1

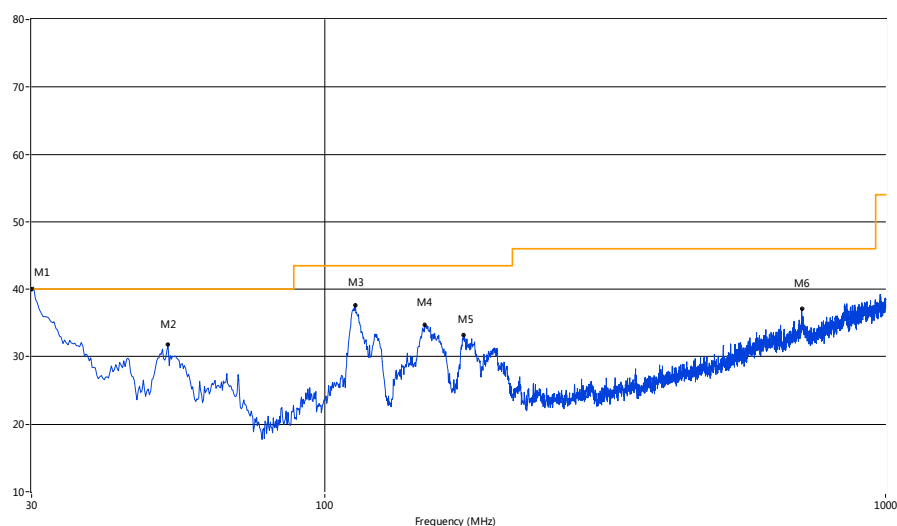
CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	30.04	36.89	-21.74	40.0	3.11	Peak	353.30	100
2	52.55	31.85	-18.66	40.0	8.15	Peak	257.20	100
3	113.40	37.63	-20.74	43.5	5.87	Peak	42.80	100
4	150.98	34.73	-23.51	43.5	8.77	Peak	139.50	100
5	176.68	33.18	-22.32	43.5	10.32	Peak	240.30	100
6	708.83	37.15	-8.89	46.0	8.85	Peak	193.40	100

REMARKS:

1. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.

2. Margin value = Results– Limit.





ABOVE 1GHz DATA

802.11b

Antenna-port Conducted test data

Note: Below the 1GHz, all configurations have been tested, only the worst configuration (GFSK Low Channel) show here

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

EIRP= Measure Conducted output power Value (dBm) + Maximum transmit antenna gain (dBi) + the appropriate maximum ground reflection factor (dB)

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna

3.76 dBi

is

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (3th ,4th, 5th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Remark	Verdict
0.12603	-104.23	6	3	3.76	QP	0.79	88.94	88.15	Note 2	PASS
3.48	-92.89	6	3	3.76	QP	12.13	88.94	76.81	Note 2	PASS
439	-82.49	4.7	3	3.76	QP	21.23	88.94	67.71	Note 2	PASS
823.8	-83.1	4.7	3	3.76	QP	20.62	88.94	68.32	Note 2	PASS
7200	-49.98	0	3	3.76	PK	49.04	88.94	39.90	Note 2	PASS



**BUREAU
VERITAS**

Test Report No.: RF151008N004-2R1

	-53.99		3	3.76	AV	24.19	68.94	44.75	--	PASS
19080	-46.37	0	3	3.76	PK	52.65	74.00	21.35	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2400	9.92	0	3	3.76	PK	108.94	N/A	N/A	Note 1	N/A
	5.91		3	3.76	AV	84.09	N/A	N/A		N/A

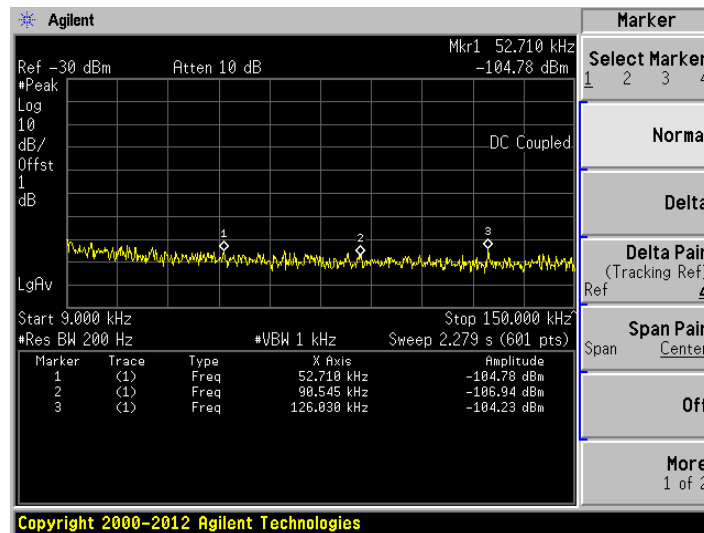


BUREAU
VERITAS

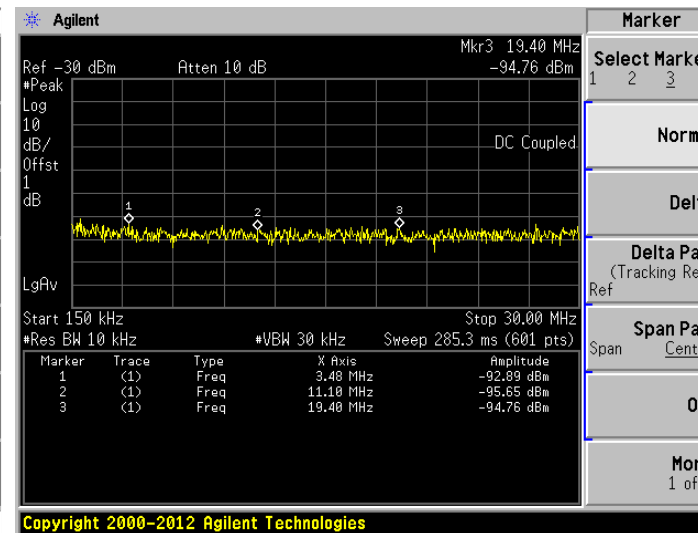
Test Report No.: RF151008N004-2R1

Test Plots

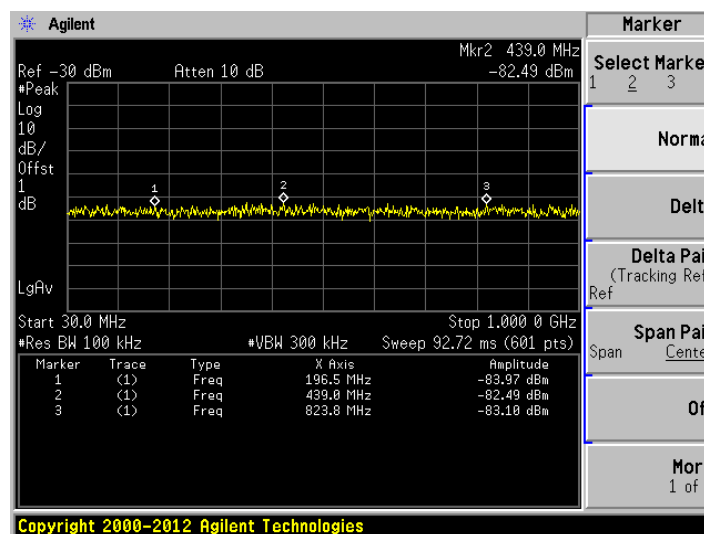
LOW CHANNEL, SPURIOUS 9 kHz ~ 150 kHz



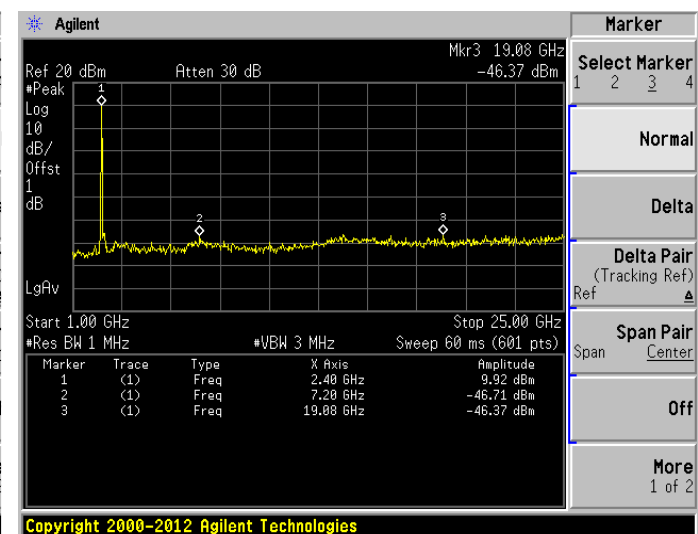
LOW CHANNEL, SPURIOUS 150 kHz ~ 30 MHz



LOW CHANNEL, SPURIOUS 30 MHz ~ 1 GHz



LOW CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

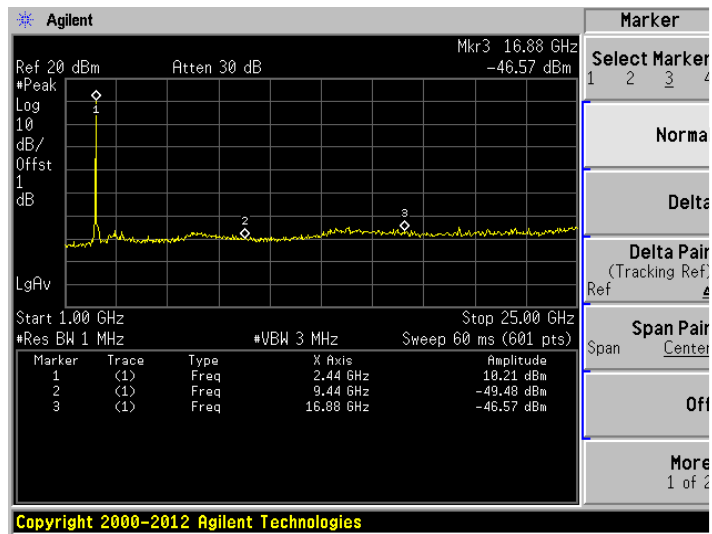
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
9440	-49.48	0	3	3.76	PK	49.54	74.00	24.46	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
16880	-46.57	0	3	3.76	PK	52.45	89.23	36.78	Note 2	PASS
	N/A		3	3.76	AV	N/A	69.23	N/A	Note 3	PASS
2440	10.21	0	3	3.76	PK	109.23	N/A	N/A	Note 1	N/A
	6.20		3	3.76	AV	84.38	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

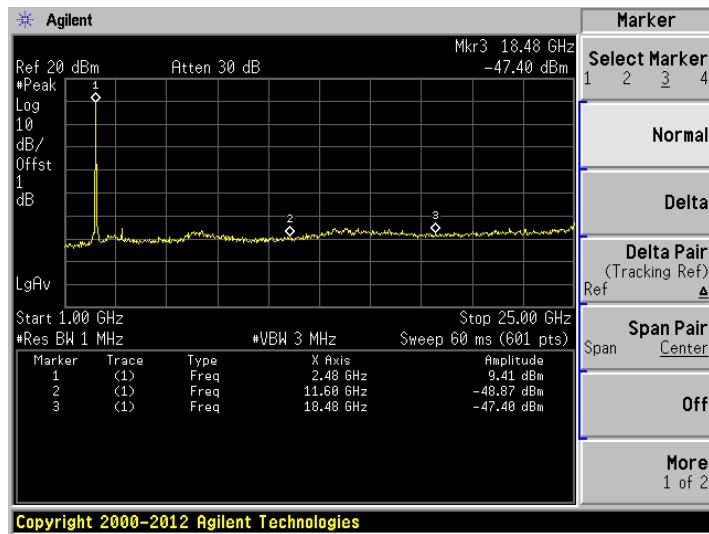
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
11600	-48.87	0	3	3.76	PK	50.15	74.00	23.85	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
18480	-47.4	0	3	3.76	PK	51.62	74.00	22.38	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2480	9.41	0	3	3.76	PK	108.43	N/A	N/A	Note 1	N/A
	5.40		3	3.76	AV	83.58	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 150 kHz ~ 30 MHz





**BUREAU
VERITAS**
802.11g

Test Report No.: RF151008N004-2R1

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

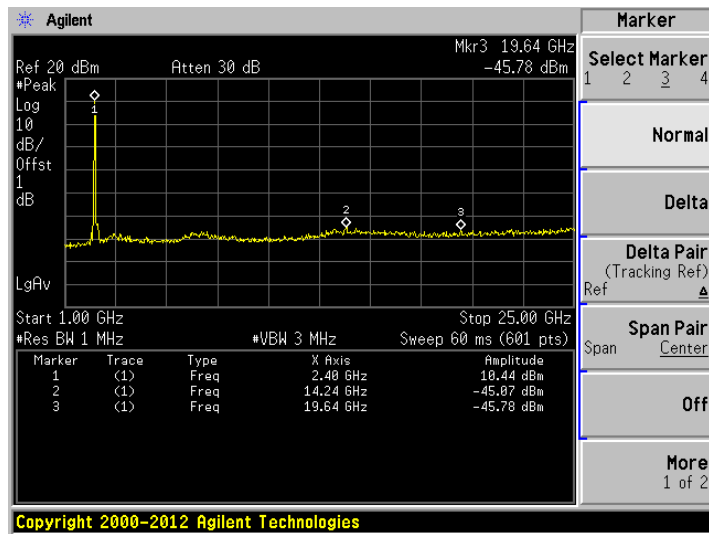
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
14240	-45.07	0	3	3.76	PK	53.95	89.46	35.51	Note 2	PASS
	N/A		3	3.76	AV	N/A	69.46	N/A	Note 3	PASS
19640	-45.78	0	3	3.76	PK	53.24	74.00	20.76	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2400	10.44	0	3	3.76	PK	109.46	N/A	N/A	Note 1	N/A
	6.43		3	3.76	AV	84.61	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

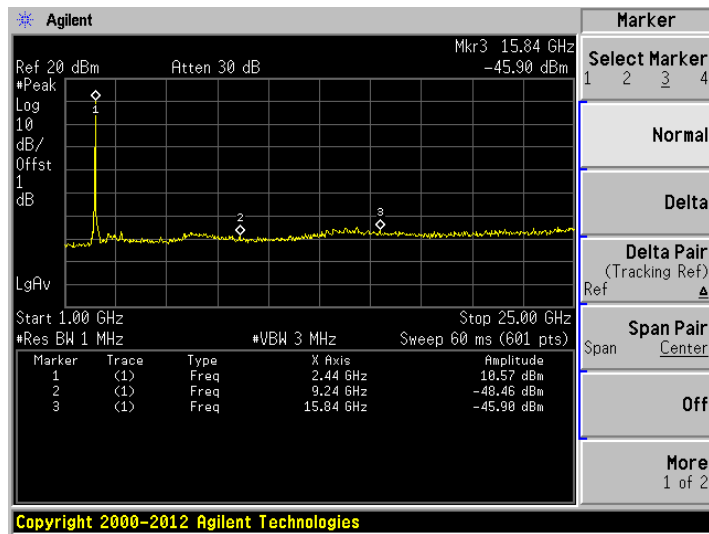
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
9240	-48.46	0	3	3.76	PK	50.56	89.59	39.03	Note 2	PASS
	N/A		3	3.76	AV	N/A	69.59	N/A	Note 3	PASS
15840	-45.9	0	3	3.76	PK	53.12	74.00	20.88	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2440	10.57	0	3	3.76	PK	109.59	N/A	N/A	Note 1	N/A
	6.56		3	3.76	AV	84.74	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

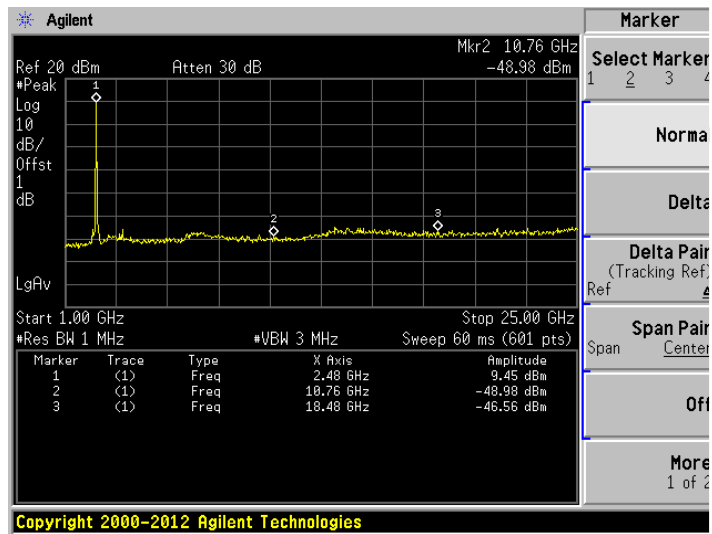
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
10760	-48.98	0	3	3.76	PK	50.04	74.00	23.96	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
18480	-46.56	0	3	3.76	PK	52.46	74.00	21.54	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2480	9.45	0	3	3.76	PK	108.47	N/A	N/A	Note 1	N/A
	5.44		3	3.76	AV	83.62	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

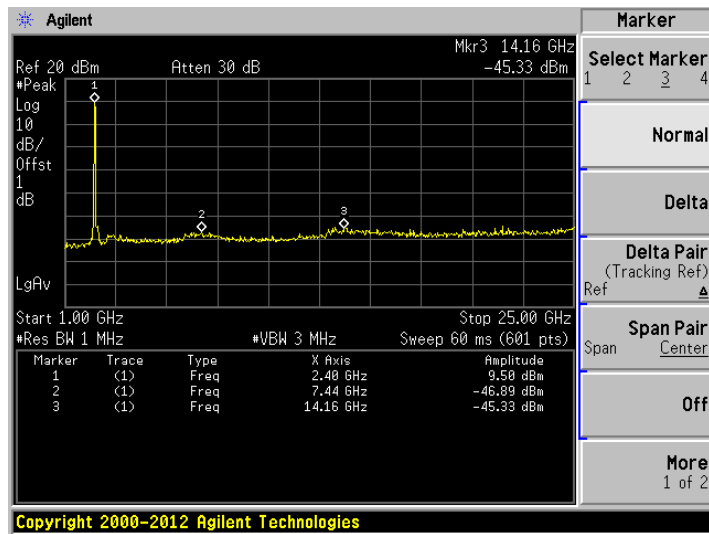
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
7440	-46.89	0	3	3.76	PK	52.13	74.00	21.87	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
14160	-45.33	0	3	3.76	PK	53.69	88.52	34.83	Note 2	PASS
	N/A		3	3.76	AV	N/A	68.52	N/A	Note 3	PASS
2400	9.5	0	3	3.76	PK	108.52	N/A	N/A	Note 1	N/A
	5.49		3	3.76	AV	83.67	N/A	N/A		N/A

LOW CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

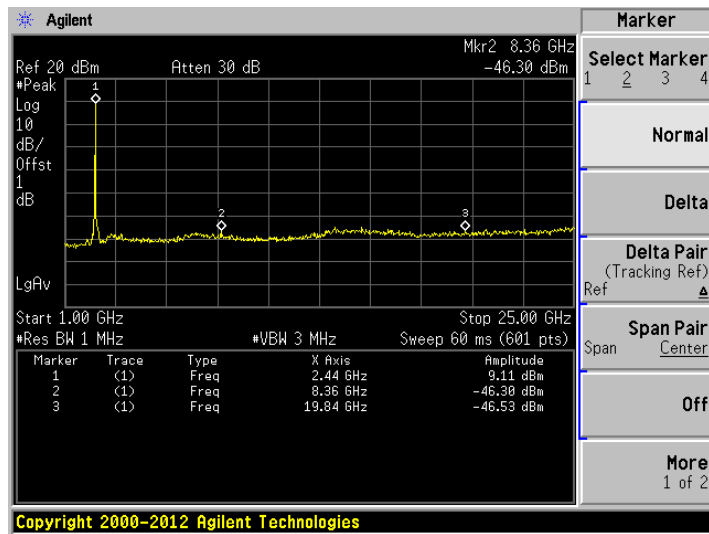
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
8360	-46.3	0	3	3.76	PK	52.72	74.00	21.28	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
19840	-46.53	0	3	3.76	PK	52.49	74.00	21.51	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2440	9.11	0	3	3.76	PK	108.13	N/A	N/A	Note 1	N/A
	5.10		3	3.76	AV	83.28	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

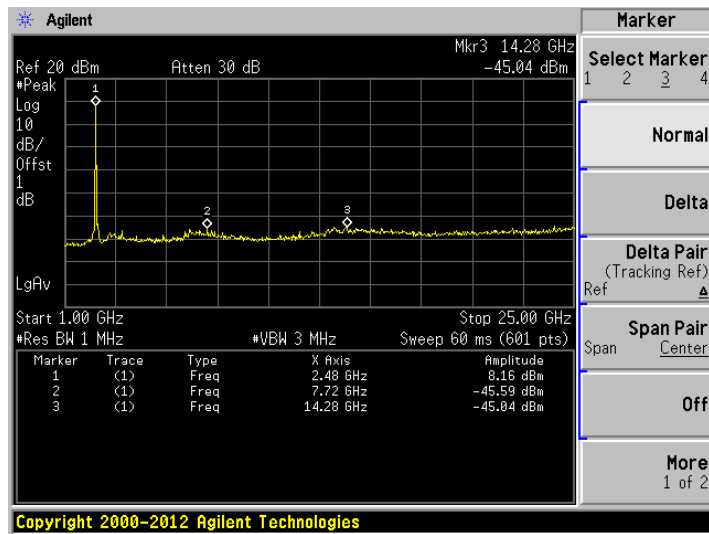
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
7720	-45.59	0	3	3.76	PK	53.43	74.00	20.57	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
14280	-45.04	0	3	3.76	PK	53.98	87.18	33.20	Note 2	PASS
	N/A		3	3.76	AV	N/A	67.18	N/A	Note 3	PASS
2480	8.16	0	3	3.76	PK	107.18	N/A	N/A	Note 1	N/A
	4.15		3	3.76	AV	82.33	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





**BUREAU
VERITAS**

Test Report No.: RF151008N004-2R1

BELOW 1GHz WORST-CASE DATA:

BT-LE (GFSK)

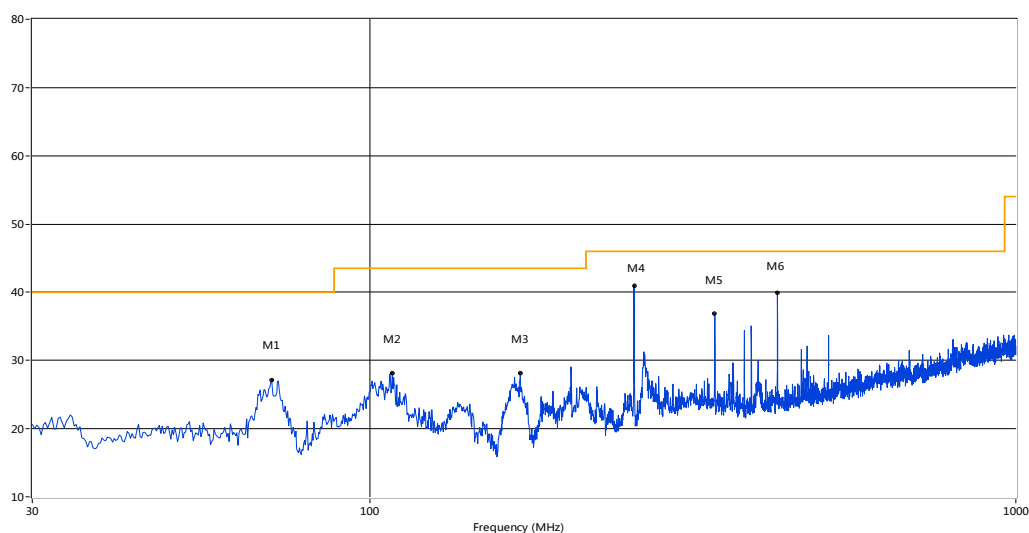
Charger SA69-050200V

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	70.49	27.14	-22.93	40.0	-12.86	Peak	42.50	100
2	108.31	28.11	-20.20	43.5	-15.39	Peak	-0.00	100
3	170.86	28.10	-22.62	43.5	-15.40	Peak	227.40	100
4	256.44	40.97	-18.74	46.0	-5.03	Peak	53.60	100
5	341.78	36.83	-16.31	46.0	-9.17	Peak	155.00	100
6	427.36	39.90	-14.62	46.0	-6.10	Peak	277.30	100

REMARKS:

1. For the test data above 1 GHz, according the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
2. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
3. Margin value = Results– Limit.



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com

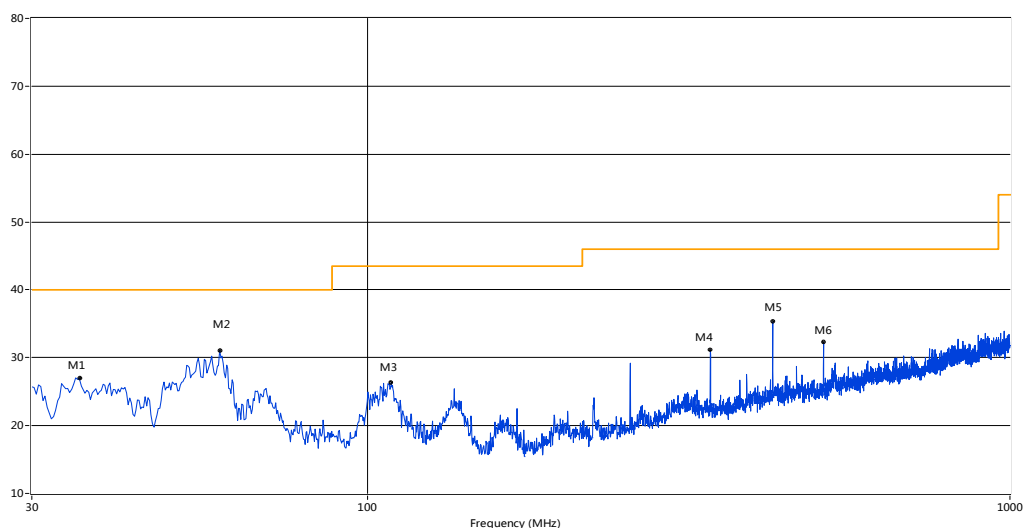


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	35.58	26.98	-21.22	40.0	-13.02	Peak	233.20	100
2	58.85	31.08	-19.94	40.0	-8.92	Peak	0.40	100
3	108.79	26.31	-20.24	43.5	-17.19	Peak	111.10	100
4	341.78	31.13	-16.31	46.0	-14.87	Peak	344.40	100
5	427.36	35.30	-14.62	46.0	-10.70	Peak	38.70	100
6	512.94	32.32	-13.01	46.0	-13.68	Peak	99.90	100

REMARKS:

1. For the test data above 1 GHz, according the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
2. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
3. Margin value = Results– Limit.



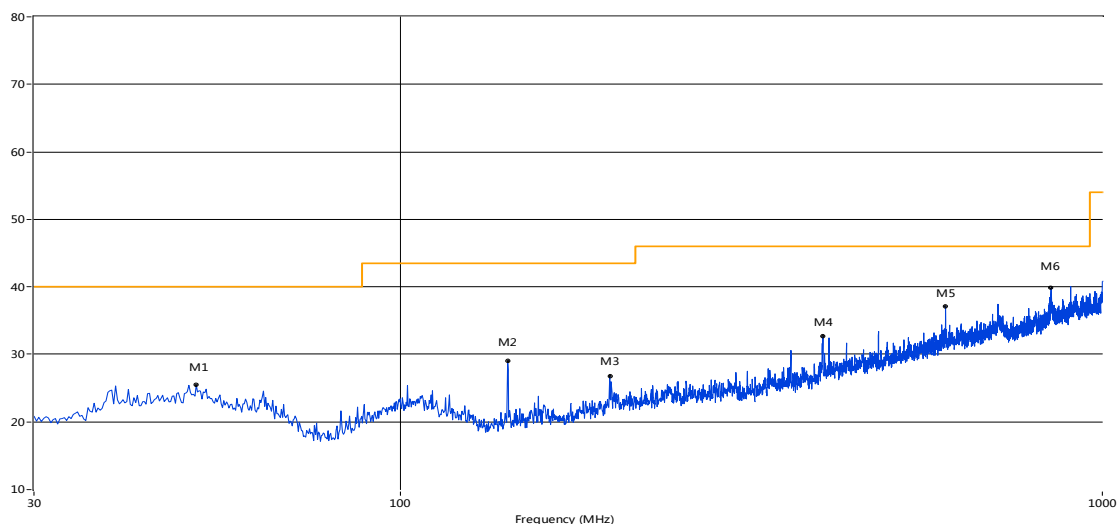


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	51.09	25.49	-18.62	40.0	14.51	Peak	219.50	100
2	142.01	29.00	-23.64	43.5	14.50	Peak	313.00	100
3	198.50	26.75	-20.33	43.5	16.75	Peak	38.40	100
4	399.96	32.64	-15.13	46.0	13.36	Peak	299.50	100
5	598.04	37.09	-10.88	46.0	8.91	Peak	0.10	100
6	845.08	39.83	-6.56	46.0	6.17	Peak	360.00	100

REMARKS:

1. For the test data above 1 GHz, according the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
2. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
3. Margin value = Results– Limit.



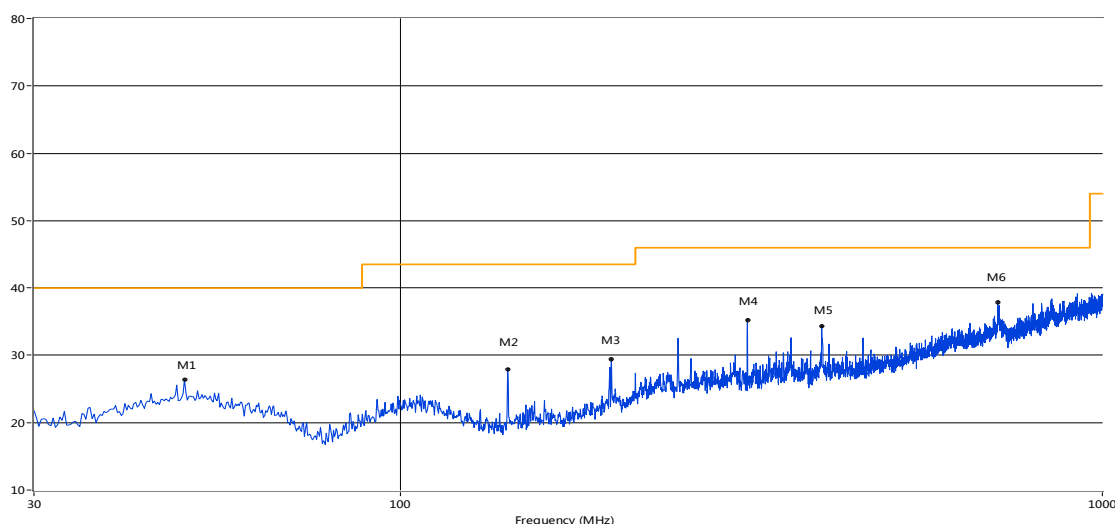


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)
1	49.15	26.38	-18.67	40.0	13.62	Peak	246.00	100
2	142.01	27.97	-23.64	43.5	15.53	Peak	306.50	100
3	199.71	29.37	-20.23	43.5	14.13	Peak	256.00	100
4	311.96	35.19	-17.33	46.0	10.81	Peak	303.00	100
5	398.27	34.35	-15.28	46.0	11.65	Peak	202.40	100
6	709.32	37.83	-8.89	46.0	8.17	Peak	11.70	100

REMARKS:

1. For the test data above 1 GHz, according the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.
2. The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.3. The other emission levels were very low against the limit.
3. Margin value = Results– Limit.





ABOVE 1GHz TEST DATA:

BT-LE (GFSK)

Note: Below the 1GHz, all configurations have been tested, only the worst configuration (Low Channel)

show here

The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 3th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
0.023805	-104.65	6	3	3.76	QP	0.37	86.00	85.63	Note 2	PASS
3.28	-94.03	6	3	3.76	QP	10.99	86.00	75.01	Note 2	PASS
409.9	-82.85	4.7	3	3.76	QP	20.87	46.00	25.13	--	PASS
804.4	-83.4	4.7	3	3.76	QP	20.32	86.00	65.68	Note 2	PASS
13720	-45.47	0	3	3.76	PK	53.55	86.00	32.45	Note 2	PASS
	-70.32		3	3.76	AV	28.70	66.00	37.30	--	PASS
22160	-46.84	0	3	3.76	PK	52.18	74.00	21.82	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2400	6.98	0	3	3.76	PK	106.00	N/A	N/A	Note 1	N/A
	-17.87		3	3.76	AV	81.15	N/A	N/A		N/A

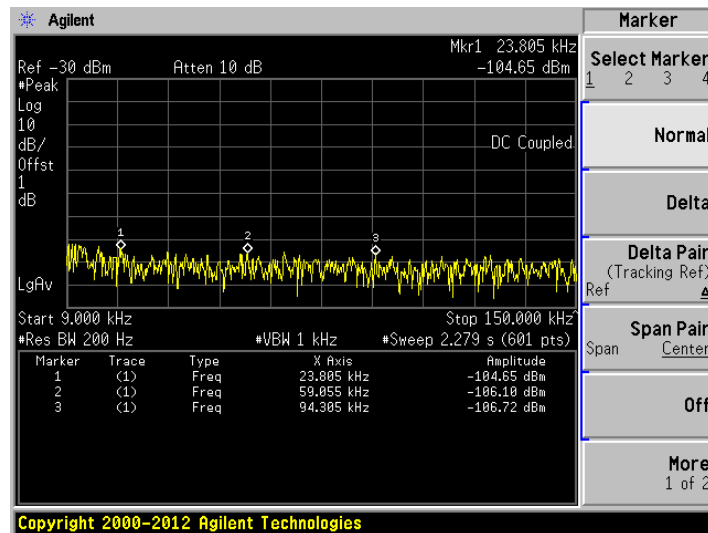


BUREAU
VERITAS

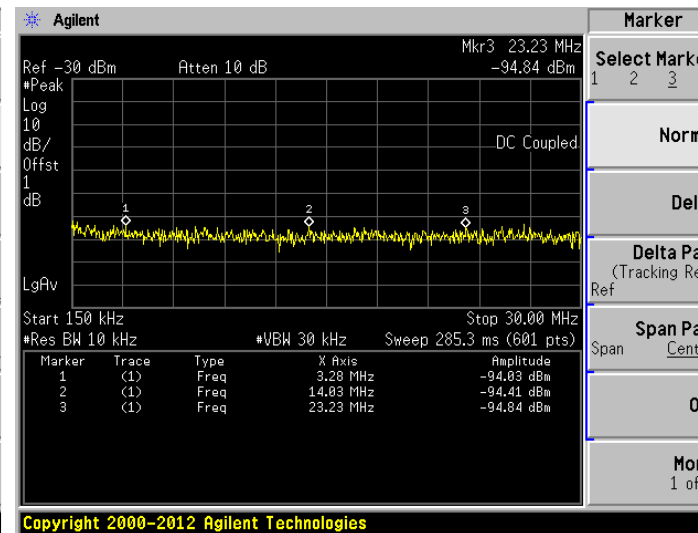
Test Report No.: RF151008N004-2R1

Test Plots

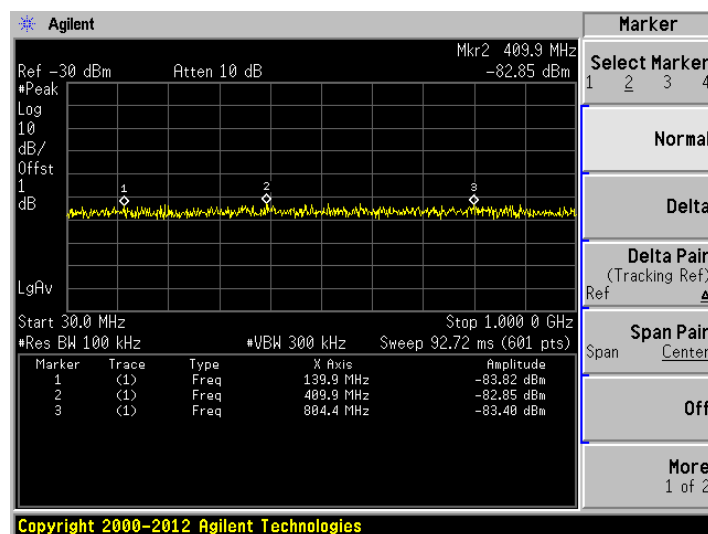
LOW CHANNEL, SPURIOUS 9 kHz ~ 150 kHz



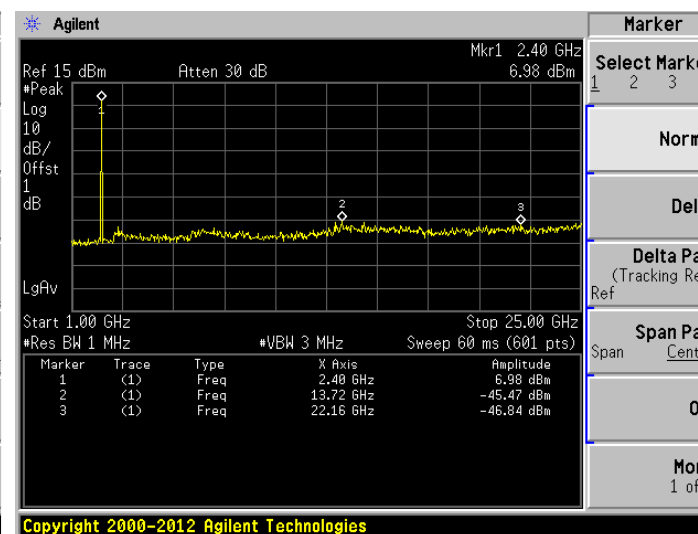
LOW CHANNEL, SPURIOUS 150 kHz ~ 30 MHz



LOW CHANNEL, SPURIOUS 30 MHz ~ 1 GHz



LOW CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is **3.76 dBi**

Note 1: The frequency is fundamental signal which can be ignored.

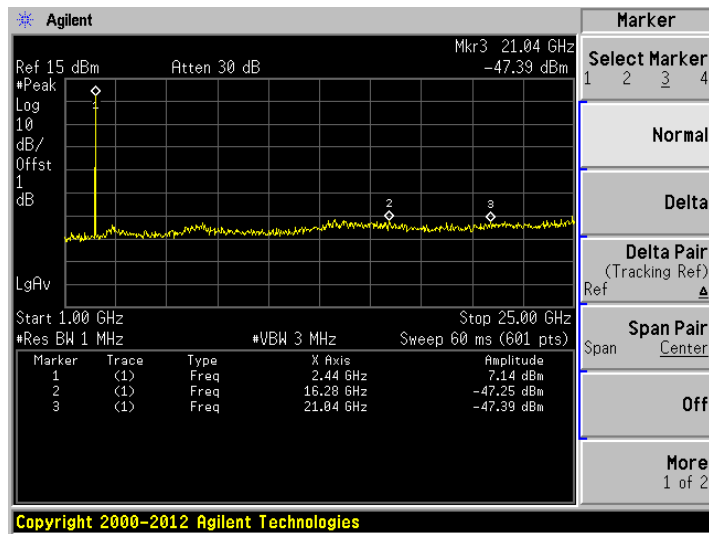
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
16280	-47.25	0	3	3.76	PK	51.77	86.16	34.39	Note 2	PASS
	N/A		3	3.76	AV	26.92	66.16	39.24	--	PASS
21040	-47.39	0	3	3.76	PK	51.63	74.00	22.37	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2440	7.14	0	3	3.76	PK	106.16	N/A	N/A	Note 1	N/A
	3.13		3	3.76	AV	81.31	N/A	N/A		N/A

MIDDLE CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





The EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2dBi, whichever is greater.

And the maximum in-band gain of the antenna is 3.76 dBi

Note 1: The frequency is fundamental signal which can be ignored.

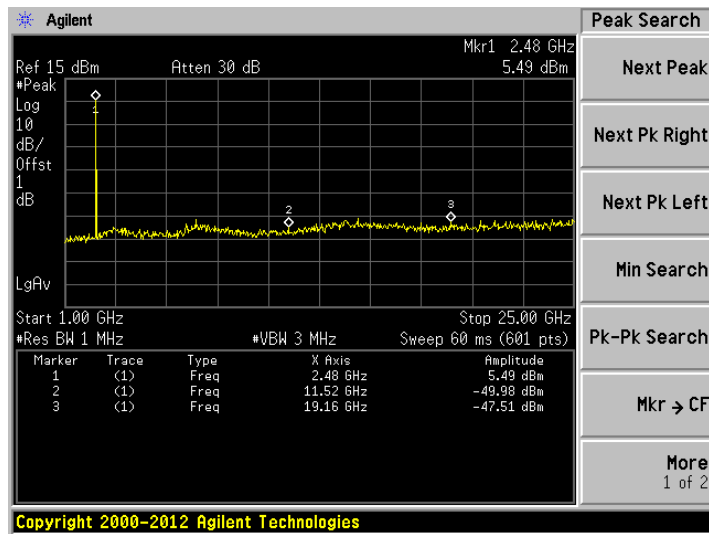
Note 2: Which frequency is not within a restricted band, and its limit line is 20dB below the highest emission level.

Note 3: Average measurement was not performed if peak level went lower than the average limit.

Note 4: The harmonic (2th ,3th, 4th,...etc.) and other spurious are not reported, because those levels are lower than average limit line and background noise

Frequency (MHz)	Value (dBm)	Ground Reflection Factor (dB)	D(m)	Max gain(dBi)	Detector	E (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Verdict
11520	-49.98	0	3	3.76	PK	49.04	74.00	24.96	--	PASS
	N/A		3	3.76	AV	24.19	54.00	29.81	--	PASS
19160	-47.51	0	3	3.76	PK	51.51	74.00	22.49	--	PASS
	N/A		3	3.76	AV	N/A	54.00	N/A	Note 3	PASS
2480	5.49	0	3	3.76	PK	104.51	N/A	N/A	Note 1	N/A
	1.48		3	3.76	AV	79.66	N/A	N/A		N/A

HIGH CHANNEL, SPURIOUS 1 GHz ~ 25 GHz





4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 07,15	Apr. 06,16
Power Meter	Anritsu	ML2495A	1139001	Feb. 20,15	Feb. 19,16
Power Sensor	Anritsu	MA2411B	1126068	Feb. 20,15	Feb. 19,16
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 27,15	Oct. 26,16
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.04,15	Sep. 03,16
Oscilloscope	Agilent	DSO9254A	MY51260160	Oct. 17, 15	Oct. 16, 16
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 05,15	Nov. 04,16

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.

4.3.3 TEST PROCEDURE

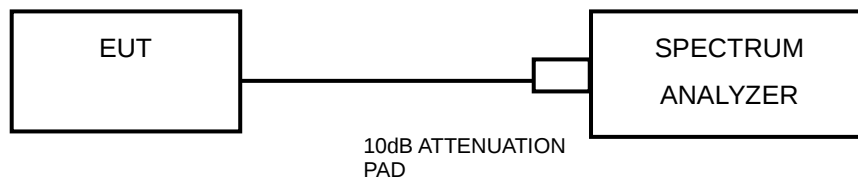
1. Set resolution bandwidth (RBW) = 100KHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.



4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

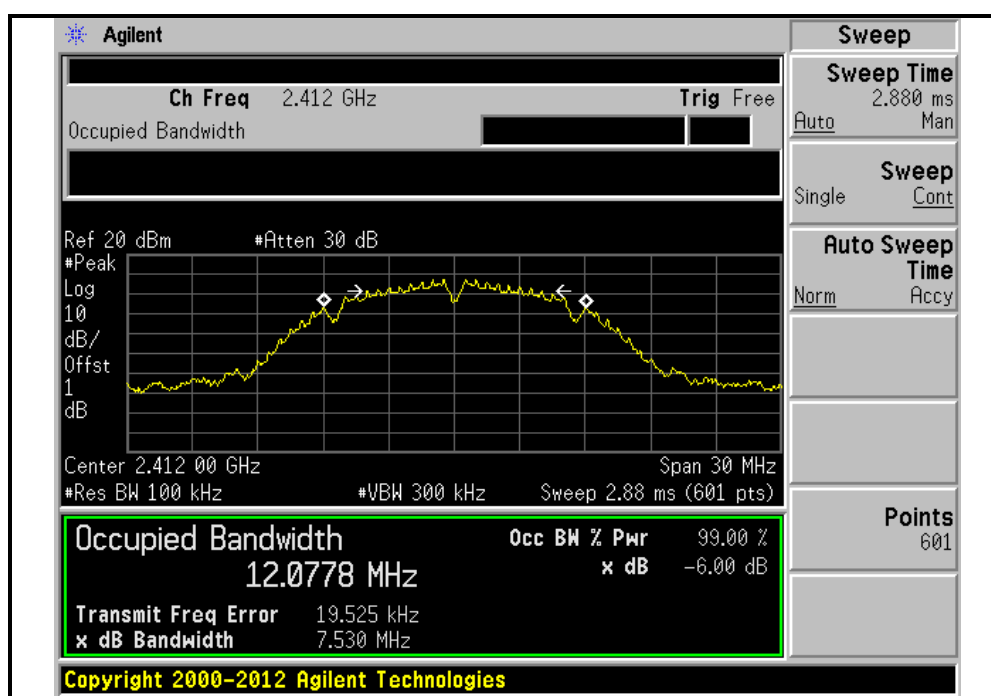


4.3.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.530	0.5	PASS
6	2437	7.101	0.5	PASS
11	2462	7.032	0.5	PASS

2412 MHz

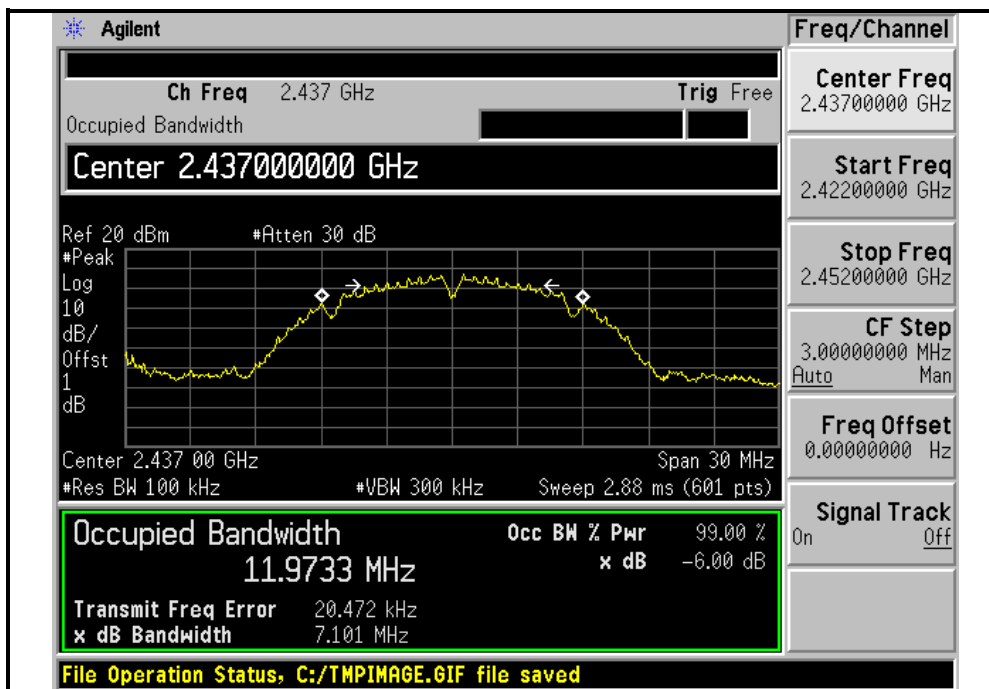




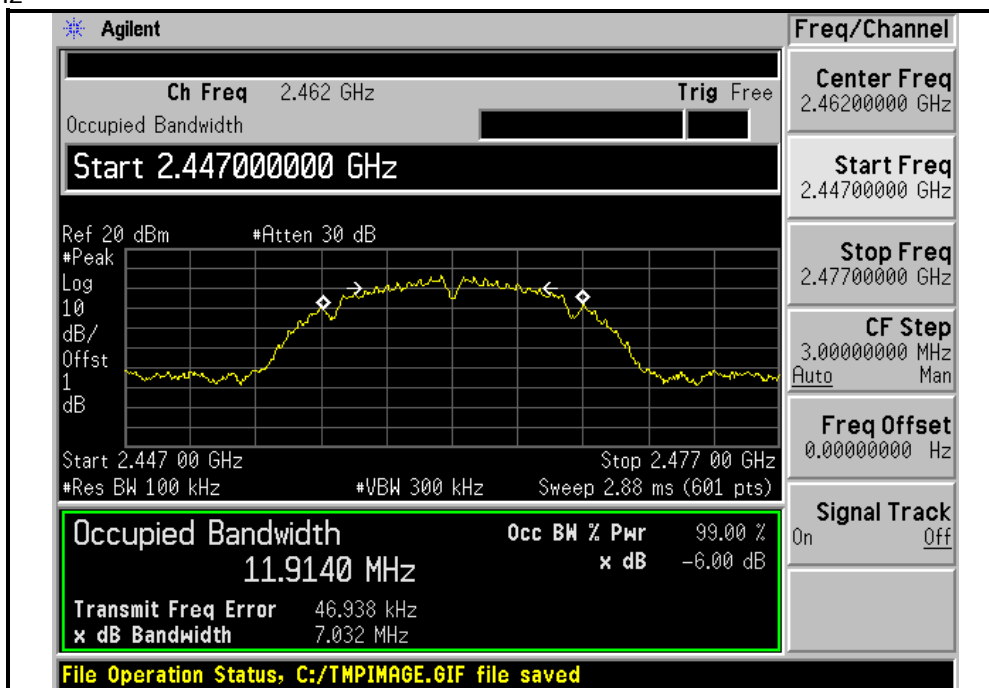
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437 MHz



2462 MHz

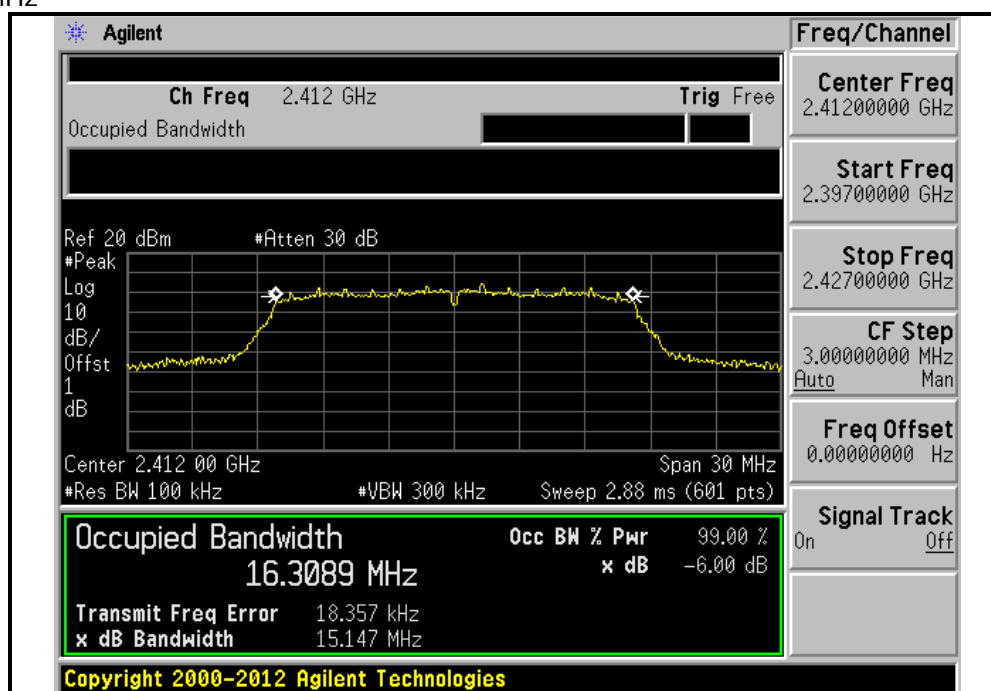




802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.147	0.5	PASS
6	2437	15.155	0.5	PASS
11	2462	15.134	0.5	PASS

2412 MHz

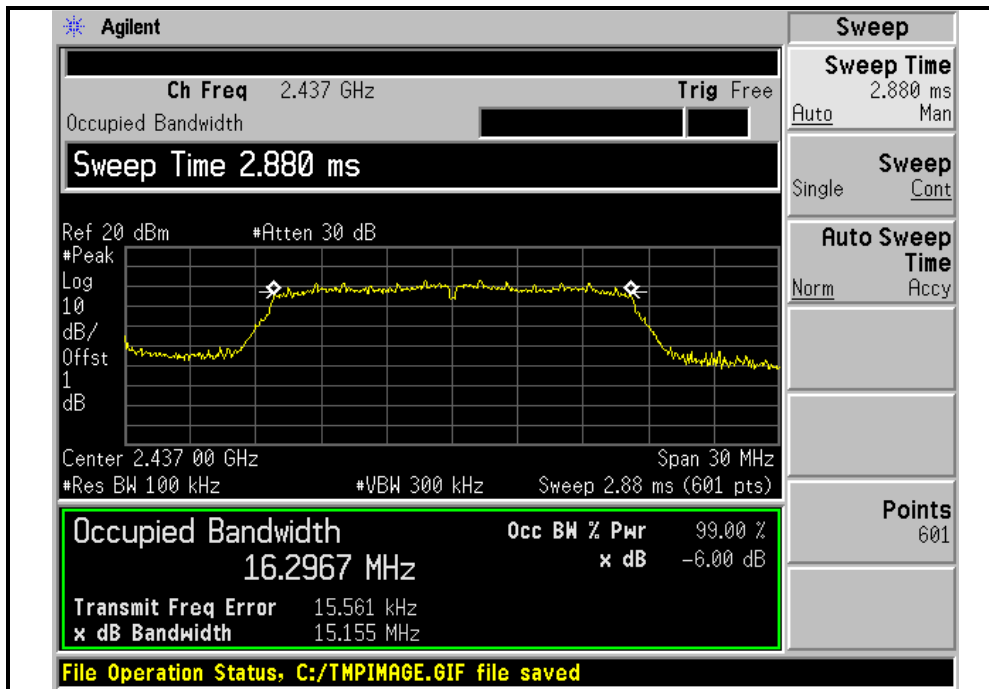




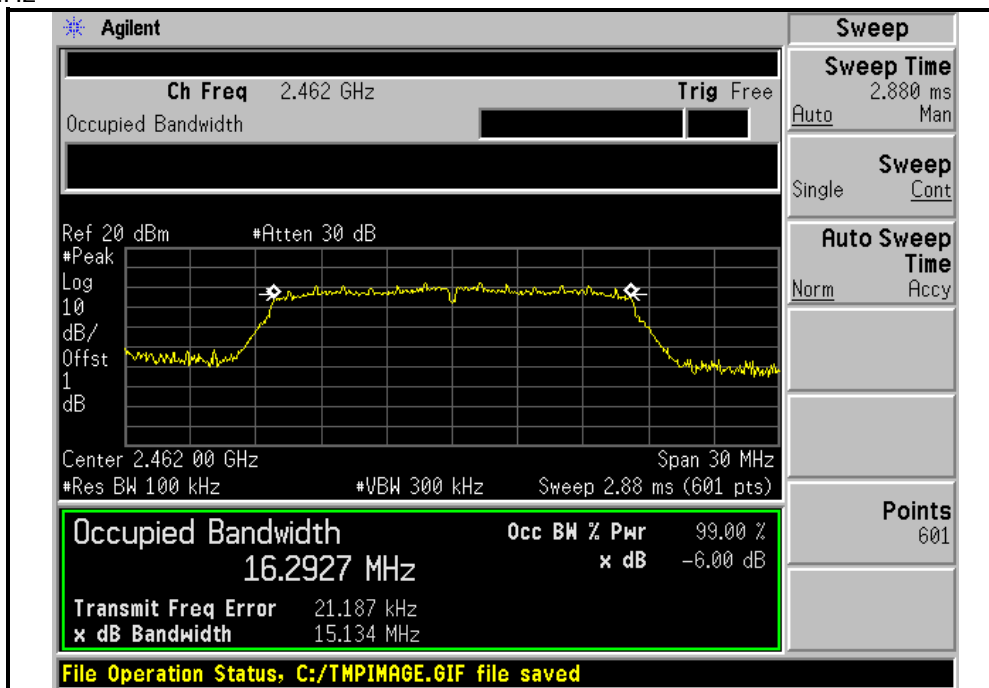
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437 MHz



2462 MHz

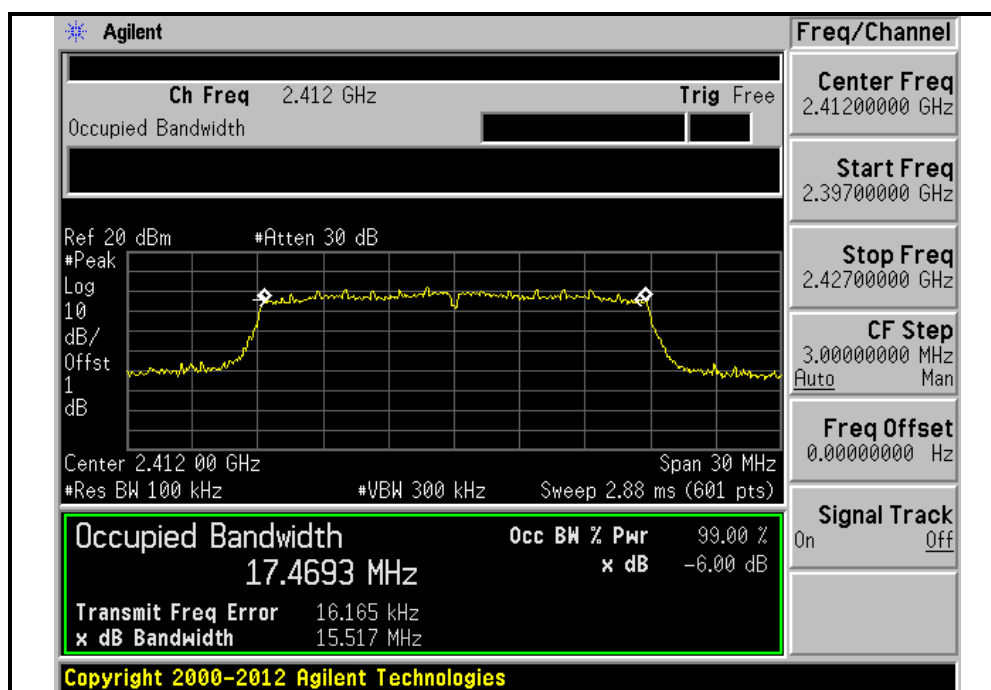




802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.517	0.5	PASS
6	2437	15.152	0.5	PASS
11	2462	15.146	0.5	PASS

2412 MHz

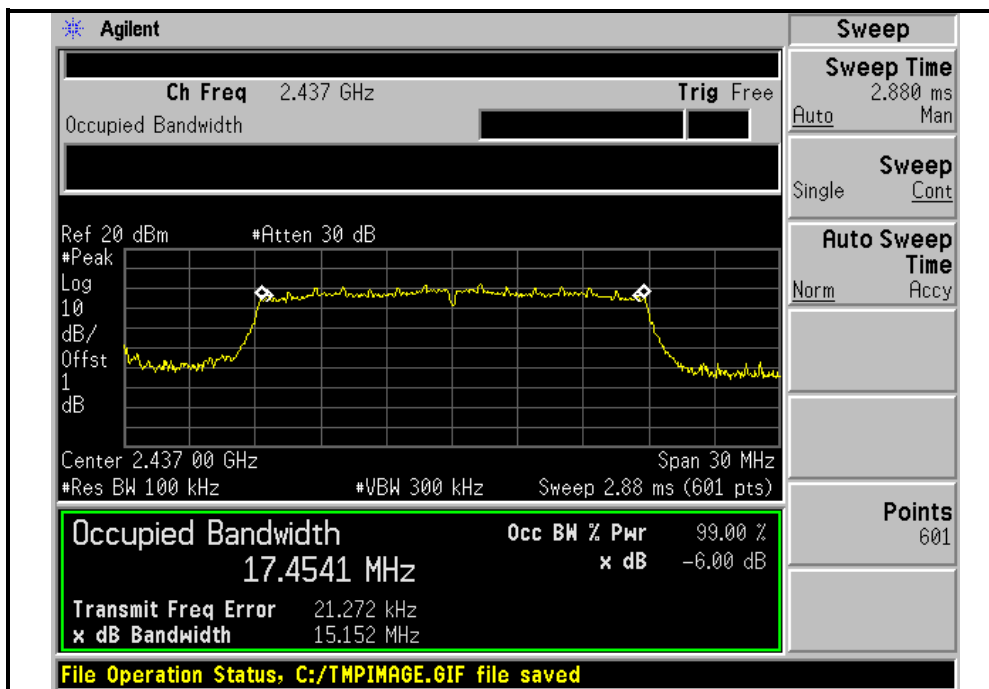




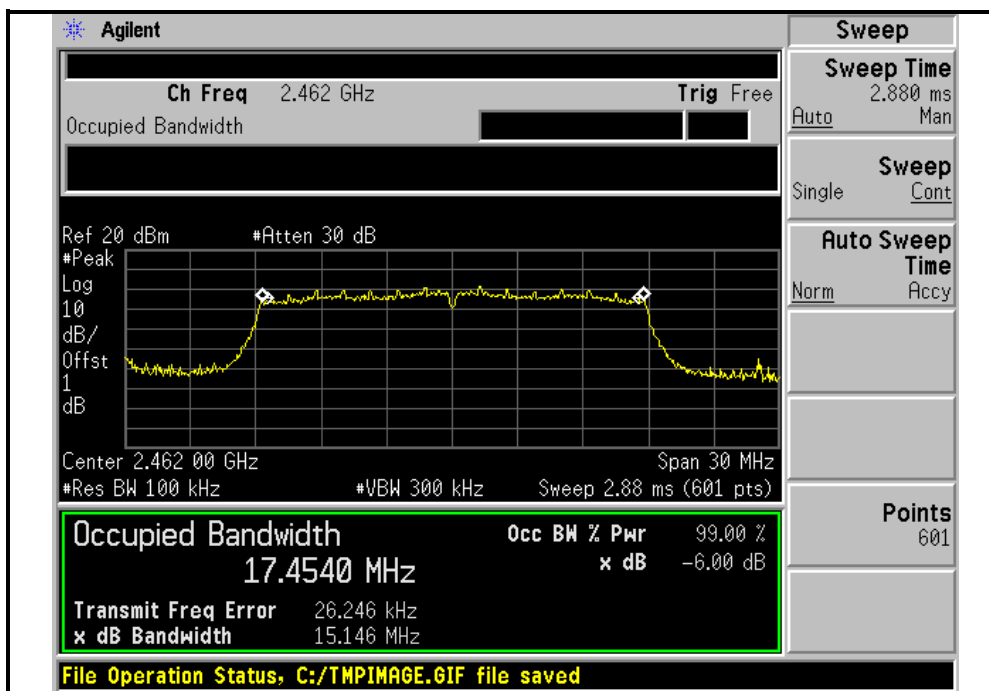
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437 MHz



2462 MHz

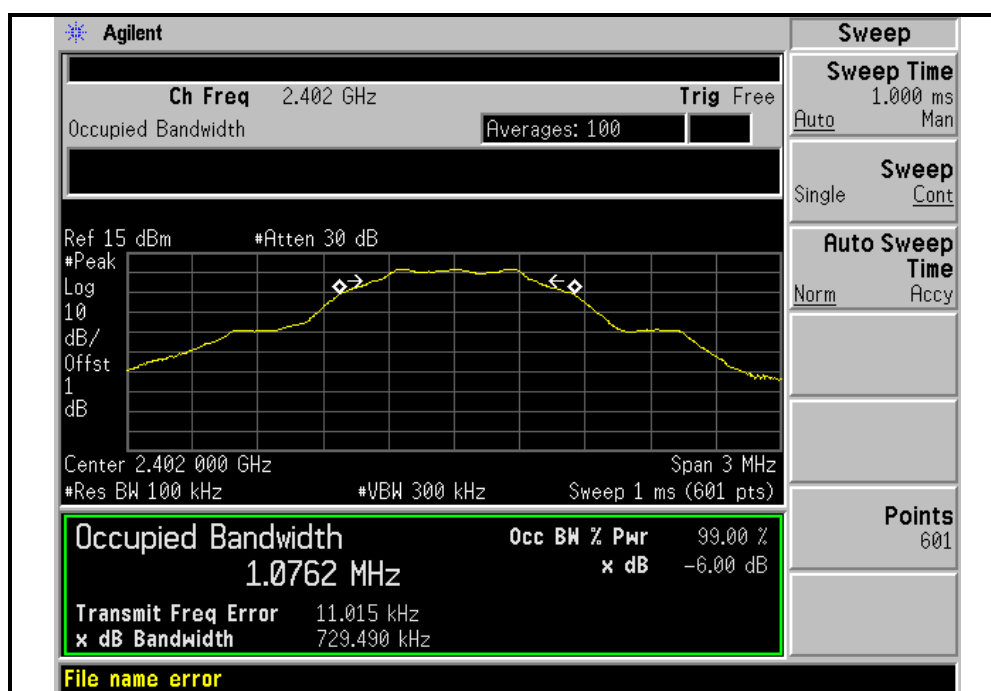




BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (KHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	729.49	0.5	PASS
19	2440	726.938	0.5	PASS
39	2480	732.992	0.5	PASS

2402 MHz

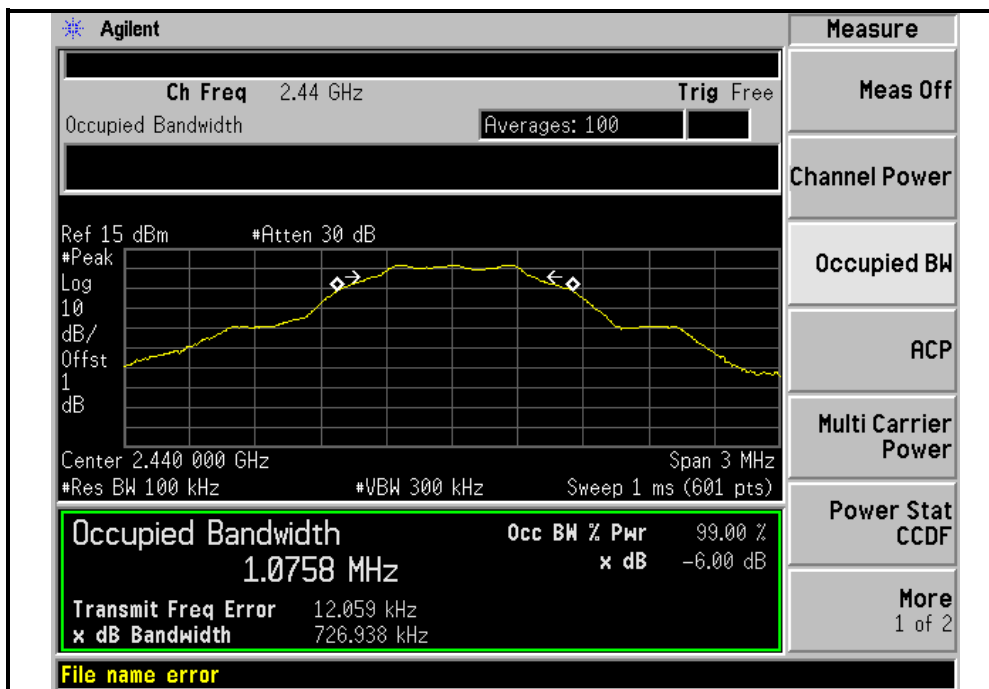




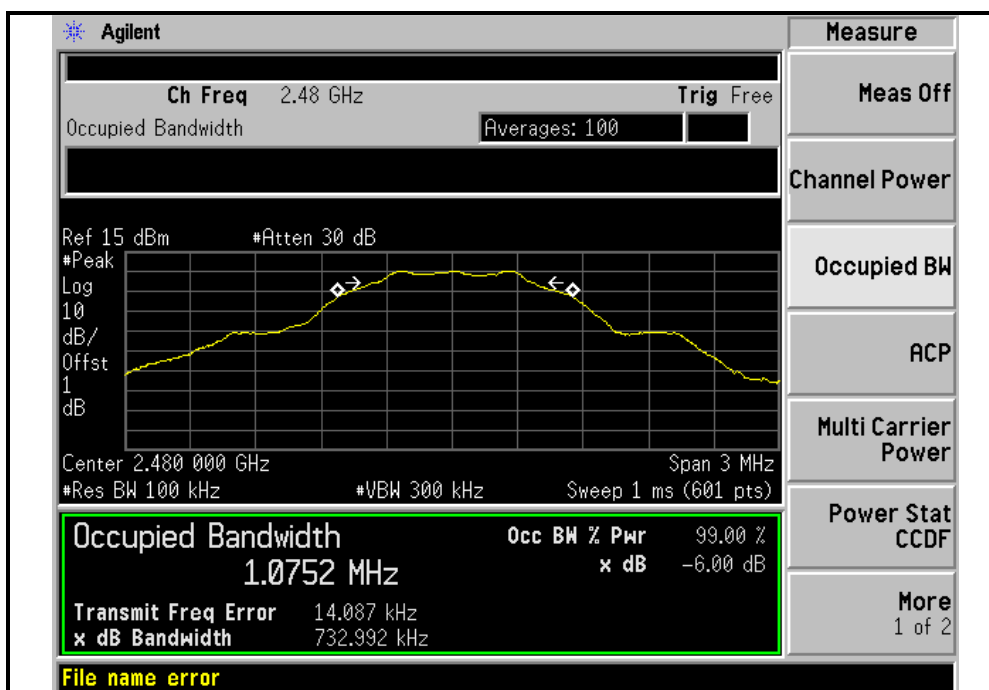
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2440 MHz



2480 MHz



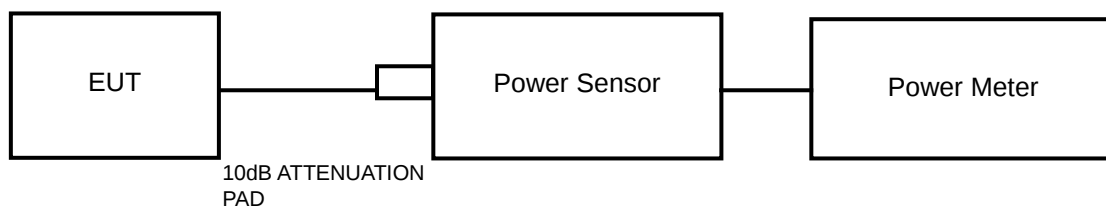


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm).

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer (10Hz–40GHz)	Rohde&Schwarz	FSV40	101003	Apr. 07,15	Apr. 06,16
Power Meter	Anritsu	ML2495A	1139001	Feb. 20,15	Feb. 19,16
Power Sensor	Anritsu	MA2411B	1126068	Feb. 20,15	Feb. 19,16
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 27,14	Oct. 26,16
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.04,15	Sep. 03,16
Oscilloscope	Agilent	DSO9254A	MY51260160	Oct. 17, 15	Oct. 16, 16
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 05,15	Nov. 04,16

NOTE:

1. The test was performed in RF Oven room.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

4.4.4 TEST PROCEDURES

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.



Test Report No.: RF151008N004-2R1

4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

**4.4.7 TEST RESULTS****4.4.7.1 MAXIMUM PEAK OUTPUT POWER****802.11b**

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	15.02	31.77	1	PASS
6	2437	14.79	30.13	1	PASS
11	2462	14.06	25.47	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	13.78	23.88	1	PASS
6	2437	13.59	22.86	1	PASS
11	2462	13.46	22.18	1	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2412	13.01	20.00	1	PASS
6	2437	12.28	16.90	1	PASS
11	2462	11.75	14.96	1	PASS



BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	7.85	6.10	1	PASS
19	2440	7.90	6.17	1	PASS
39	2480	6.37	4.34	1	PASS

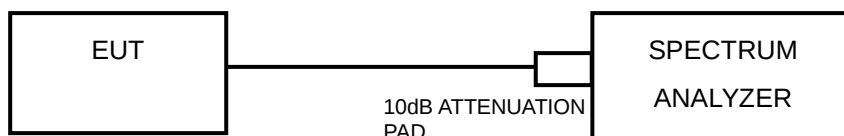


4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- Set instrument center frequency to DTS channel center frequency.
- Set span to at least 1.5 times the OBW.
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set VBW $\geq 3 \times \text{RBW}$.
- Detector = power averaging (RMS) or sample detector (when RMS not available).
- Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span/RBW}$.
- Sweep time = auto couple.
- Employ trace averaging (RMS) mode over a minimum of 100 traces.
- Use the peak marker function to determine the maximum amplitude level.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.



4.5.6 EUT OPERATING CONDITION

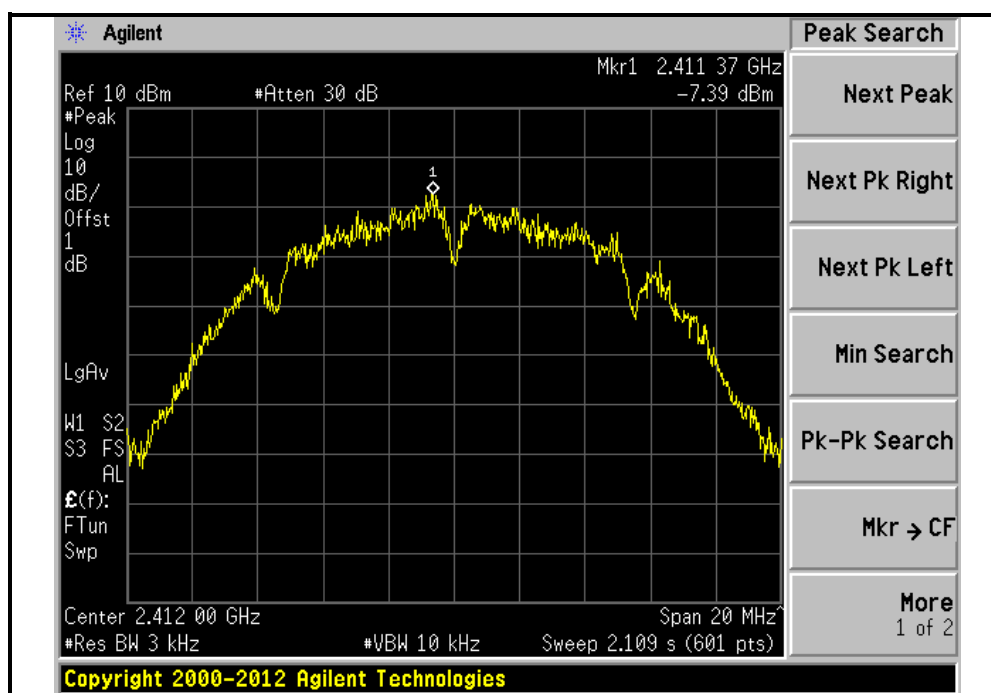
Same as item 4.3.6.

4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-7.39	8	PASS
6	2437	-8.97	8	PASS
11	2462	-8.72	8	PASS

2412 MHz

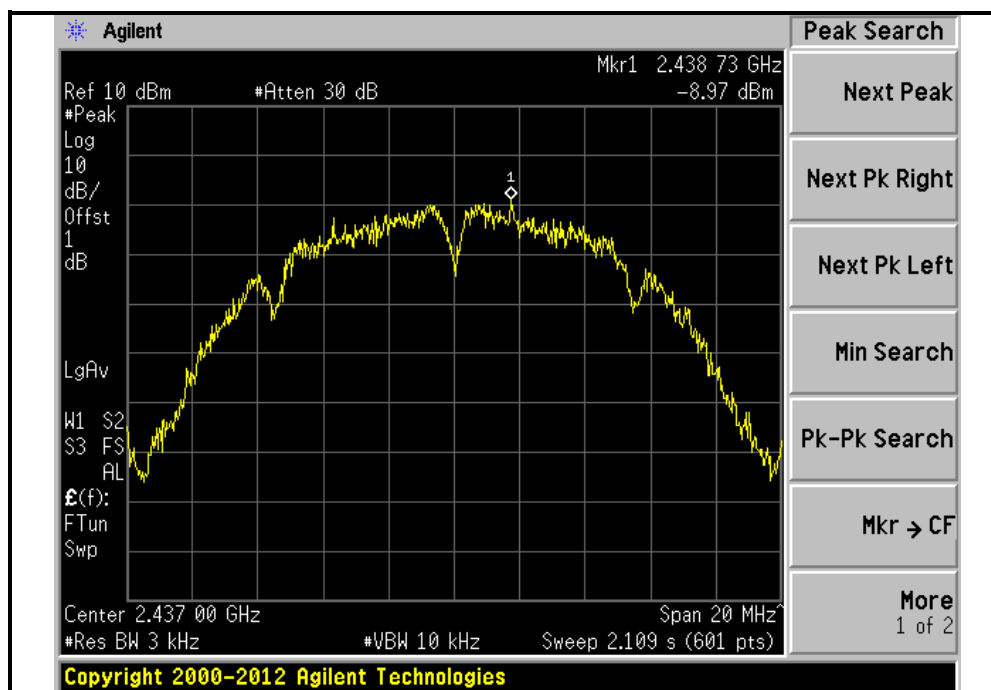




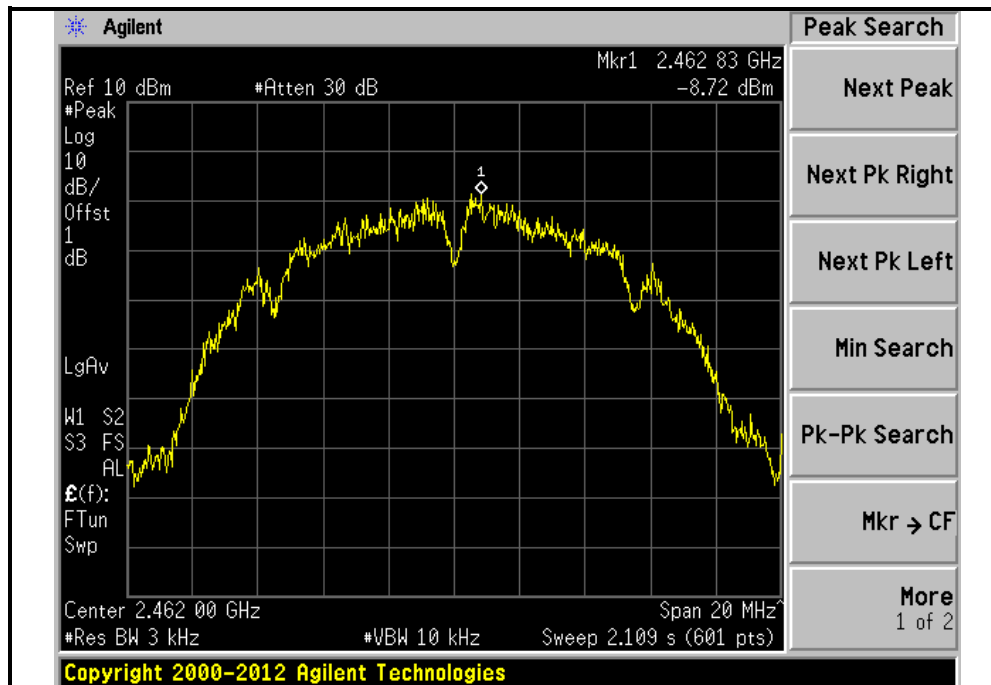
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437MHz



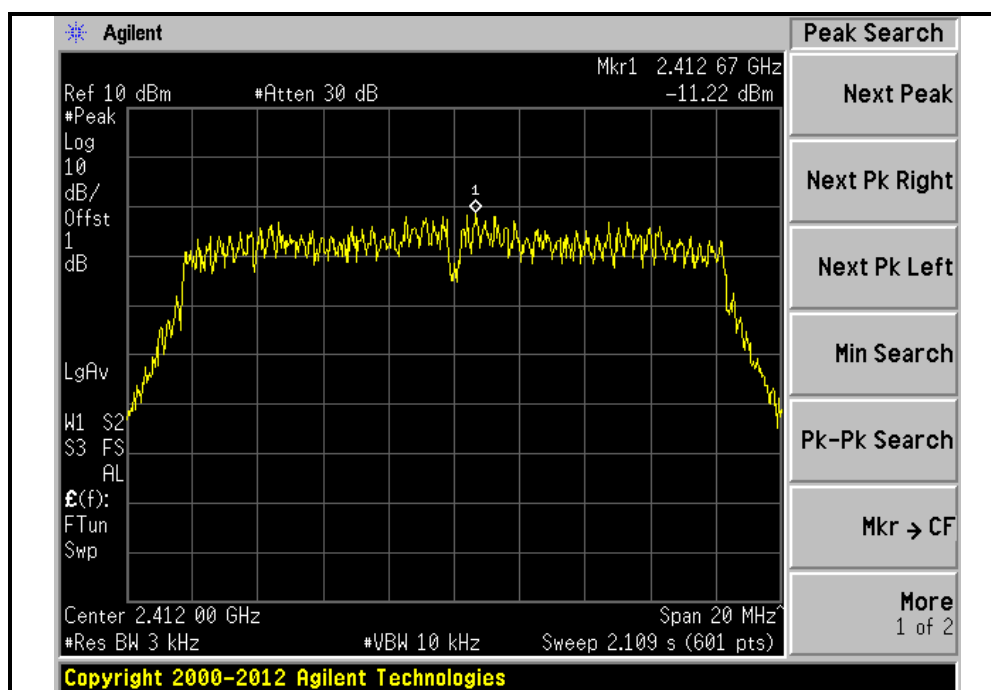
2462 MHz



802.11g

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.22	8	PASS
6	2437	-11.54	8	PASS
11	2462	-12.76	8	PASS

2412 MHz

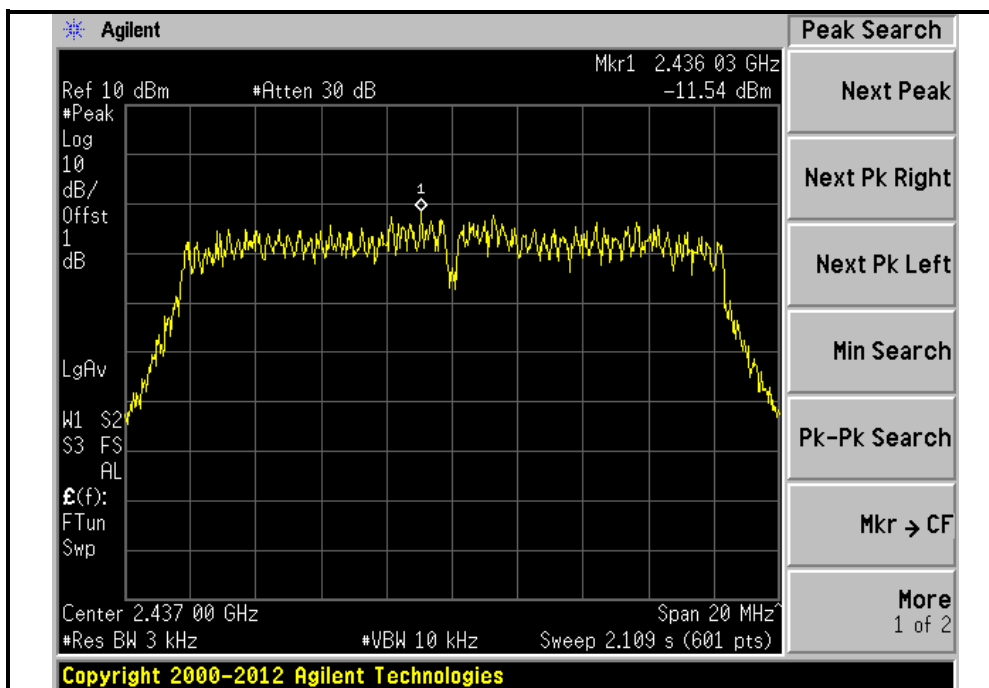




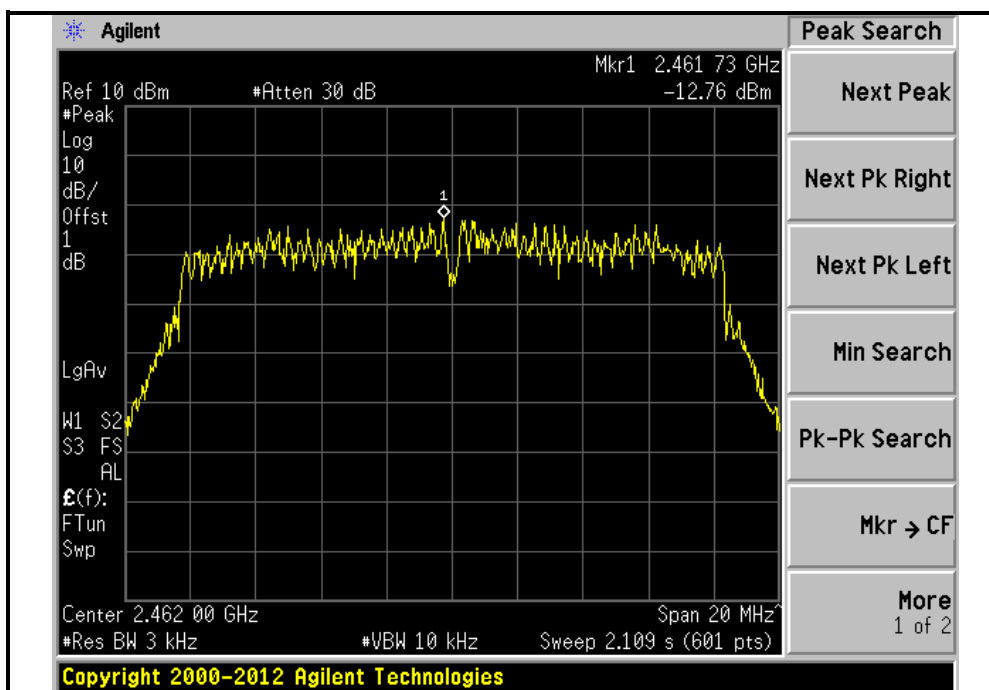
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437 MHz



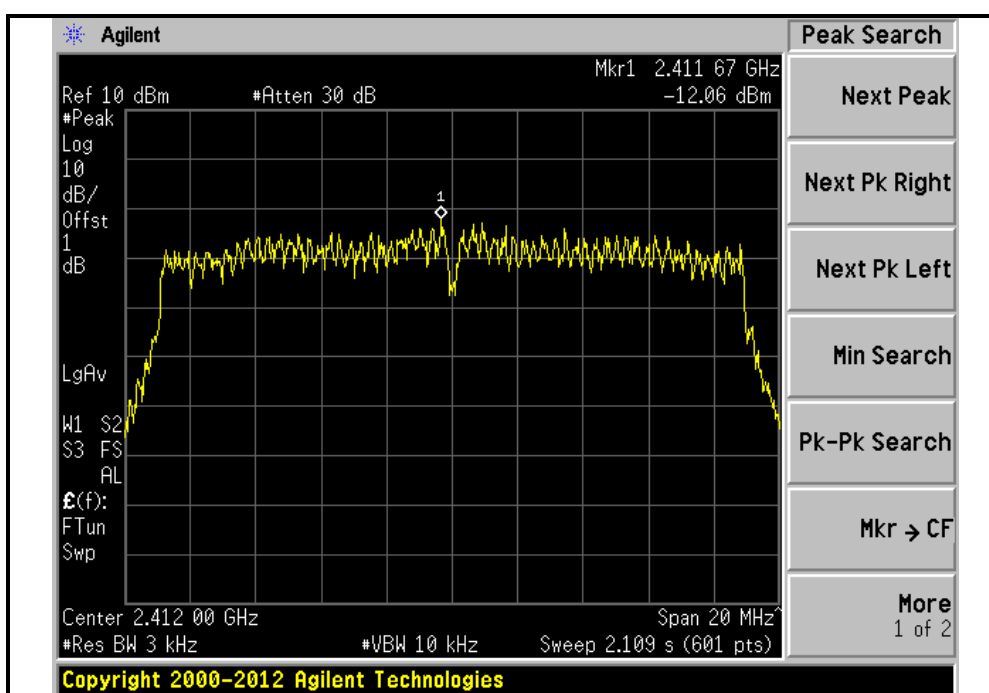
2462MHz



802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.06	8	PASS
6	2437	-12.47	8	PASS
11	2462	-13.38	8	PASS

2412 MHz

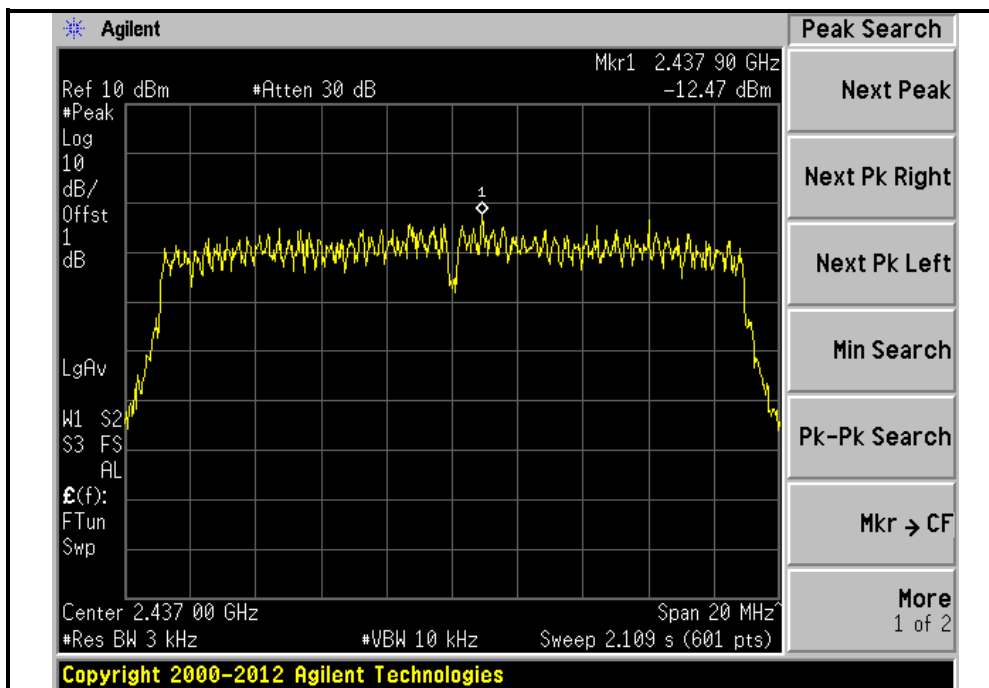




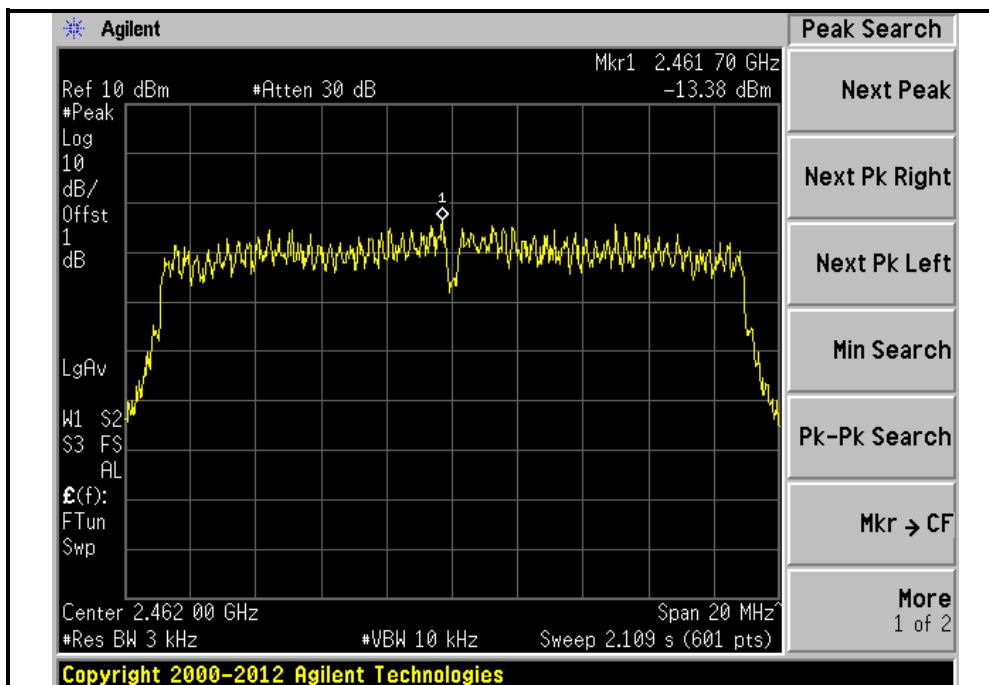
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

2437 MHz



2462 MHz





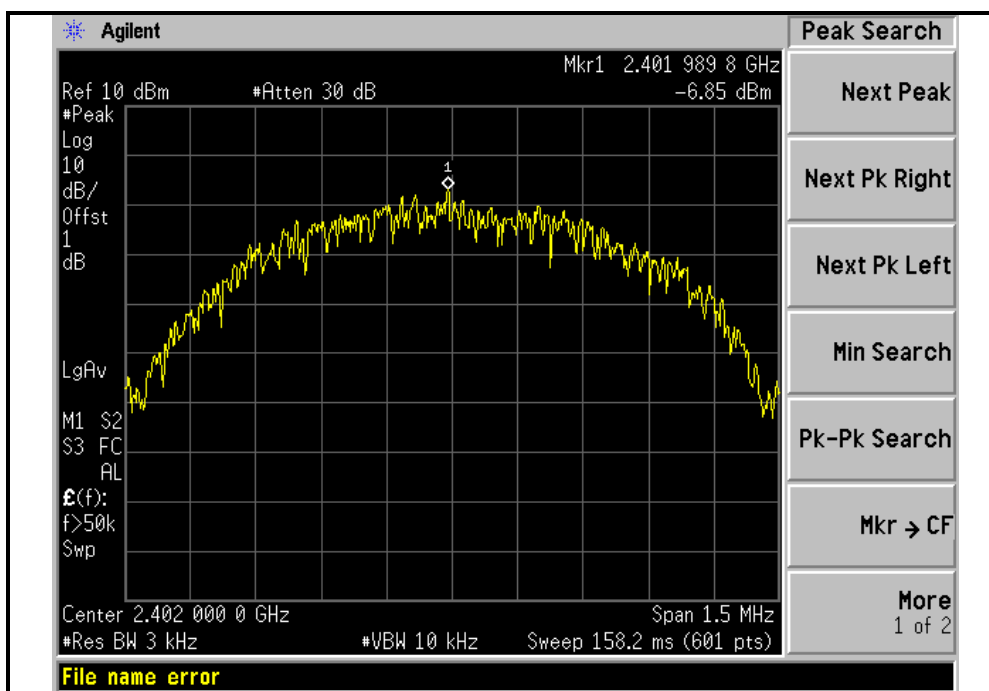
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

BT-LE (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-6.85	8	PASS
19	2440	-7.74	8	PASS
39	2480	-8.46	8	PASS

2402 MHz

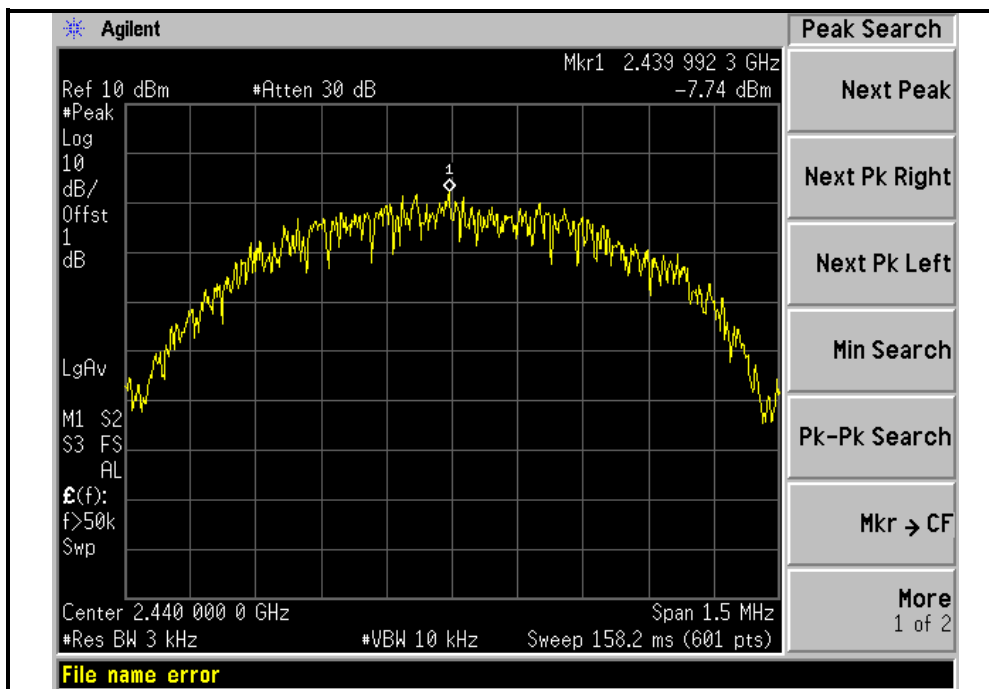




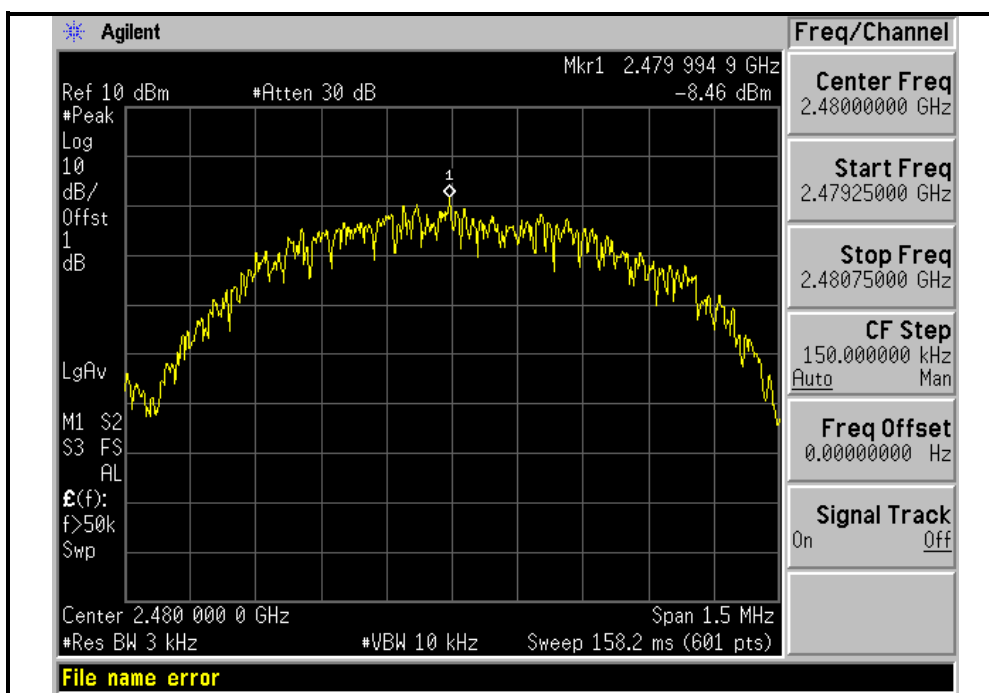
BUREAU
VERITAS

2440MHz

Test Report No.: RF151008N004-2R1



2480 MHz



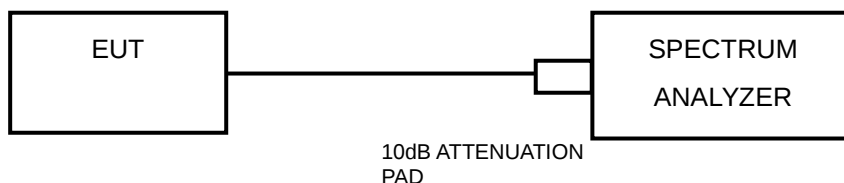


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as item 4.3.6.



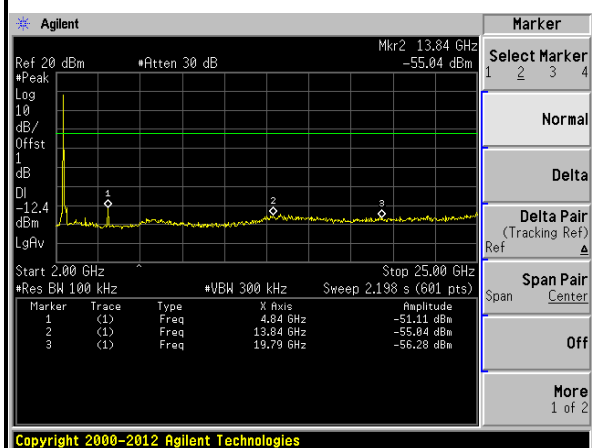
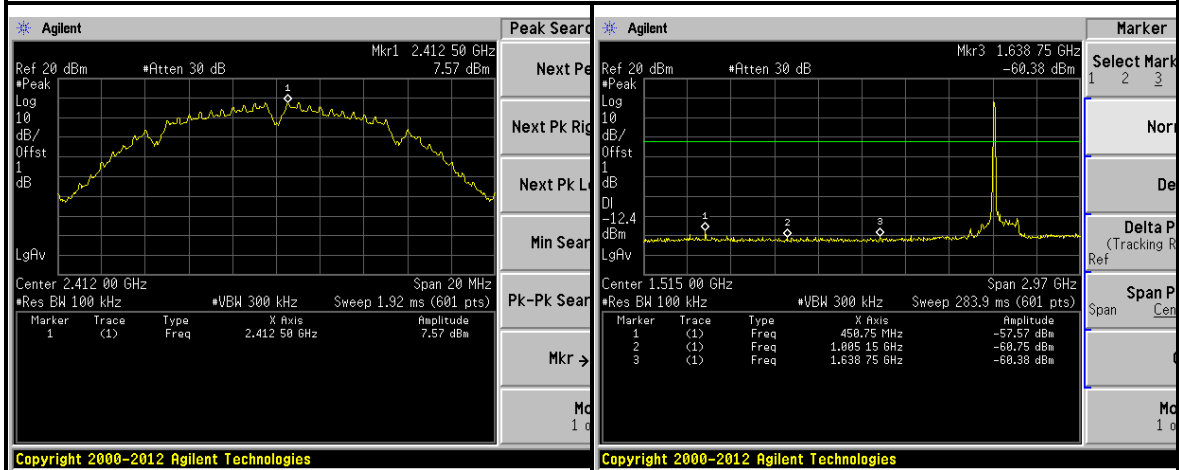
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

4.6.7 TEST RESULTS

802.11b

CH 1

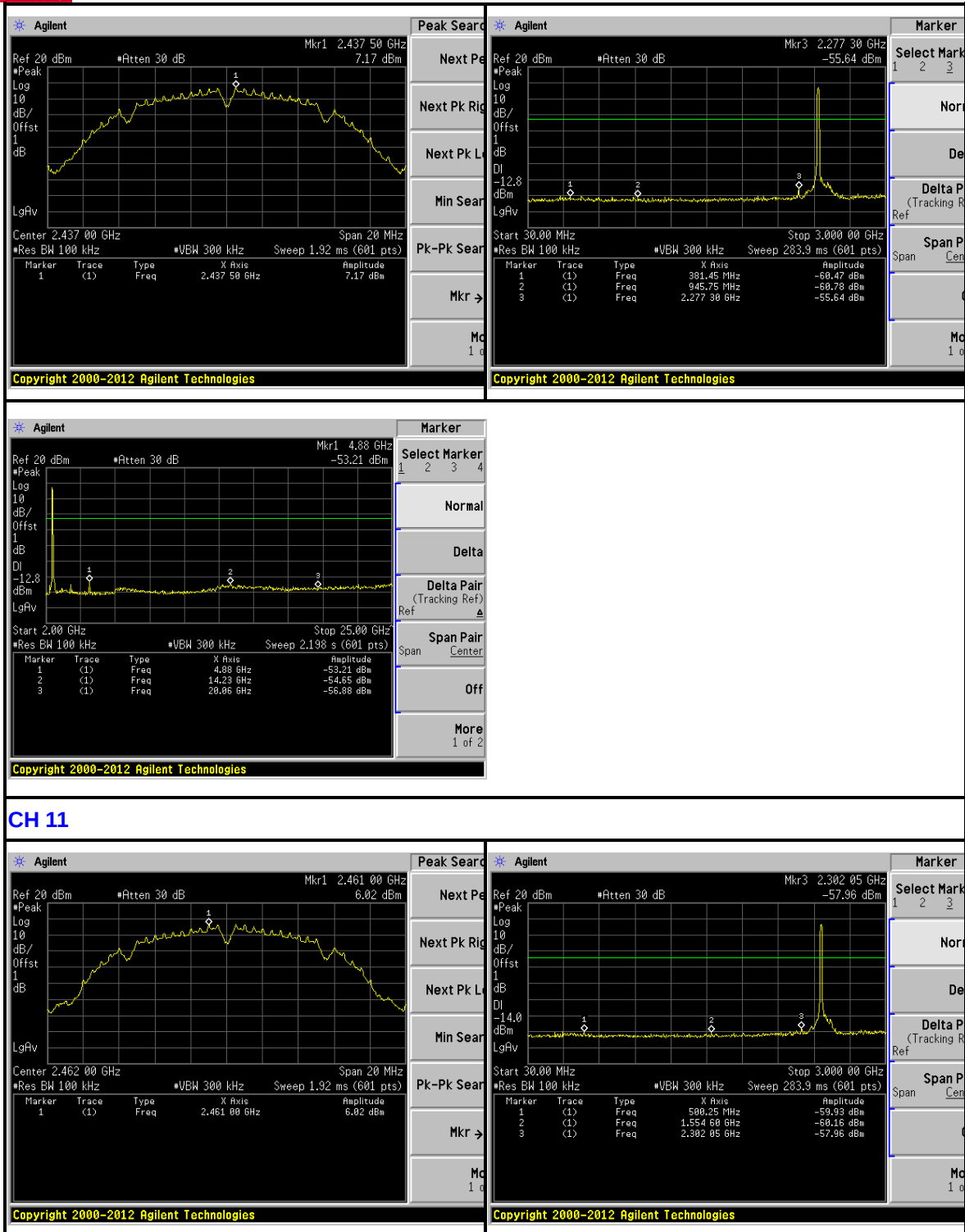


CH 6



BUREAU
VERITAS

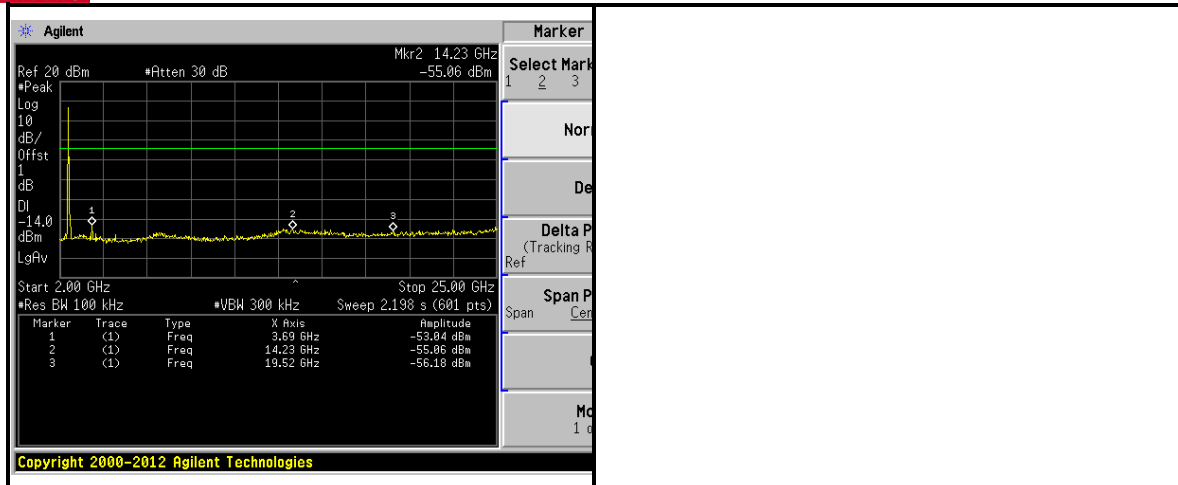
Test Report No.: RF151008N004-2R1





BUREAU
VERITAS

Test Report No.: RF151008N004-2R1



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Page 88 of 98

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com

Report Version 1

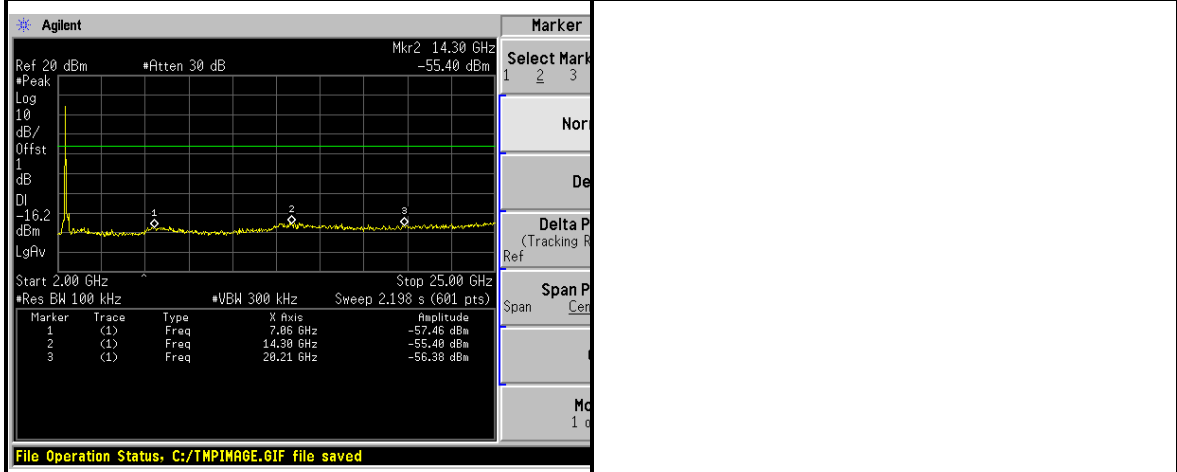
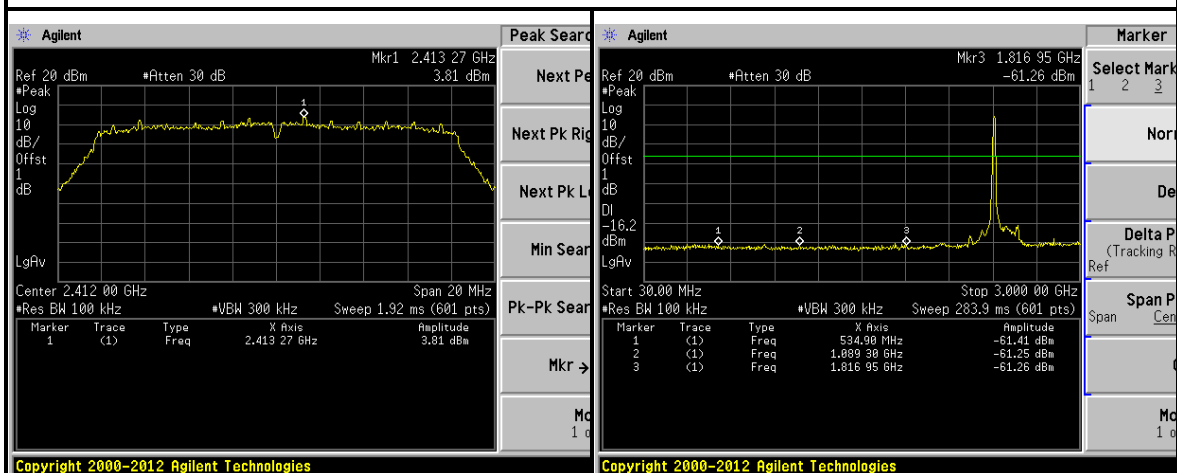


BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

802.11g

CH 1



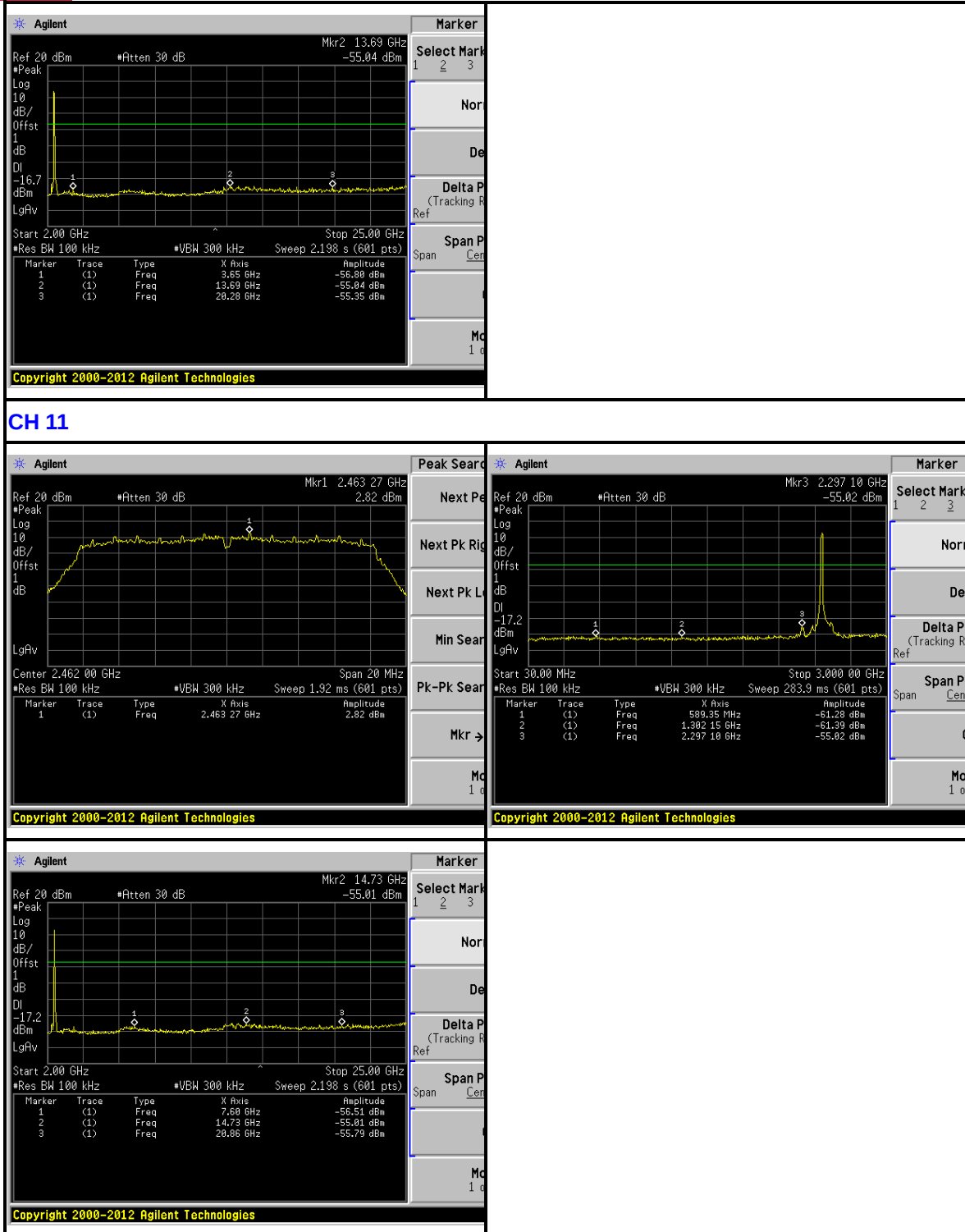
CH 6





BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

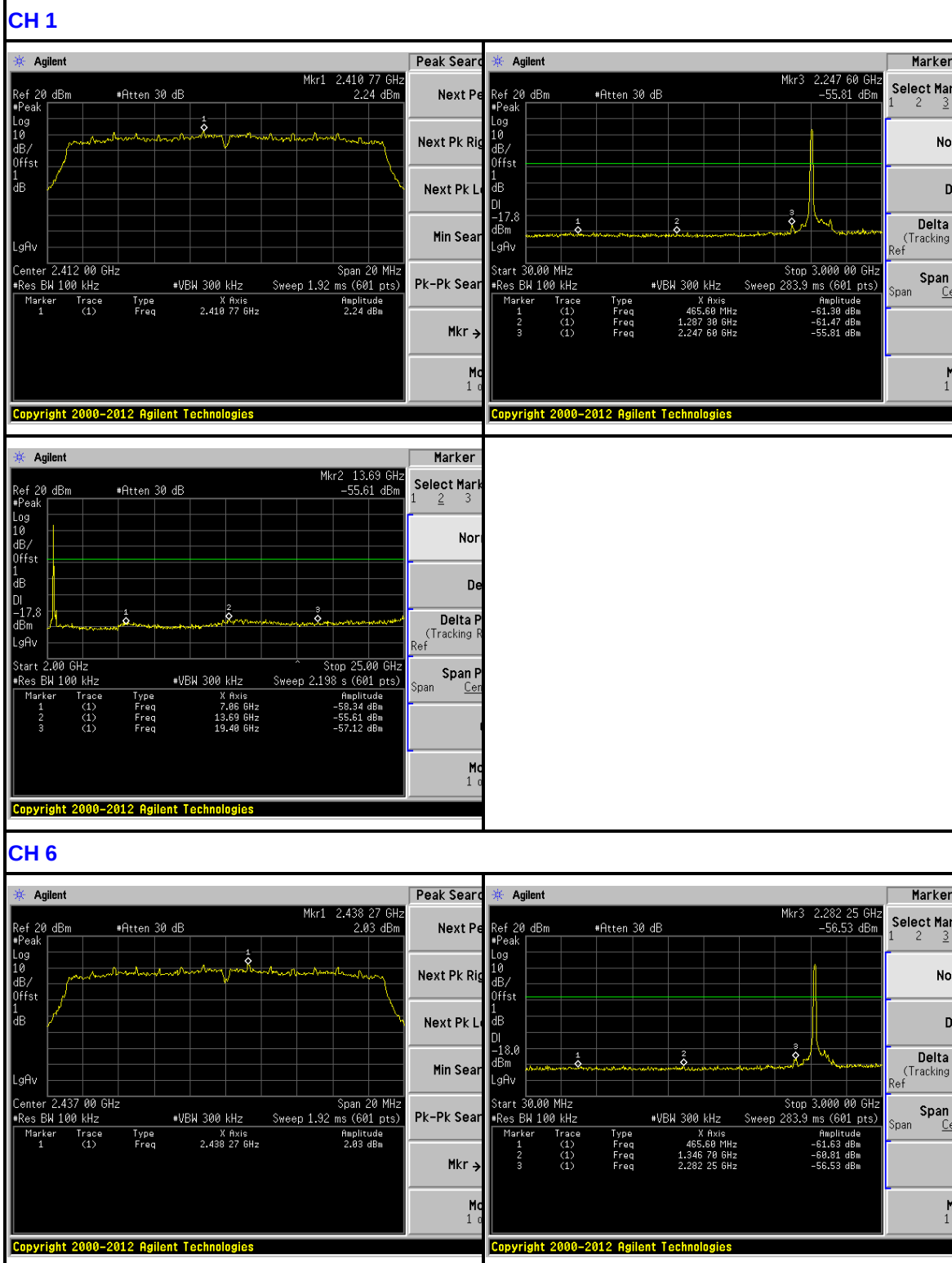




BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

802.11n (20MHz)



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

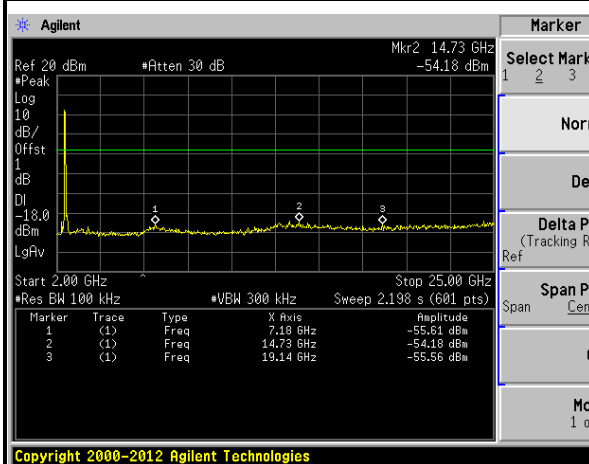
No. 34, Chenwulu Section, Guantai Rd., Houjie
Town, Dongguan City,
Guangdong 523942, China

Tel: +86 769 8593 5656
Fax: +86 769 8593 1080
Email: customerservice.dg@cn.bureauveritas.com

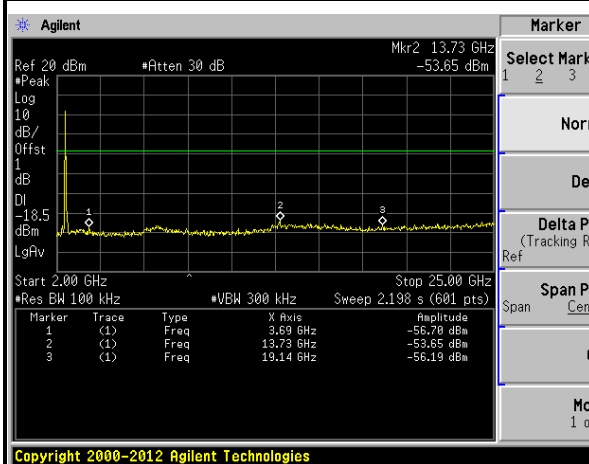
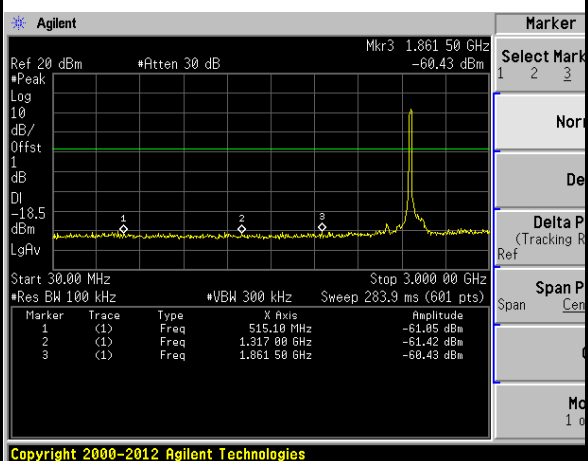
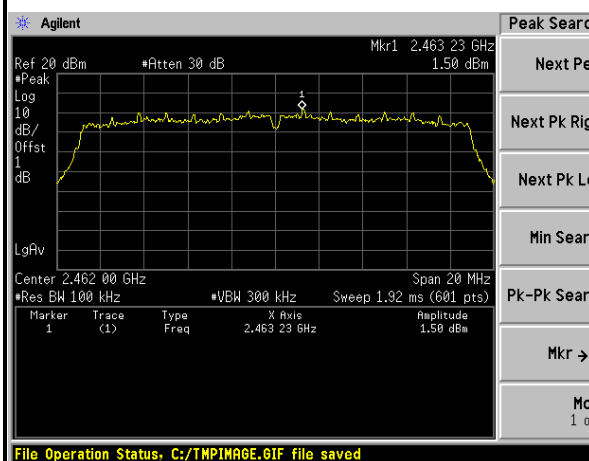


BUREAU
VERITAS

Test Report No.: RF151008N004-2R1



CH 11



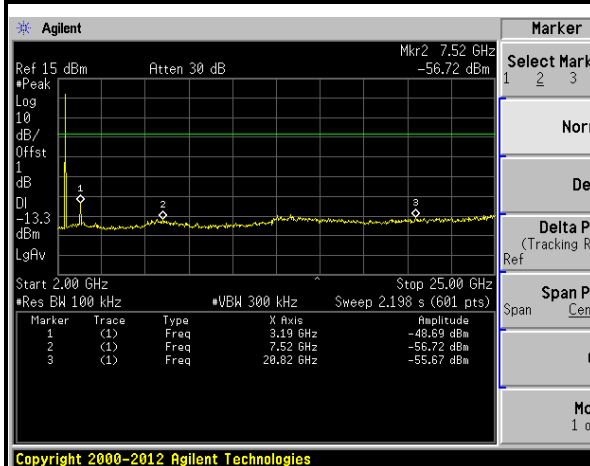
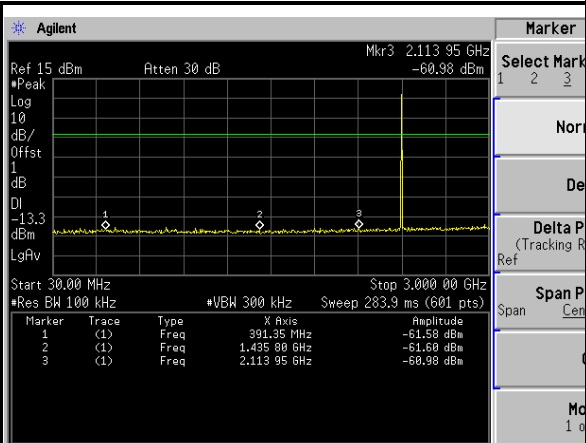
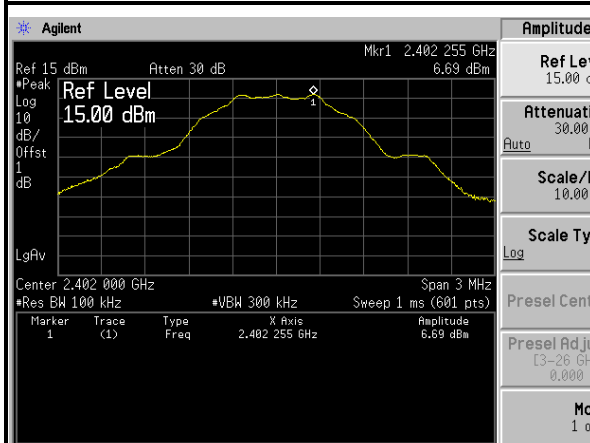


BUREAU
VERITAS

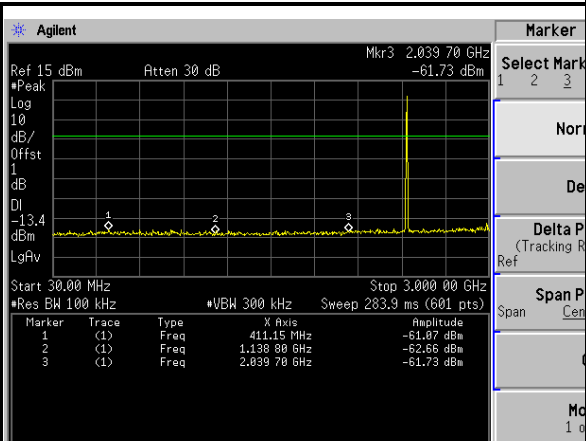
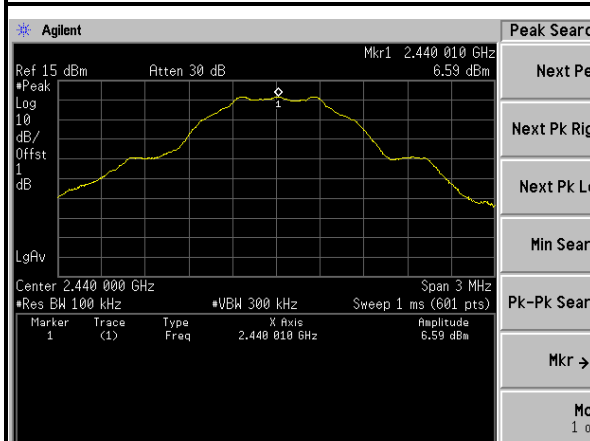
Test Report No.: RF151008N004-2R1

BT-LE (GFSK)

CH 0



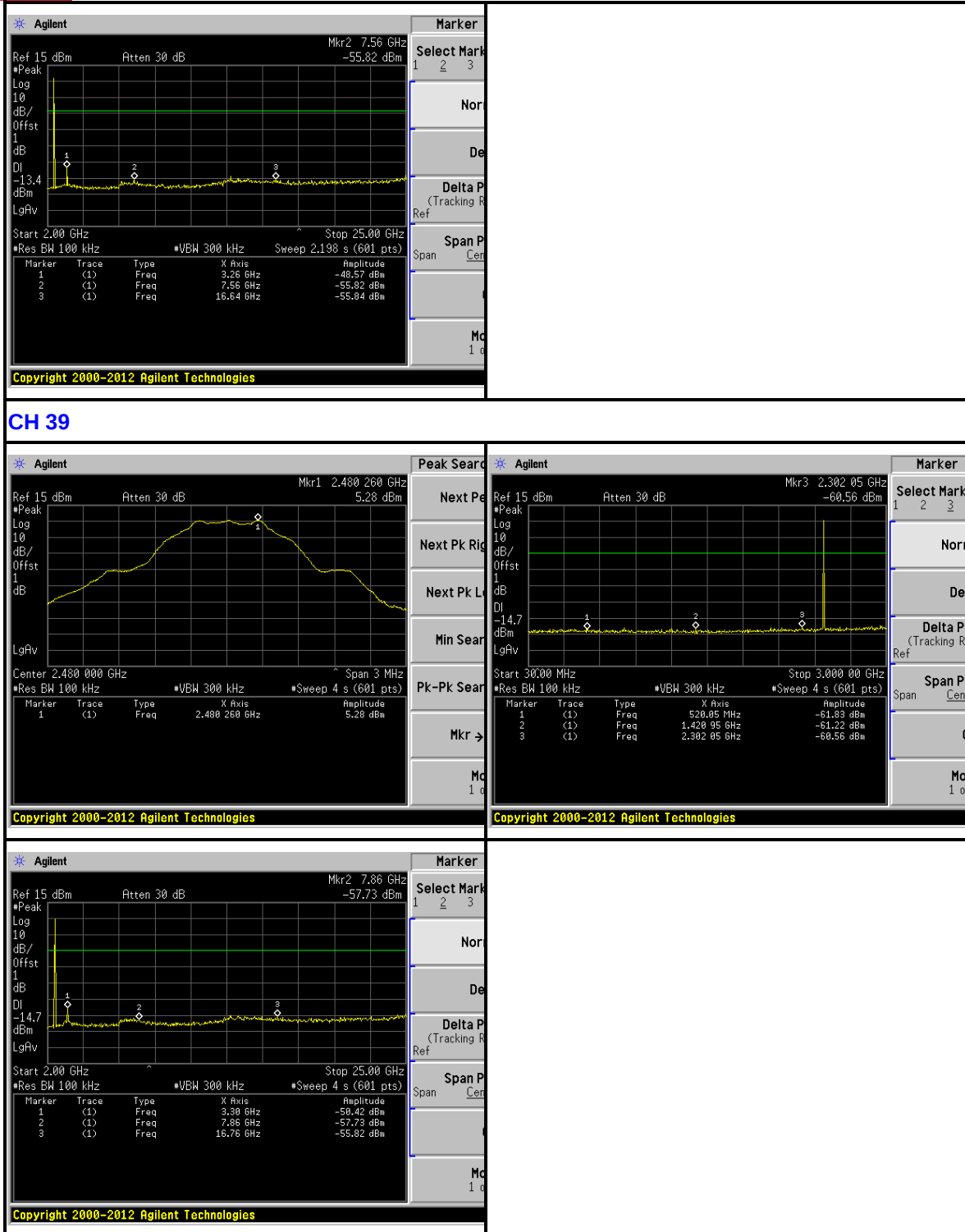
CH 19





BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

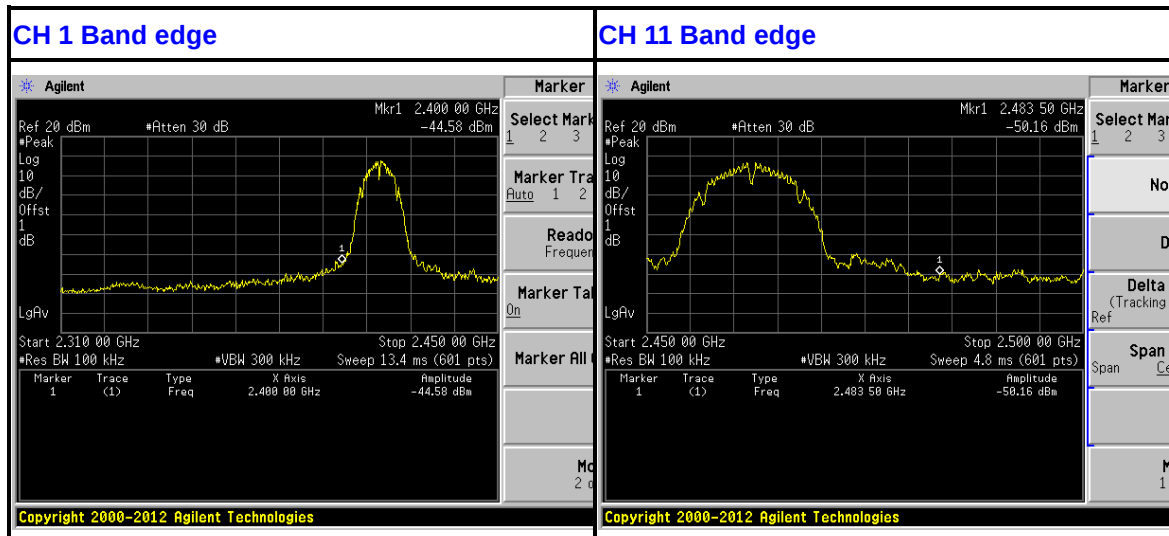




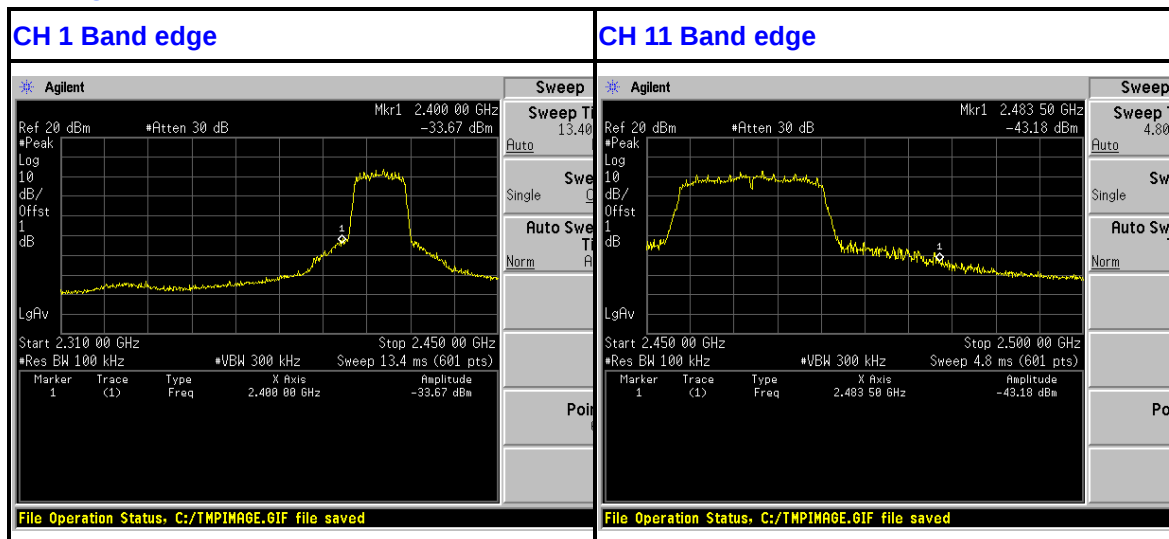
BUREAU
VERITAS

Test Report No.: RF151008N004-2R1

802.11b



802.11g



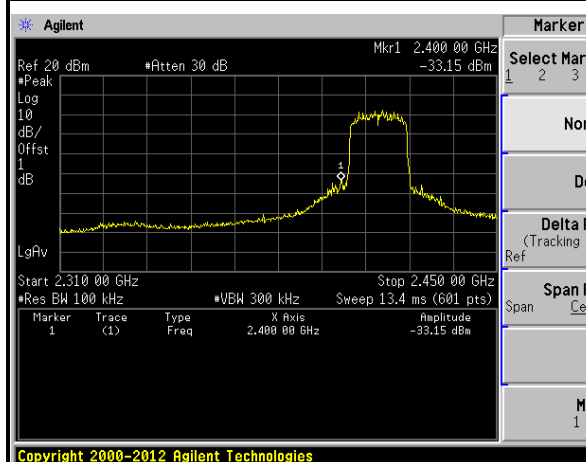


BUREAU
VERITAS

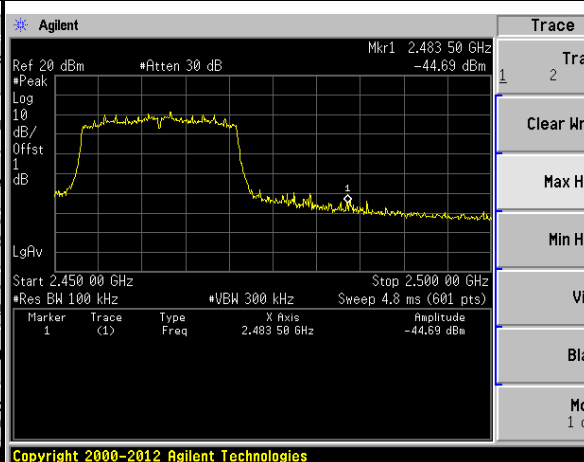
Test Report No.: RF151008N004-2R1

802.11n (20MHz)

CH 1 Band edge

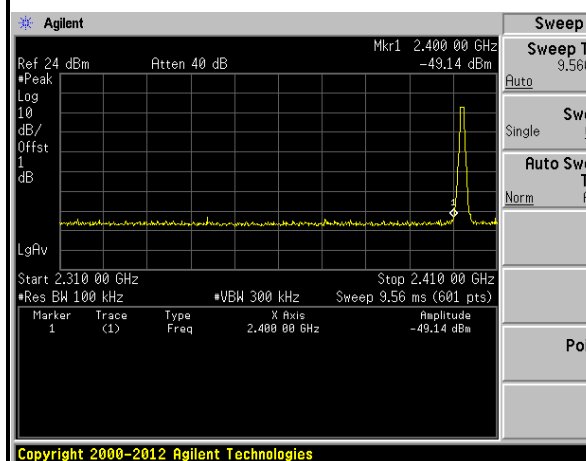


CH 11 Band edge

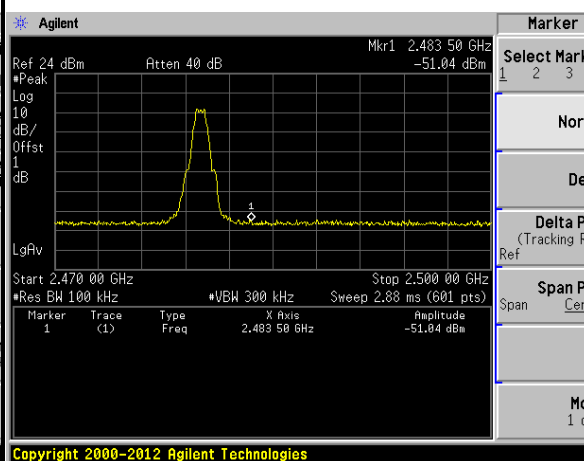


BT-LE (GFSK)

CH 0 Band edge



CH 39 Band edge





Test Report No.: RF151008N004-2R1

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: RF151008N004-2R1

6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---