

FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9,02600 Espoo,Finland

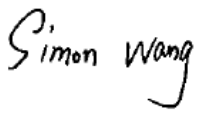
Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9,02600 Espoo,Finland
Product:	Tablet PC
Brand Name:	NOKIA
Model Name:	TA-1505
FCC ID:	2AJOTTA-1505
Date of tests:	Aug. 03, 2022 ~ Aug. 31, 2022

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

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

☒ **ANSI C63.10-2013**

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

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Aug. 31, 2022	 Date: Aug. 31, 2022

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended 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. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; 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.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
1.1 MEASUREMENT UNCERTAINTY	6
2 GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	10
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	11
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	11
2.3 DUTY CYCLE OF TEST SIGNAL	15
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	16
2.5 DESCRIPTION OF SUPPORT UNITS	16
3 TEST TYPES AND RESULTS.....	17
3.1 CONDUCTED EMISSION MEASUREMENT	17
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	17
3.1.2 TEST INSTRUMENTS.....	17
3.1.3 TEST PROCEDURES	18
3.1.4 DEVIATION FROM TEST STANDARD	18
3.1.5 TEST SETUP	19
3.1.6 EUT OPERATING CONDITIONS	19
3.1.7 TEST RESULTS	20
3.2 RADIATED EMISSION MEASUREMENT	22
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	22
3.2.2 TEST INSTRUMENTS.....	23
3.2.3 TEST PROCEDURES	24
3.2.4 DEVIATION FROM TEST STANDARD	24
3.2.5 TEST SETUP	25
3.2.6 EUT OPERATING CONDITIONS	26
3.2.7 TEST RESULTS	27
3.3 6 DB BANDWIDTH MEASUREMENT	65
3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	65
3.3.2 TEST INSTRUMENTS.....	65
3.3.3 TEST PROCEDURE.....	65
3.3.4 DEVIATION FROM TEST STANDARD	66



3.3.5	TEST SETUP	66
3.3.6	EUT OPERATING CONDITIONS	66
3.3.7	TEST RESULTS	67
3.4	CONDUCTED OUTPUT POWER.....	68
3.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	68
3.4.2	TEST SETUP	68
3.4.3	TEST INSTRUMENTS	68
3.4.4	TEST PROCEDURES	68
3.4.5	DEVIATION FROM TEST STANDARD	68
3.4.6	EUT OPERATING CONDITIONS	68
3.4.7	TEST RESULTS	69
3.4.7.1	MAXIMUM PEAK OUTPUT POWER	69
3.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE).....	70
3.5	POWER SPECTRAL DENSITY MEASUREMENT	71
3.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	71
3.5.2	TEST SETUP	71
3.5.3	TEST INSTRUMENTS	71
3.5.4	TEST PROCEDURE.....	71
3.5.5	DEVIATION FROM TEST STANDARD	71
3.5.6	EUT OPERATING CONDITION	71
3.5.7	TEST RESULTS	72
3.6	OUT OF BAND EMISSION MEASUREMENT	73
3.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	73
3.6.2	TEST SETUP	73
3.6.3	TEST INSTRUMENTS	73
3.6.4	TEST PROCEDURE.....	73
3.6.5	DEVIATION FROM TEST STANDARD	74
3.6.6	EUT OPERATING CONDITION	74
3.6.7	TEST RESULTS	74
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	75
5	MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	76
6	APPENDIX 1 WLAN 2.4G.....	77
7	APPENDIX 2 BLE	131



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P22070038RF02	Original release	Aug. 31, 2022



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
15.207	AC Power Conducted Emission	Compliance
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

Note : 1.Except RSE , other data please refer to Appendix 1 (for WIFI-2.4G) and Appendix 2 (for BLE)
2. Only the worse data were report



1.1 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	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (9KHz-30MHz)	±2.16 dB
Radiated emissions (30MHz~1GMHz)	±4.98dB
Radiated emissions (1GMHz ~6GMHz)	±4.70dB
Radiated emissions (6GMHz ~18GMHz)	±4.60dB
Radiated emissions (18GMHz ~40GMHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

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



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Tablet PC
BRAND NAME	NOKIA
MODEL NAME	TA-1505
NOMINAL VOLTAGE	5.0Vdc(adapter or host equipment) 3.85Vdc (Li-ion, battery)
MODULATION	DSSS, OFDM, GFSK
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n20: up to 72.2 Mbps 802.11n40: up to 150 Mbps BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20/40) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 257.63mW (Maximum) BT-LE: 2.82mW (Maximum)
ANTENNA TYPE	PIFA Antenna with 1.3dBi gain
HW VERSION	EM_U1630_V1.2 L20
SW VERSION	V0.492_B01
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: non-shielded cable, with w/o ferrite core, 1 meter Earphone: non-shielded cable, with w/o ferrite core, 1.5 meter



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX
802.11n (40MHz)	1TX /1RX
BT_LE(1MHz)	1TX /1RX
BT_LE(2MHz)	1TX /1RX
BT_LE(S2)	1TX /1RX
BT_LE(S8)	1TX /1RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	NOKIA	Guangdong Fenghua New Energy Co., Ltd.	WTT80	Capacity : 3.8 Vdc, 8000mAh
AC Adapter	NOKIA	Shenzhen Baijunda Electronic Co., Ltd	AD-010U	I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A
Earphone	NOKIA	JUWEI ELECTRONICS CO., LTD	JWEP1242-W09 H	Signal Line, 1.5meter
USB Cable	NOKIA	Saibao (Jiangxi) Industrial Co., Ltd	AC-2A	Signal Line, 1.0meter



2.2 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		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

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

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	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



2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

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

2.2.2 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 Y 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	
-	√	√	√	√	-

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.

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 and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT40	3 to 9	9	OFDM	MCS0
BT-LE	0 to 39	39	GFSK	1.0



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 and antenna ports (if EUT with antenna diversity architecture).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT40	3 to 9	9	OFDM	MCS0



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

**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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1&2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 5V By Adapter	Carl Xie
RE≥1G	23deg. C, 70%RH	DC 5V By Adapter	Carl Xie
PLC	25deg. C, 52%RH	DC 5V By Adapter	Lily Zhao
APCM	25deg. C, 60%RH	DC 3.8V By Battery	Lily Zhao



2.3 Duty Cycle of Test Signal

Please Refer to Appendix1/2 Of this test report.

WORST-CASE DATA:

Measured Duty Cycle		
Mode		Duty Cycle [%]
		ANT1
WIFI 2.4GHz	11B	97.89
	11G	89.10
	11N20	86.67
	11N40	74.36
BT LE	BT4.0	87.23
	BT5.0	65.60
	BTS2	81.28
	BTS8	94.91

Note:

Duty cycle of test signal is < 98%, duty factor shall be considered.

2.4 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

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2013

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 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	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thnikpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 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.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 15,22	Feb. 14,23
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Mar. 04,22	Mar. 03,23

NOTE:

1. The test was performed in CE shielded 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.



3.1.3 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 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

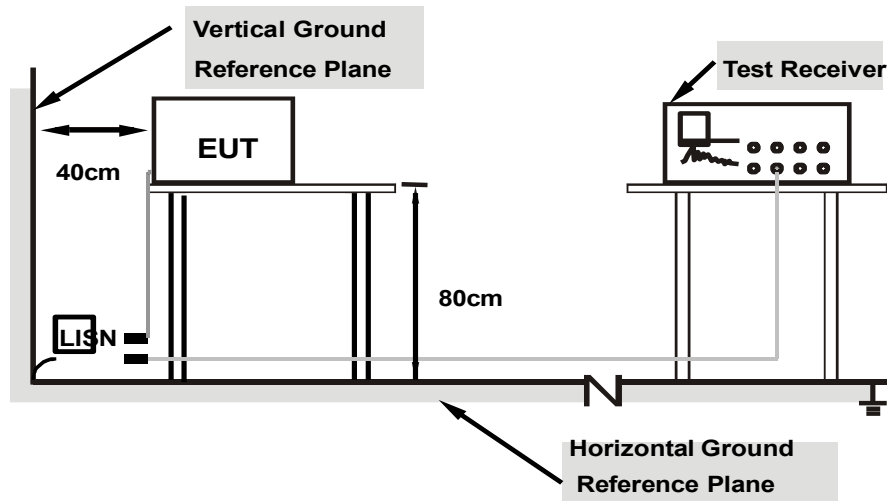
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.



3.1.5 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).

3.1.6 EUT OPERATING CONDITIONS

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



3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.280000	---	30.28	50.82	20.54	L1	ON	9.7
0.280000	43.45	---	60.82	17.37	L1	ON	9.7
0.400000	---	29.45	47.85	18.40	L1	ON	9.7
0.400000	43.68	---	57.85	14.17	L1	ON	9.7
0.592000	---	32.48	46.00	13.52	L1	ON	9.7
0.592000	46.88	---	56.00	9.12	L1	ON	9.7
0.676000	---	30.30	46.00	15.70	L1	ON	9.7
0.676000	44.29	---	56.00	11.71	L1	ON	9.7
1.192000	---	25.93	46.00	20.07	L1	ON	9.7
1.192000	39.29	---	56.00	16.71	L1	ON	9.7
16.100000	---	22.65	50.00	27.35	L1	ON	9.8
16.100000	35.22	---	60.00	24.78	L1	ON	9.8

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

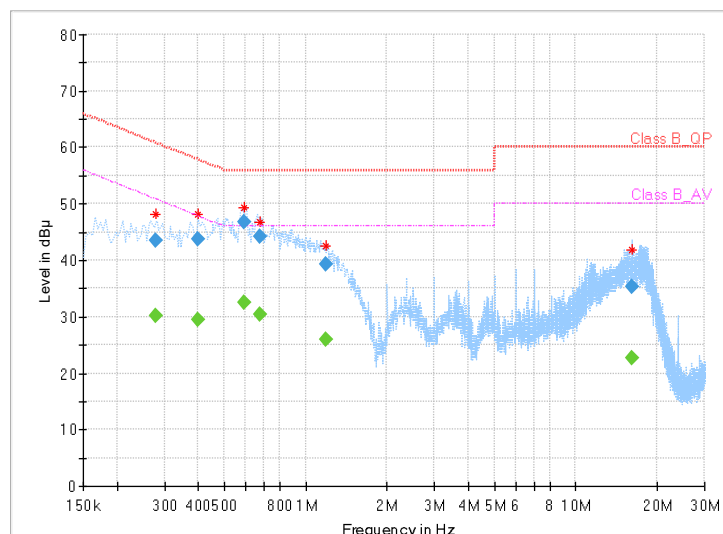
3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Limit value - Emission level

5. Correction factor = Insertion loss + Cable loss

6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





BUREAU
VERITAS

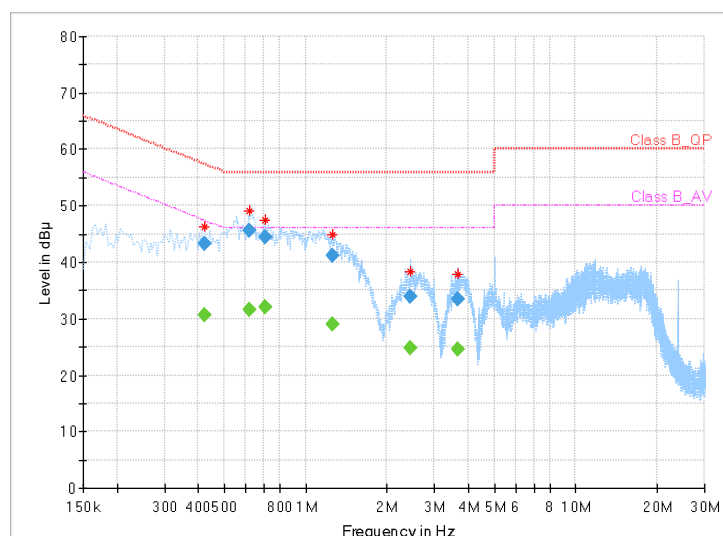
Test Report No.: W7L-P22070038RF02

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.420000	---	30.67	47.45	16.78	N	ON	9.7
0.420000	43.36	---	57.45	14.09	N	ON	9.7
0.616000	---	31.62	46.00	14.38	N	ON	9.7
0.616000	45.59	---	56.00	10.41	N	ON	9.7
0.708000	---	32.09	46.00	13.91	N	ON	9.7
0.708000	44.46	---	56.00	11.54	N	ON	9.7
1.264000	---	28.96	46.00	17.04	N	ON	9.8
1.264000	41.25	---	56.00	14.75	N	ON	9.8
2.452000	---	24.84	46.00	21.16	N	ON	9.8
2.452000	33.93	---	56.00	22.07	N	ON	9.8
3.656000	---	24.57	46.00	21.43	N	ON	9.8
3.656000	33.35	---	56.00	22.65	N	ON	9.8

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Limit value -Emission level
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 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.



3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 06,22	Mar. 05,23
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 06,22	Mar. 05,23
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 28, 21	Aug. 27, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 27, 22	Aug. 26, 23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120-3	3.2.06	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 02,22	Jun. 01,23
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 21,22	Feb. 20,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 21,22	Feb.20,23
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 25,21	Aug. 24,22
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 24,22	Aug. 23,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 22,22	Feb. 21,23
Power Sensor	Anritsu	MA2411B	1339352	May. 14,22	May. 13,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.05,21	Sep. 04,22

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Chamber.
 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

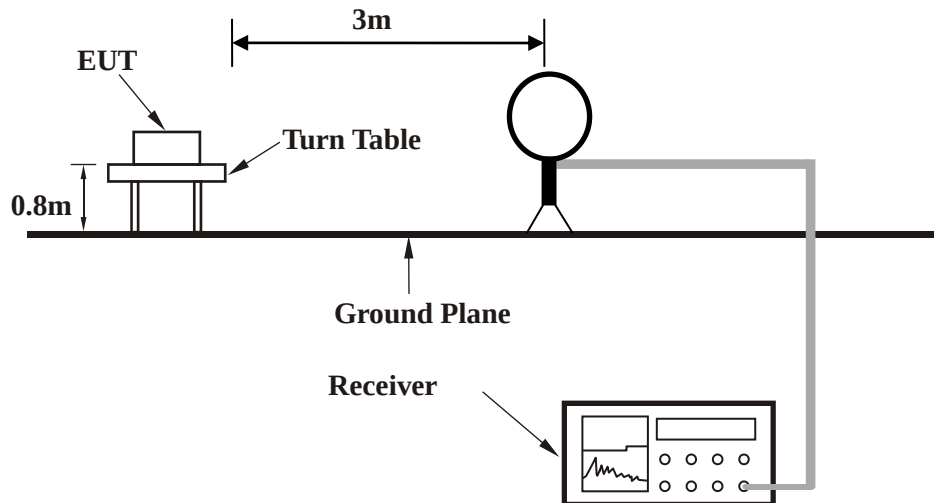


BUREAU
VERITAS

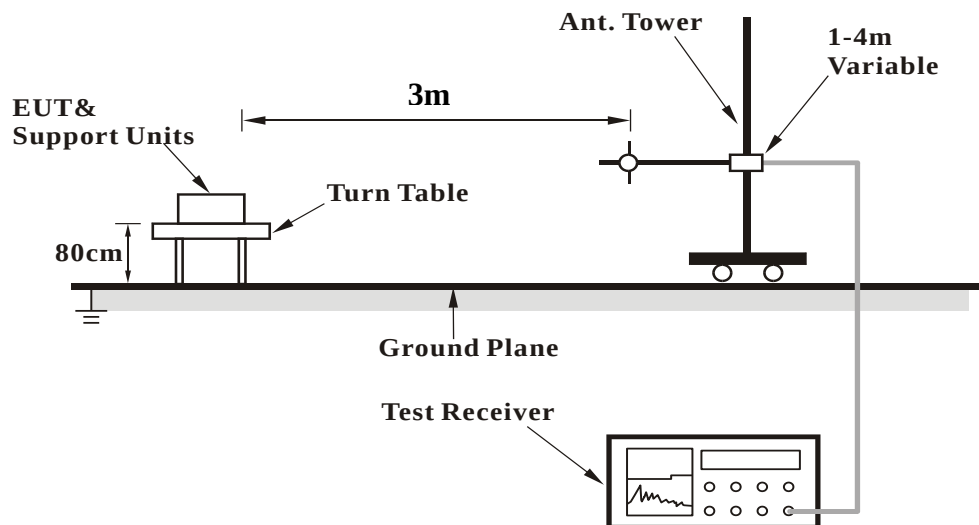
Test Report No.: W7L-P22070038RF02

3.2.5 TEST SETUP

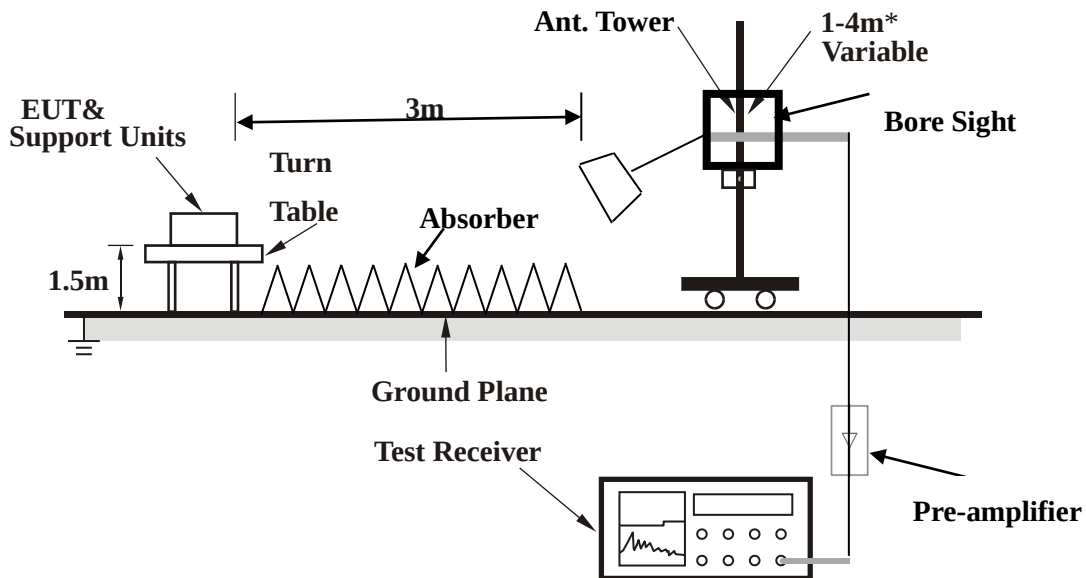
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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

3.2.6 EUT OPERATING CONDITIONS

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



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

3.2.7 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

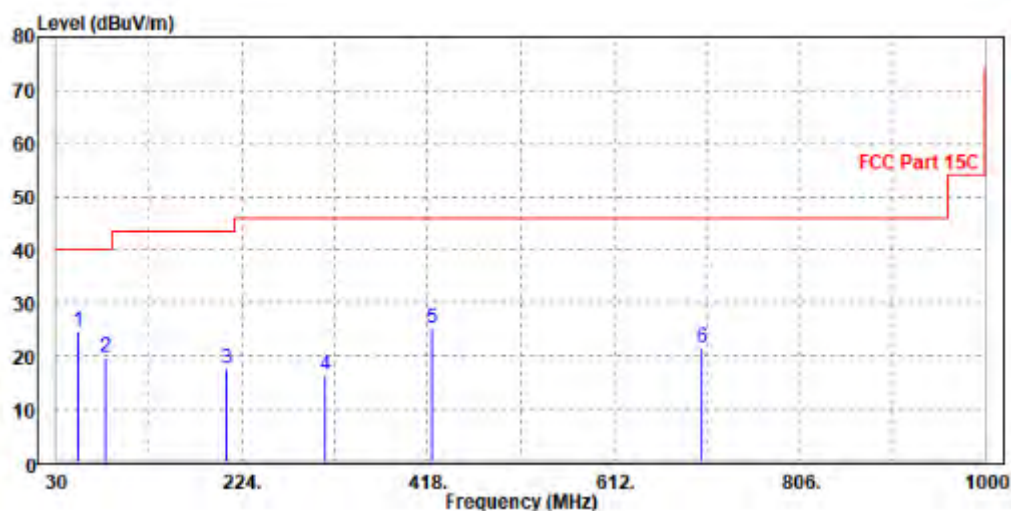
802.11n (40MHz)

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
52.31	24.67	51.28	40	-15.33	9.97	0.41	36.99	200	0	QP
81.41	19.91	48.52	40	-20.09	7.87	0.49	36.97	200	0	QP
208.48	17.79	41.66	43.5	-25.71	11.67	0.75	36.29	200	0	QP
311.3	16.32	37.42	46	-29.68	14.25	0.93	36.28	200	0	QP
422.85	25.25	43.98	46	-20.75	16.63	1.11	36.47	200	0	QP
703.18	21.54	35.64	46	-24.46	21.63	1.48	37.21	200	0	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.





**BUREAU
VERITAS**

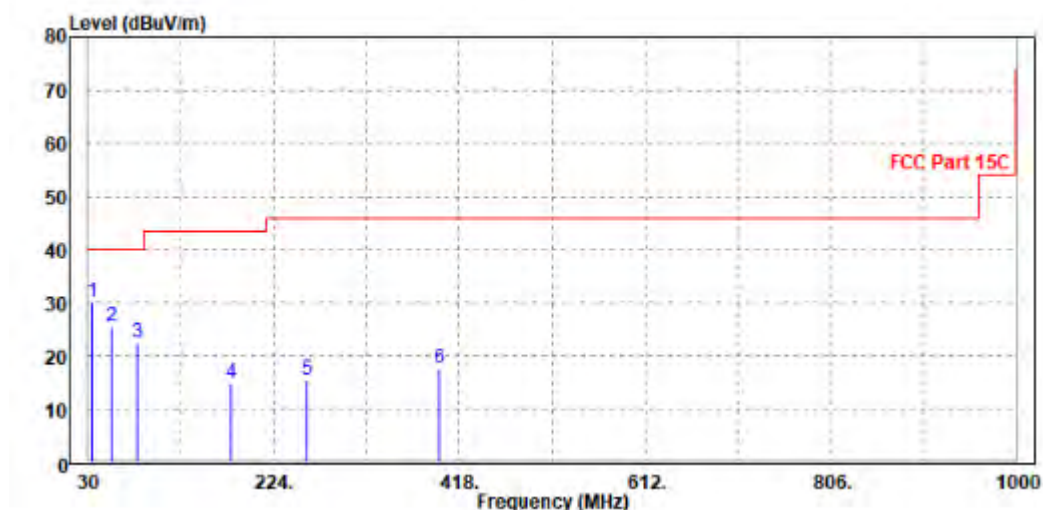
Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
33.88	30.23	48.92	40	-9.77	18.36	0.33	37.38	100	360	QP
55.22	25.52	52.93	40	-14.48	9.13	0.43	36.97	100	360	QP
81.41	22.37	51.11	40	-17.63	7.74	0.49	36.97	100	360	QP
179.38	14.92	39.43	43.5	-28.58	11.19	0.7	36.4	100	360	QP
258.92	15.36	37.93	46	-30.64	12.85	0.85	36.27	100	360	QP
397.63	17.74	36.84	46	-28.26	16.25	1.07	36.42	100	360	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.





**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

ABOVE 1GHz WORST-CASE DATA:

Note: 1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.

2. All other emissions that more than 20dB below the limit were not recorded

802.11b:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	56.04	64.08	74	-17.96	31.75	6.18	45.97	190	210	Peak
2390	48.65	56.69	54	-5.35	31.75	6.18	45.97	190	210	Average
2412	105.01	112.94	/	/	31.82	6.21	45.96	190	210	Peak
2412	103.5	111.43	/	/	31.82	6.21	45.96	190	210	Average
2483.5	52.98	60.55	74	-21.02	32.05	6.31	45.93	190	210	Peak
2483.5	44.71	52.28	54	-9.29	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	54.22	61.87	74	-19.78	32.14	6.18	45.97	100	185	Peak
2390	47.05	54.7	54	-6.95	32.14	6.18	45.97	100	185	Average
2412	99.18	106.74	/	/	32.19	6.21	45.96	100	185	Peak
2412	97.09	104.65	/	/	32.19	6.21	45.96	100	185	Average
2483.5	52.29	59.55	74	-21.71	32.36	6.31	45.93	100	185	Peak
2483.5	45.37	52.63	54	-8.63	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	53.08	61.12	74	-20.92	31.75	6.18	45.97	190	210	Peak
2390	45.56	53.6	54	-8.44	31.75	6.18	45.97	190	210	Average
2437	105.11	112.92	/	/	31.9	6.24	45.95	190	210	Peak
2437	101.53	109.34	/	/	31.9	6.24	45.95	190	210	Average
2483.5	51.69	59.26	74	-22.31	32.05	6.31	45.93	190	210	Peak
2483.5	45.48	53.05	54	-8.52	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.99	59.64	74	-22.01	32.14	6.18	45.97	100	185	Peak
2390	45.06	52.71	54	-8.94	32.14	6.18	45.97	100	185	Average
2437	99.09	106.55	/	/	32.25	6.24	45.95	100	185	Peak
2437	96.72	104.18	/	/	32.25	6.24	45.95	100	185	Average
2483.5	53.09	60.35	74	-20.91	32.36	6.31	45.93	100	185	Peak
2483.5	44.62	51.88	54	-9.38	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.55	59.59	74	-22.45	31.75	6.18	45.97	190	210	Peak
2390	44.11	52.15	54	-9.89	31.75	6.18	45.97	190	210	Average
2462	105.26	112.94	/	/	31.98	6.28	45.94	190	210	Peak
2462	104.26	111.94	/	/	31.98	6.28	45.94	190	210	Average
2483.5	54.99	62.56	74	-19.01	32.05	6.31	45.93	190	210	Peak
2483.5	47.59	55.16	54	-6.41	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.42	60.07	74	-21.58	32.14	6.18	45.97	100	185	Peak
2390	45.17	52.82	54	-8.83	32.14	6.18	45.97	100	185	Average
2462	101	108.35	/	/	32.31	6.28	45.94	100	185	Peak
2462	99.5	106.85	/	/	32.31	6.28	45.94	100	185	Average
2483.5	53.54	60.8	74	-20.46	32.36	6.31	45.93	100	185	Peak
2483.5	45.9	53.16	54	-8.1	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	63.81	71.85	74	-10.19	31.75	6.18	45.97	190	210	Peak
2390	50.82	58.86	54	-3.18	31.75	6.18	45.97	190	210	Average
2412	109.23	117.16	/	/	31.82	6.21	45.96	190	210	Peak
2412	101.14	109.07	/	/	31.82	6.21	45.96	190	210	Average
2483.5	53.13	60.7	74	-20.87	32.05	6.31	45.93	190	210	Peak
2483.5	42.97	50.54	54	-11.03	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	59.98	67.63	74	-14.02	32.14	6.18	45.97	100	185	Peak
2390	49.64	57.29	54	-4.36	32.14	6.18	45.97	100	185	Average
2412	103.04	110.6	/	/	32.19	6.21	45.96	100	185	Peak
2412	96.02	103.58	/	/	32.19	6.21	45.96	100	185	Average
2483.5	52.25	59.51	74	-21.75	32.36	6.31	45.93	100	185	Peak
2483.5	45.3	52.56	54	-8.7	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.45	60.49	74	-21.55	31.75	6.18	45.97	190	210	Peak
2390	44.9	52.94	54	-9.1	31.75	6.18	45.97	190	210	Average
2437	108.18	115.99	/	/	31.9	6.24	45.95	190	210	Peak
2437	100.32	108.13	/	/	31.9	6.24	45.95	190	210	Average
2483.5	51.85	59.42	74	-22.15	32.05	6.31	45.93	190	210	Peak
2483.5	45.32	52.89	54	-8.68	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.95	59.6	74	-22.05	32.14	6.18	45.97	100	185	Peak
2390	45.55	53.2	54	-8.45	32.14	6.18	45.97	100	185	Average
2437	100.8	108.26	/	/	32.25	6.24	45.95	100	185	Peak
2437	94.83	102.29	/	/	32.25	6.24	45.95	100	185	Average
2483.5	54	61.26	74	-20	32.36	6.31	45.93	100	185	Peak
2483.5	45.19	52.45	54	-8.81	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2437MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.76	58.8	74	-23.24	31.75	6.18	45.97	190	210	Peak
2390	42.56	50.6	54	-11.44	31.75	6.18	45.97	190	210	Average
2462	102.81	110.49	/	/	31.98	6.28	45.94	190	210	Peak
2462	95.25	102.93	/	/	31.98	6.28	45.94	190	210	Average
2483.5	58.06	65.63	74	-15.94	32.05	6.31	45.93	190	210	Peak
2483.5	47.55	55.12	54	-6.45	32.05	6.31	45.93	190	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.9	59.55	74	-22.1	32.14	6.18	45.97	100	185	Peak
2390	43.03	50.68	54	-10.97	32.14	6.18	45.97	100	185	Average
2462	96.48	103.83	/	/	32.31	6.28	45.94	100	185	Peak
2462	88.98	96.33	/	/	32.31	6.28	45.94	100	185	Average
2483.5	55.12	62.38	74	-18.88	32.36	6.31	45.93	100	185	Peak
2483.5	44.48	51.74	54	-9.52	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2462MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	62.6	70.64	74	-11.4	31.75	6.18	45.97	145	210	Peak
2390	50.92	58.96	54	-3.08	31.75	6.18	45.97	145	210	Average
2412	106.29	114.22	/	/	31.82	6.21	45.96	145	210	Peak
2412	97.27	105.2	/	/	31.82	6.21	45.96	145	210	Average
2483.5	51.06	58.63	74	-22.94	32.05	6.31	45.93	145	210	Peak
2483.5	42.49	50.06	54	-11.51	32.05	6.31	45.93	145	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	58.69	66.34	74	-15.31	32.14	6.18	45.97	100	185	Peak
2390	47.78	55.43	54	-6.22	32.14	6.18	45.97	100	185	Average
2412	102.43	109.99	/	/	32.19	6.21	45.96	100	185	Peak
2412	92.28	99.84	/	/	32.19	6.21	45.96	100	185	Average
2483.5	51.61	58.87	74	-22.39	32.36	6.31	45.93	100	185	Peak
2483.5	43.3	50.56	54	-10.7	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.49	58.53	74	-23.51	31.75	6.18	45.97	145	210	Peak
2390	42.99	51.03	54	-11.01	31.75	6.18	45.97	145	210	Average
2437	106.08	113.89	/	/	31.9	6.24	45.95	145	210	Peak
2437	96.82	104.63	/	/	31.9	6.24	45.95	145	210	Average
2483.5	52.06	59.63	74	-21.94	32.05	6.31	45.93	145	210	Peak
2483.5	43.13	50.7	54	-10.87	32.05	6.31	45.93	145	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.5	59.15	74	-22.5	32.14	6.18	45.97	100	185	Peak
2390	44.45	52.1	54	-9.55	32.14	6.18	45.97	100	185	Average
2437	100.69	108.15	/	/	32.25	6.24	45.95	100	185	Peak
2437	92.25	99.71	/	/	32.25	6.24	45.95	100	185	Average
2483.5	50.86	58.12	74	-23.14	32.36	6.31	45.93	100	185	Peak
2483.5	43.88	51.14	54	-10.12	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.46	60.5	74	-21.54	31.75	6.18	45.97	100	210	Peak
2390	42.66	50.7	54	-11.34	31.75	6.18	45.97	100	210	Average
2462	104.59	112.27	/	/	31.98	6.28	45.94	100	210	Peak
2462	95.36	103.04	/	/	31.98	6.28	45.94	100	210	Average
2483.5	67.66	75.23	74	-6.34	32.05	6.31	45.93	100	210	Peak
2483.5	47.76	55.33	54	-6.24	32.05	6.31	45.93	100	210	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.28	58.93	74	-22.72	32.14	6.18	45.97	100	185	Peak
2390	43.07	50.72	54	-10.93	32.14	6.18	45.97	100	185	Average
2462	101.25	108.6	/	/	32.31	6.28	45.94	100	185	Peak
2462	92.13	99.48	/	/	32.31	6.28	45.94	100	185	Average
2483.5	64.32	71.58	74	-9.68	32.36	6.31	45.93	100	185	Peak
2483.5	46.15	53.41	54	-7.85	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

802.11n (40MHz)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	63.47	71.51	74	-10.53	31.75	6.18	45.97	160	220	Peak
2390	50.51	58.55	54	-3.49	31.75	6.18	45.97	160	220	Average
2422	99.02	106.91	/	/	31.85	6.22	45.96	160	220	Peak
2422	90.4	98.29	/	/	31.85	6.22	45.96	160	220	Average
2483.5	51.66	59.23	74	-22.34	32.05	6.31	45.93	160	220	Peak
2483.5	43.22	50.79	54	-10.78	32.05	6.31	45.93	160	220	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	61.45	69.1	74	-12.55	32.14	6.18	45.97	100	185	Peak
2390	48.38	56.03	54	-5.62	32.14	6.18	45.97	100	185	Average
2422	93.26	100.79	/	/	32.21	6.22	45.96	100	185	Peak
2422	85.56	93.09	/	/	32.21	6.22	45.96	100	185	Average
2483.5	51.14	58.4	74	-22.86	32.36	6.31	45.93	100	185	Peak
2483.5	43.72	50.98	54	-10.28	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2422MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	57.31	65.35	74	-16.69	31.75	6.18	45.97	145	220	Peak
2390	46.29	54.33	54	-7.71	31.75	6.18	45.97	145	220	Average
2437	103.81	111.62	/	/	31.9	6.24	45.95	145	220	Peak
2437	95.9	103.71	/	/	31.9	6.24	45.95	145	220	Average
2483.5	55.98	63.55	74	-18.02	32.05	6.31	45.93	145	220	Peak
2483.5	44.17	51.74	54	-9.83	32.05	6.31	45.93	145	220	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	54.38	62.03	74	-19.62	32.14	6.18	45.97	100	185	Peak
2390	45.94	53.59	54	-8.06	32.14	6.18	45.97	100	185	Average
2437	98.09	105.55	/	/	32.25	6.24	45.95	100	185	Peak
2437	90.48	97.94	/	/	32.25	6.24	45.95	100	185	Average
2483.5	51.74	59	74	-22.26	32.36	6.31	45.93	100	185	Peak
2483.5	45.43	52.69	54	-8.57	32.36	6.31	45.93	100	185	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.77	58.81	74	-23.23	31.75	6.18	45.97	145	220	Peak
2390	43.2	51.24	54	-10.8	31.75	6.18	45.97	145	220	Average
2452	98.78	106.52	/	/	31.95	6.26	45.95	145	220	Peak
2452	90.67	98.41	/	/	31.95	6.26	45.95	145	220	Average
2483.5	58.34	65.91	74	-15.66	32.05	6.31	45.93	145	220	Peak
2483.5	50.97	58.54	54	-3.03	32.05	6.31	45.93	145	220	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.17	57.82	74	-23.83	32.14	6.18	45.97	100	185	Peak
2390	42.66	50.31	54	-11.34	32.14	6.18	45.97	100	185	Average
2452	95.06	102.47	/	/	32.28	6.26	45.95	100	185	Peak
2452	95.84	103.25	/	/	32.28	6.26	45.95	100	185	Average
2483.5	55.59	62.85	74	-18.41	32.36	6.31	45.93	100	185	Peak
2483.5	48.03	55.29	54	-5.97	32.36	6.31	45.93	100	185	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2452MHz: Fundamental frequency.



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

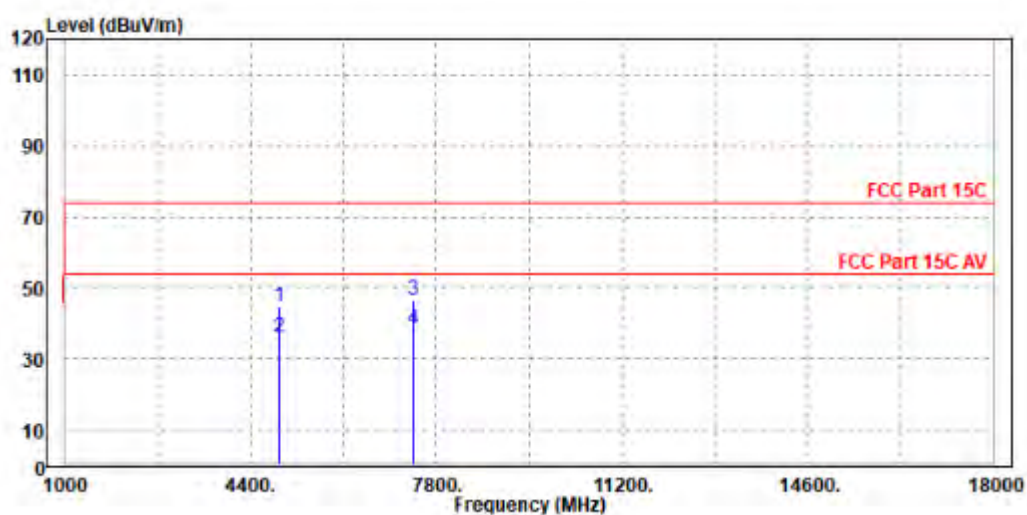
Worst case harmonic:

802.11n (40MHz)

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4904.000	44.86	46.15	74.00	-29.14	-1.29	Peak	Horizontal
2	4904.000	36.20	37.49	54.00	-17.80	-1.29	Average	Horizontal
3 PK	7358.000	46.33	44.43	74.00	-27.67	1.90	Peak	Horizontal
4 PP	7358.000	38.49	36.59	54.00	-15.51	1.90	Average	Horizontal



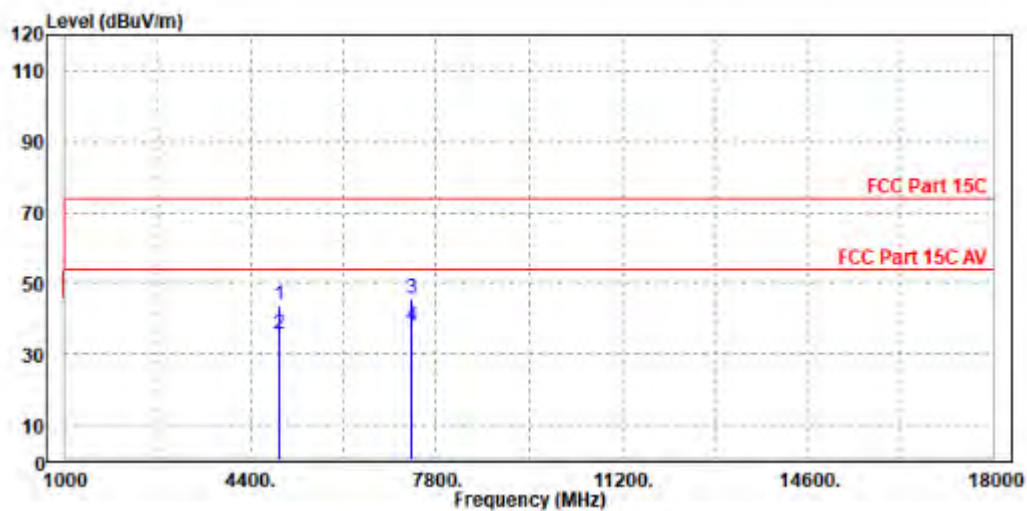


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

	Freq	Level	Read	Limit	Over			
	MHz	dBuV/m	Level	Line	Limit	Factor	Remark	Pol/Phase
			dBuV	dBuV/m	dB	dB/m		
1	4910.000	43.78	44.86	74.00	-30.22	-1.08	Peak	Vertical
2	4910.000	35.77	36.85	54.00	-18.23	-1.08	Average	Vertical
3	PK 7356.000	45.44	43.48	74.00	-28.56	1.96	Peak	Vertical
4	PP 7356.000	37.87	35.91	54.00	-16.13	1.96	Average	Vertical



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2452MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

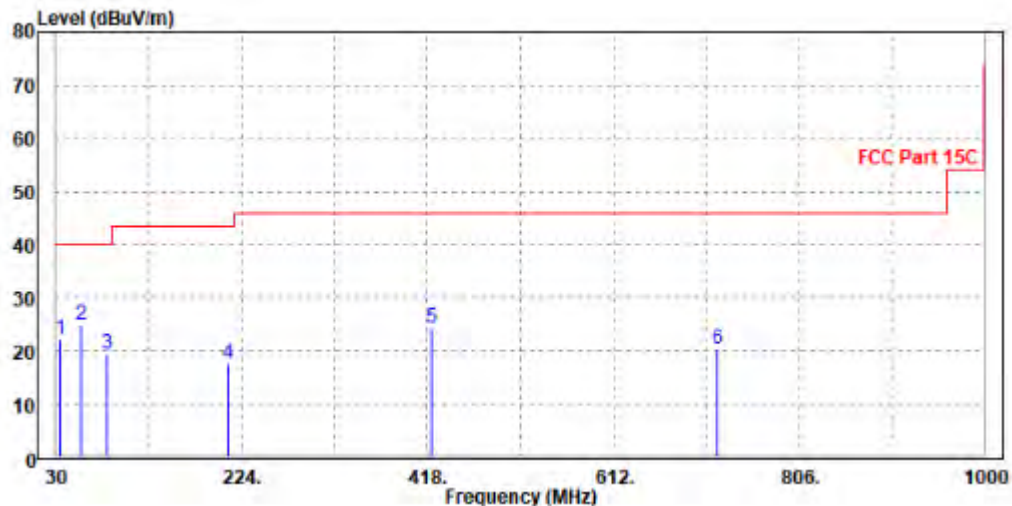
BT-LE _1M

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
33.88	22.21	40.19	40	-17.79	19.07	0.33	37.38	200	0	QP
56.19	25.01	51.96	40	-14.99	9.58	0.43	36.96	200	0	QP
82.38	19.41	47.89	40	-20.59	7.99	0.5	36.97	200	0	QP
210.42	17.66	41.44	43.5	-25.84	11.76	0.75	36.29	200	0	QP
422.85	24.38	43.11	46	-21.62	16.63	1.11	36.47	200	0	QP
720.64	20.38	34.32	46	-25.62	21.77	1.5	37.21	200	0	QP

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value





**BUREAU
VERITAS**

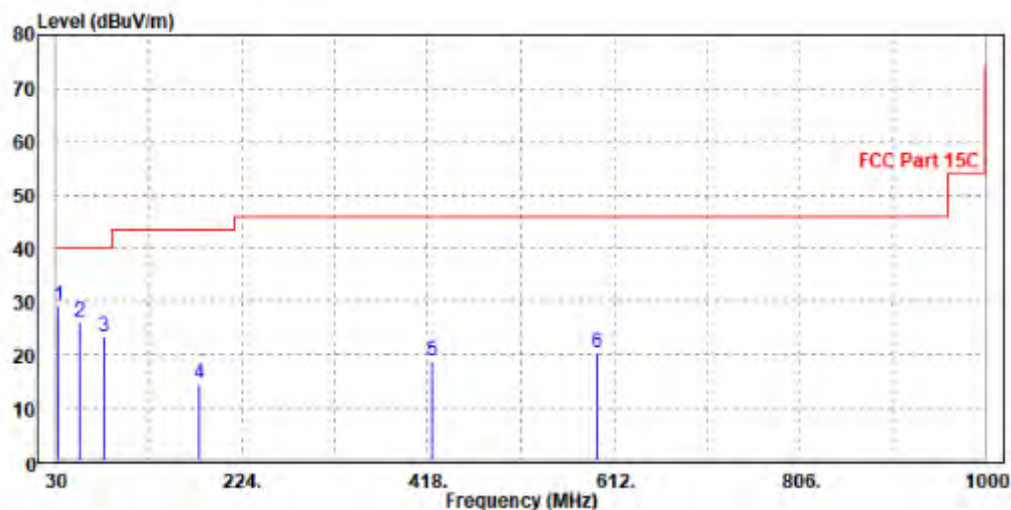
Test Report No.: W7L-P22070038RF02

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

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
32.91	29.07	47.31	40	-10.93	18.84	0.32	37.4	100	360	QP
55.22	26.07	53.48	40	-13.93	9.13	0.43	36.97	100	360	QP
79.47	23.4	52.26	40	-16.6	7.63	0.49	36.98	100	360	QP
179.38	14.53	39.04	43.5	-28.97	11.19	0.7	36.4	100	360	QP
422.85	18.88	37.64	46	-27.12	16.6	1.11	36.47	100	360	QP
594.54	20.31	36.31	46	-25.69	19.49	1.35	36.84	100	360	QP

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value





**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

ABOVE 1GHz TEST DATA

Note: 1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.

2. All other emissions were greater than 20dB below the limit was not recorded

BT-LE _1M

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.32	59.36	74	-22.68	31.75	6.18	45.97	100	215	Peak
2390	45.41	53.45	54	-8.59	31.75	6.18	45.97	100	215	Average
2402	99.64	107.63	/	/	31.79	6.19	45.97	100	215	Peak
2402	99.25	107.24	/	/	31.79	6.19	45.97	100	215	Average
2483.5	51.96	59.53	74	-22.04	32.05	6.31	45.93	100	215	Peak
2483.5	46.08	53.65	54	-7.92	32.05	6.31	45.93	100	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.33	58.98	74	-22.67	32.14	6.18	45.97	100	170	Peak
2390	46.26	53.91	54	-7.74	32.14	6.18	45.97	100	170	Average
2402	92.38	100	/	/	32.16	6.19	45.97	100	170	Peak
2402	92.02	99.64	/	/	32.16	6.19	45.97	100	170	Average
2483.5	52.43	59.69	74	-21.57	32.36	6.31	45.93	100	170	Peak
2483.5	46.12	53.38	54	-7.88	32.36	6.31	45.93	100	170	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2402MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.49	59.53	74	-22.51	31.75	6.18	45.97	100	215	Peak
2390	45.22	53.26	54	-8.78	31.75	6.18	45.97	100	215	Average
2440	98.86	106.65	/	/	31.91	6.25	45.95	100	215	Peak
2440	98.46	106.25	/	/	31.91	6.25	45.95	100	215	Average
2483.5	51.97	59.54	74	-22.03	32.05	6.31	45.93	100	215	Peak
2483.5	45.57	53.14	54	-8.43	32.05	6.31	45.93	100	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.77	60.42	74	-21.23	32.14	6.18	45.97	100	170	Peak
2390	45.96	53.61	54	-8.04	32.14	6.18	45.97	100	170	Average
2440	91.63	99.07	/	/	32.26	6.25	45.95	100	170	Peak
2440	91.29	98.73	/	/	32.26	6.25	45.95	100	170	Average
2483.5	52.58	59.84	74	-21.42	32.36	6.31	45.93	100	170	Peak
2483.5	45.64	52.9	54	-8.36	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2440MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.13	59.17	74	-22.87	31.75	6.18	45.97	100	215	Peak
2390	44.95	52.99	54	-9.05	31.75	6.18	45.97	100	215	Average
2480	98.59	106.18	/	/	32.04	6.3	45.93	100	215	Peak
2480	98.23	105.82	/	/	32.04	6.3	45.93	100	215	Average
2483.5	55.56	63.13	74	-18.44	32.05	6.31	45.93	100	215	Peak
2483.5	45.64	53.21	54	-8.36	32.05	6.31	45.93	100	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.53	59.18	74	-22.47	32.14	6.18	45.97	100	170	Peak
2390	45.26	52.91	54	-8.74	32.14	6.18	45.97	100	170	Average
2480	91.98	99.26	/	/	32.35	6.3	45.93	100	170	Peak
2480	91.49	98.77	/	/	32.35	6.3	45.93	100	170	Average
2483.5	53.37	60.63	74	-20.63	32.36	6.31	45.93	100	170	Peak
2483.5	46.44	53.7	54	-7.56	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2480MHz: Fundamental frequency.



**BUREAU
VERITAS**

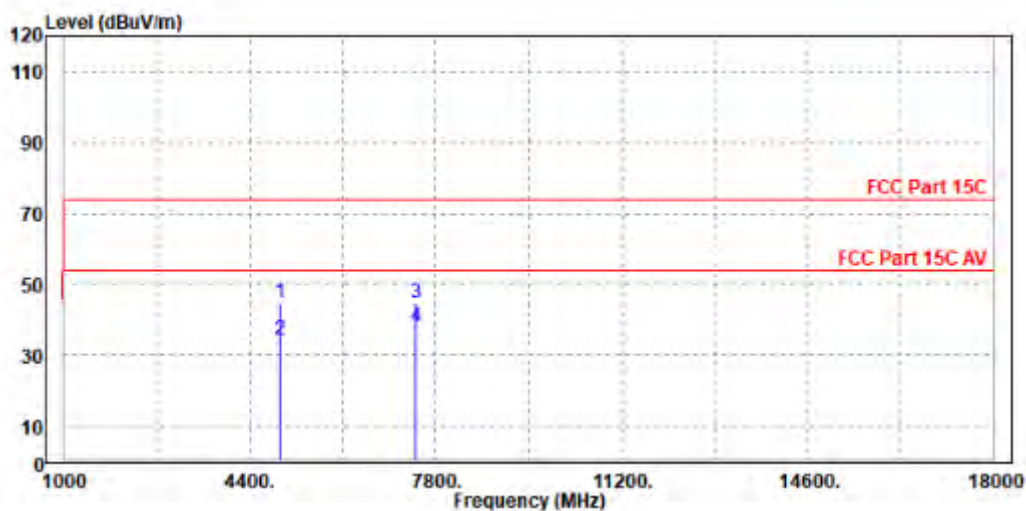
Test Report No.: W7L-P22070038RF02

Worst case harmonic:

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4960.000	44.62	45.81	74.00	-29.38	-1.19	Peak	Horizontal
2	4960.000	34.22	35.41	54.00	-19.78	-1.19	Average	Horizontal
3 PK	7443.000	44.79	42.81	74.00	-29.21	1.98	Peak	Horizontal
4 PP	7443.000	38.02	36.04	54.00	-15.98	1.98	Average	Horizontal



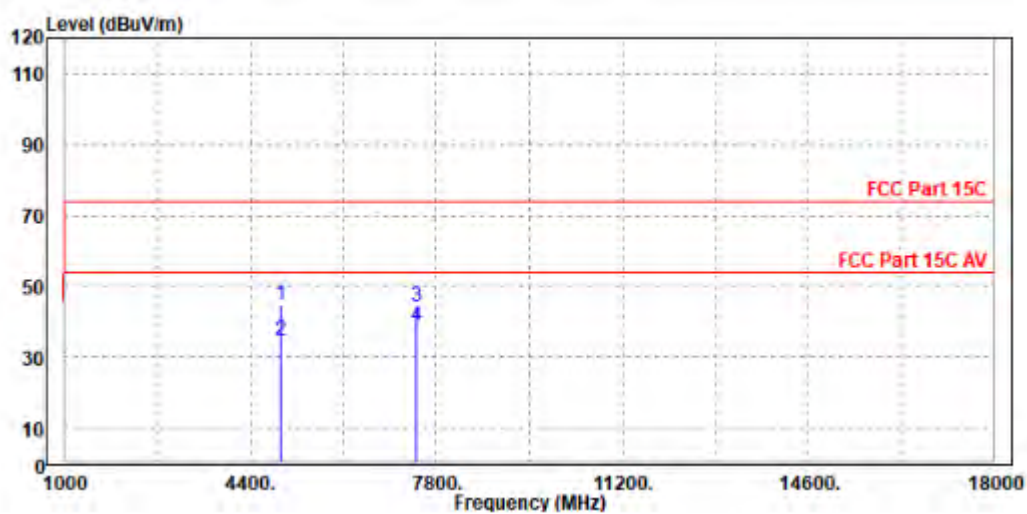


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1 PK	4961.000	44.81	45.80	74.00	-29.19	-0.99	Peak	Vertical
2	4961.000	34.87	35.86	54.00	-19.13	-0.99	Average	Vertical
3	7440.000	44.27	42.26	74.00	-29.73	2.01	Peak	Vertical
4 PP	7440.000	38.92	36.91	54.00	-15.08	2.01	Average	Vertical



REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2480MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

BT-LE _2M

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52	60.04	74	-22	31.75	6.18	45.97	200	215	Peak
2390	43.98	52.02	54	-10.02	31.75	6.18	45.97	200	215	Average
2402	98.4	106.39	/	/	31.79	6.19	45.97	200	215	Peak
2402	97.55	105.54	/	/	31.79	6.19	45.97	200	215	Average
2483.5	51.53	59.1	74	-22.47	32.05	6.31	45.93	200	215	Peak
2483.5	44.32	51.89	54	-9.68	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.18	59.83	74	-21.82	32.14	6.18	45.97	100	170	Peak
2390	44.72	52.37	54	-9.28	32.14	6.18	45.97	100	170	Average
2402	92.63	100.25	/	/	32.16	6.19	45.97	100	170	Peak
2402	92.21	99.83	/	/	32.16	6.19	45.97	100	170	Average
2483.5	52.52	59.78	74	-21.48	32.36	6.31	45.93	100	170	Peak
2483.5	44.45	51.71	54	-9.55	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2402MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.4	58.44	74	-23.6	31.75	6.18	45.97	200	215	Peak
2390	43.77	51.81	54	-10.23	31.75	6.18	45.97	200	215	Average
2440	97.62	105.41	/	/	31.91	6.25	45.95	200	215	Peak
2440	97.1	104.89	/	/	31.91	6.25	45.95	200	215	Average
2483.5	51.74	59.31	74	-22.26	32.05	6.31	45.93	200	215	Peak
2483.5	44.46	52.03	54	-9.54	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.14	58.79	74	-22.86	32.14	6.18	45.97	100	170	Peak
2390	44.03	51.68	54	-9.97	32.14	6.18	45.97	100	170	Average
2440	90.64	98.08	/	/	32.26	6.25	45.95	100	170	Peak
2440	90.24	97.68	/	/	32.26	6.25	45.95	100	170	Average
2483.5	54.31	61.57	74	-19.69	32.36	6.31	45.93	100	170	Peak
2483.5	44.98	52.24	54	-9.02	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2440MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.29	59.33	74	-22.71	31.75	6.18	45.97	200	215	Peak
2390	43.98	52.02	54	-10.02	31.75	6.18	45.97	200	215	Average
2480	98.06	105.65	/	/	32.04	6.3	45.93	200	215	Peak
2480	97.6	105.19	/	/	32.04	6.3	45.93	200	215	Average
2483.5	56.46	64.03	74	-17.54	32.05	6.31	45.93	200	215	Peak
2483.5	45.09	52.66	54	-8.91	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.57	59.22	74	-22.43	32.14	6.18	45.97	100	170	Peak
2390	44.36	52.01	54	-9.64	32.14	6.18	45.97	100	170	Average
2480	91.25	98.53	/	/	32.35	6.3	45.93	100	170	Peak
2480	90.83	98.11	/	/	32.35	6.3	45.93	100	170	Average
2483.5	54.6	61.86	74	-19.4	32.36	6.31	45.93	100	170	Peak
2483.5	44.57	51.83	54	-9.43	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2480MHz: Fundamental frequency.



BUREAU
VERITAS

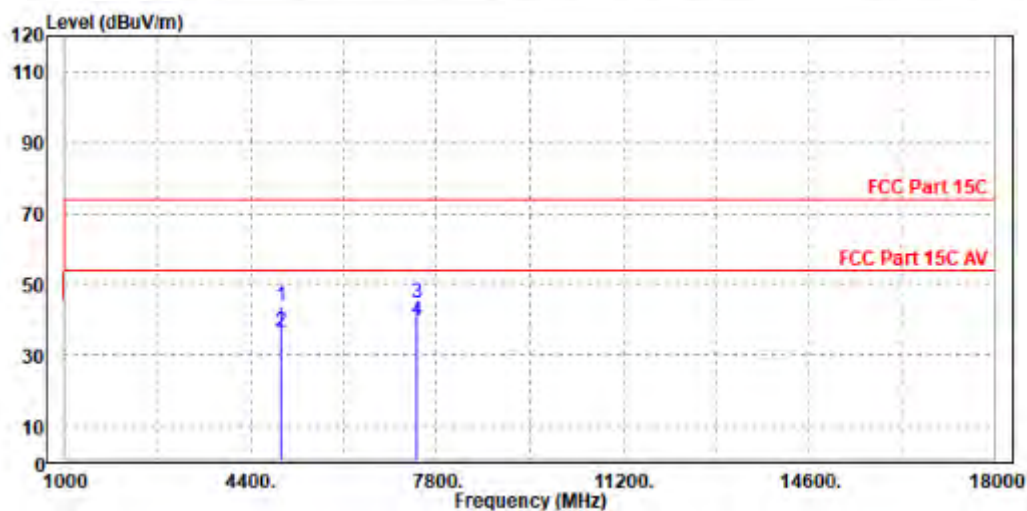
Test Report No.: W7L-P22070038RF02

Worst case harmonic:

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

	Freq	Level	Read	Limit	Over			
	MHz	dBuV/m	Level	Line	Limit	Factor	Remark	Pol/Phase
			dBuV	dBuV/m	dB	dB/m		
1	4961.000	43.75	44.94	74.00	-30.25	-1.19	Peak	Horizontal
2	4961.000	36.41	37.60	54.00	-17.59	-1.19	Average	Horizontal
3 PK	7440.000	44.80	42.82	74.00	-29.20	1.98	Peak	Horizontal
4 PP	7440.000	39.48	37.50	54.00	-14.52	1.98	Average	Horizontal



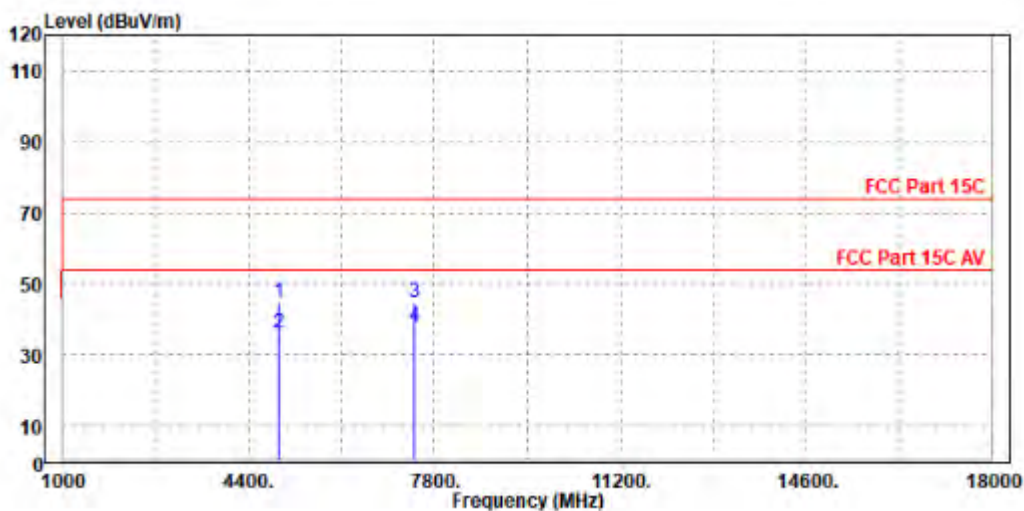


**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	PK 4960.000	44.62	45.61	74.00	-29.38	-0.99	Peak	Vertical
2	4960.000	35.95	36.94	54.00	-18.05	-0.99	Average	Vertical
3	7443.000	44.55	42.55	74.00	-29.45	2.00	Peak	Vertical
4	PP 7443.000	37.97	35.97	54.00	-16.03	2.00	Average	Vertical



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2480MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

BT-LE _S2

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.56	58.6	74	-23.44	31.75	6.18	45.97	200	215	Peak
2390	44.25	52.29	54	-9.75	31.75	6.18	45.97	200	215	Average
2402	98.05	106.04	/	/	31.79	6.19	45.97	200	215	Peak
2402	97.7	105.69	/	/	31.79	6.19	45.97	200	215	Average
2483.5	51.89	59.46	74	-22.11	32.05	6.31	45.93	200	215	Peak
2483.5	44.02	51.59	54	-9.98	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.91	58.56	74	-23.09	32.14	6.18	45.97	100	170	Peak
2390	44.92	52.57	54	-9.08	32.14	6.18	45.97	100	170	Average
2402	91.63	99.25	/	/	32.16	6.19	45.97	100	170	Peak
2402	90.89	98.51	/	/	32.16	6.19	45.97	100	170	Average
2483.5	51.99	59.25	74	-22.01	32.36	6.31	45.93	100	170	Peak
2483.5	44.5	51.76	54	-9.5	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2402MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.78	59.82	74	-22.22	31.75	6.18	45.97	200	215	Peak
2390	44.17	52.21	54	-9.83	31.75	6.18	45.97	200	215	Average
2440	98.21	106	/	/	31.91	6.25	45.95	200	215	Peak
2440	97.11	104.9	/	/	31.91	6.25	45.95	200	215	Average
2483.5	51.08	58.65	74	-22.92	32.05	6.31	45.93	200	215	Peak
2483.5	44.01	51.58	54	-9.99	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.9	60.55	74	-21.1	32.14	6.18	45.97	100	170	Peak
2390	44.55	52.2	54	-9.45	32.14	6.18	45.97	100	170	Average
2440	90.56	98	/	/	32.26	6.25	45.95	100	170	Peak
2440	89.89	97.33	/	/	32.26	6.25	45.95	100	170	Average
2483.5	52.08	59.34	74	-21.92	32.36	6.31	45.93	100	170	Peak
2483.5	44.67	51.93	54	-9.33	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2440MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.45	59.49	74	-22.55	31.75	6.18	45.97	200	215	Peak
2390	43.67	51.71	54	-10.33	31.75	6.18	45.97	200	215	Average
2480	98.15	105.74	/	/	32.04	6.3	45.93	200	215	Peak
2480	97.94	105.53	/	/	32.04	6.3	45.93	200	215	Average
2483.5	51.71	59.28	74	-22.29	32.05	6.31	45.93	200	215	Peak
2483.5	44.32	51.89	54	-9.68	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.43	60.08	74	-21.57	32.14	6.18	45.97	100	170	Peak
2390	44.49	52.14	54	-9.51	32.14	6.18	45.97	100	170	Average
2480	91.41	98.69	/	/	32.35	6.3	45.93	100	170	Peak
2480	90.75	98.03	/	/	32.35	6.3	45.93	100	170	Average
2483.5	53.69	60.95	74	-20.31	32.36	6.31	45.93	100	170	Peak
2483.5	44.61	51.87	54	-9.39	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2480MHz: Fundamental frequency.



**BUREAU
VERITAS**

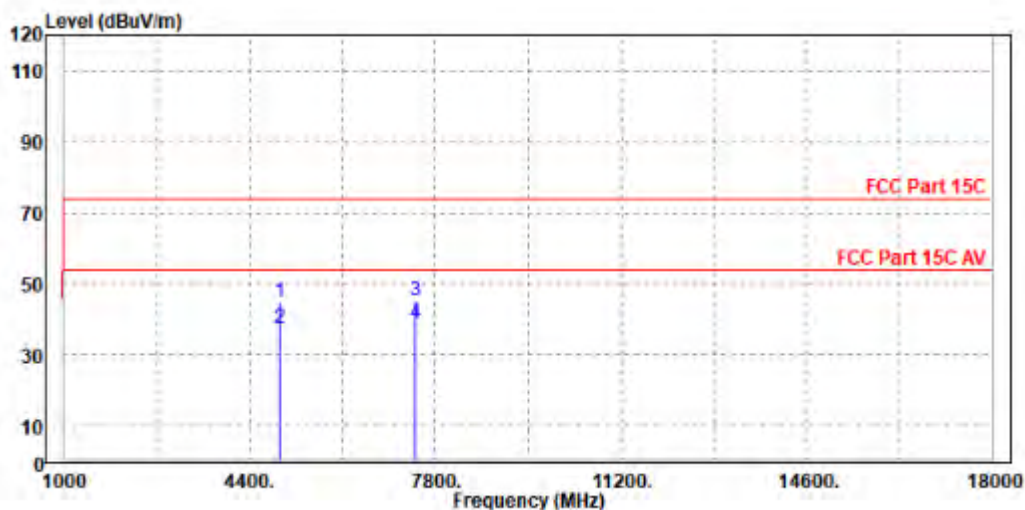
Test Report No.: W7L-P22070038RF02

Worst case harmonic:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4960.000	44.60	45.79	74.00	-29.40	-1.19	Peak	Horizontal
2	4960.000	37.32	38.51	54.00	-16.68	-1.19	Average	Horizontal
3 PK	7443.000	45.07	43.09	74.00	-28.93	1.98	Peak	Horizontal
4 PP	7443.000	38.86	36.88	54.00	-15.14	1.98	Average	Horizontal



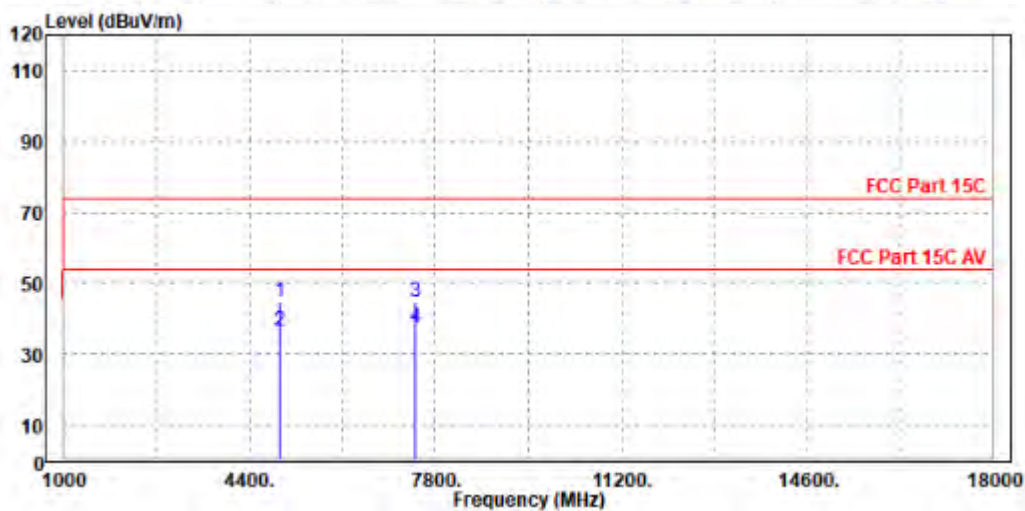


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

		Freq	Level	Read Level	Limit Line	Over- Limit	Factor	Remark	Pol/Phase
		MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	PK	4961.000	44.65	45.64	74.00	-29.35	-0.99	Peak	Vertical
2		4961.000	36.37	37.36	54.00	-17.63	-0.99	Average	Vertical
3		7440.000	44.54	42.53	74.00	-29.46	2.01	Peak	Vertical
4	PP	7440.000	37.30	35.29	54.00	-16.70	2.01	Average	Vertical



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2402MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

BT-LE _S8

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.52	58.56	74	-23.48	31.75	6.18	45.97	200	215	Peak
2390	43.81	51.85	54	-10.19	31.75	6.18	45.97	200	215	Average
2402	98.6	106.59	/	/	31.79	6.19	45.97	200	215	Peak
2402	97.35	105.34	/	/	31.79	6.19	45.97	200	215	Average
2483.5	52.06	59.63	74	-21.94	32.05	6.31	45.93	200	215	Peak
2483.5	43.77	51.34	54	-10.23	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.48	59.13	74	-22.52	32.14	6.18	45.97	100	170	Peak
2390	43.58	51.23	54	-10.42	32.14	6.18	45.97	100	170	Average
2402	92.8	100.42	/	/	32.16	6.19	45.97	100	170	Peak
2402	91.08	98.7	/	/	32.16	6.19	45.97	100	170	Average
2483.5	52.28	59.54	74	-21.72	32.36	6.31	45.93	100	170	Peak
2483.5	44.2	51.46	54	-9.8	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2402MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.72	59.76	74	-22.28	31.75	6.18	45.97	200	215	Peak
2390	43.57	51.61	54	-10.43	31.75	6.18	45.97	200	215	Average
2440	98.63	106.42	/	/	31.91	6.25	45.95	200	215	Peak
2440	95.4	103.19	/	/	31.91	6.25	45.95	200	215	Average
2483.5	50.91	58.48	74	-23.09	32.05	6.31	45.93	200	215	Peak
2483.5	44.47	52.04	54	-9.53	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	50.11	57.76	74	-23.89	32.14	6.18	45.97	100	170	Peak
2390	43.71	51.36	54	-10.29	32.14	6.18	45.97	100	170	Average
2440	91.24	98.68	/	/	32.26	6.25	45.95	100	170	Peak
2440	90.08	97.52	/	/	32.26	6.25	45.95	100	170	Average
2483.5	51.68	58.94	74	-22.32	32.36	6.31	45.93	100	170	Peak
2483.5	44.45	51.71	54	-9.55	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2440MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P22070038RF02

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.52	59.56	74	-22.48	31.75	6.18	45.97	200	215	Peak
2390	43.35	51.39	54	-10.65	31.75	6.18	45.97	200	215	Average
2480	98.68	106.27	/	/	32.04	6.3	45.93	200	215	Peak
2480	97.75	105.34	/	/	32.04	6.3	45.93	200	215	Average
2483.5	53.92	61.49	74	-20.08	32.05	6.31	45.93	200	215	Peak
2483.5	45.37	52.94	54	-8.63	32.05	6.31	45.93	200	215	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.16	59.81	74	-21.84	32.14	6.18	45.97	100	170	Peak
2390	44.57	52.22	54	-9.43	32.14	6.18	45.97	100	170	Average
2480	91.56	98.84	/	/	32.35	6.3	45.93	100	170	Peak
2480	90.56	97.84	/	/	32.35	6.3	45.93	100	170	Average
2483.5	50.99	58.25	74	-23.01	32.36	6.31	45.93	100	170	Peak
2483.5	45.33	52.59	54	-8.67	32.36	6.31	45.93	100	170	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2480MHz: Fundamental frequency.



**BUREAU
VERITAS**

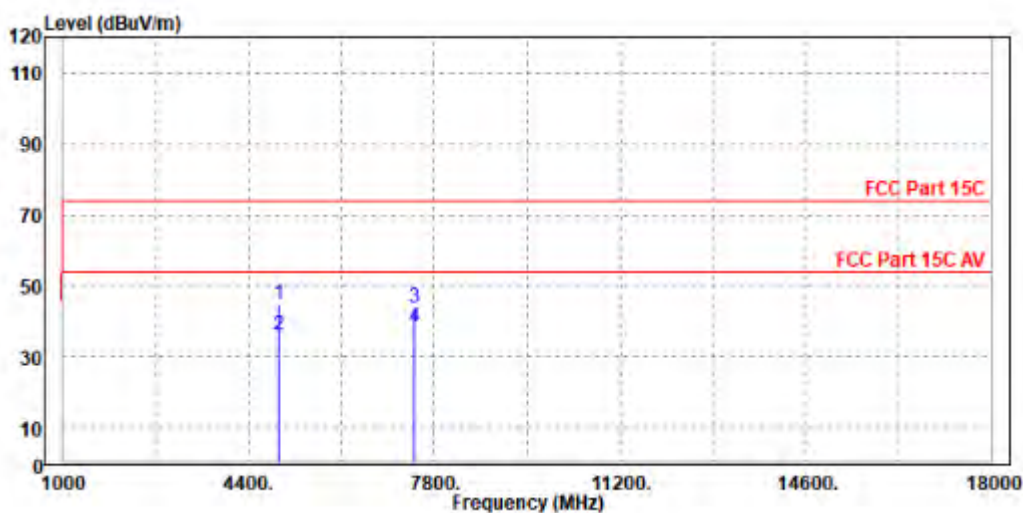
Test Report No.: W7L-P22070038RF02

Worst case harmonic:

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	PK	4961.000	44.53	45.72	74.00	-29.47	-1.19	Peak	Horizontal
2		4961.000	35.93	37.12	54.00	-18.07	-1.19	Average	Horizontal
3		7440.000	43.95	41.97	74.00	-30.05	1.98	Peak	Horizontal
4	PP	7440.000	38.24	36.26	54.00	-15.76	1.98	Average	Horizontal



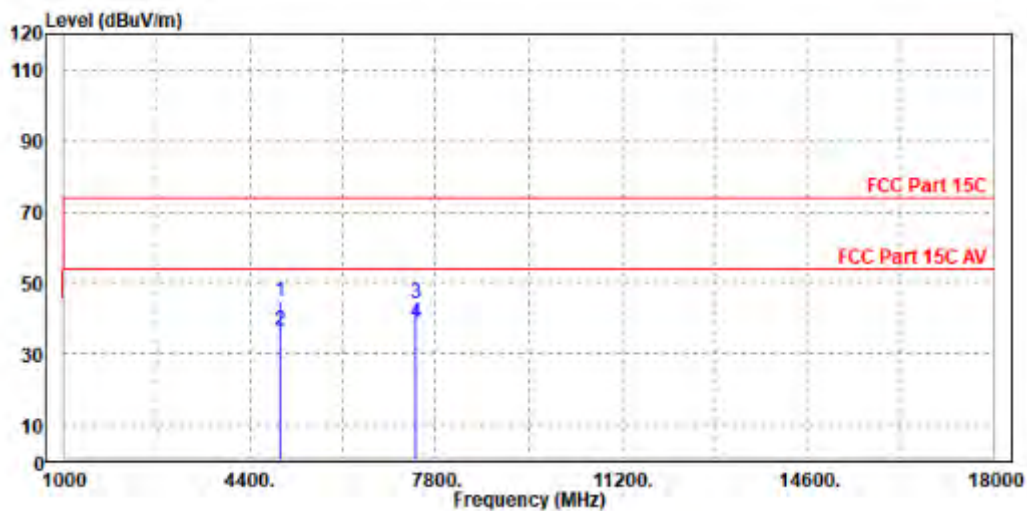


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1 PK	4960.000	44.94	45.93	74.00	-29.06	-0.99	Peak	Vertical
2	4960.000	36.31	37.30	54.00	-17.69	-0.99	Average	Vertical
3	7443.000	44.04	42.04	74.00	-29.96	2.00	Peak	Vertical
4 PP	7443.000	38.85	36.85	54.00	-15.15	2.00	Average	Vertical



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2402MHz: Fundamental frequency.



3.3 6 dB BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 22,22	Feb. 21,23
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 18,22	Feb. 17,23
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,22	May.14,23
Power Sensor	ANRITSU	MA2411B	1339352	May. 06,22	May. 05,23

NOTE:

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

3.3.3 TEST PROCEDURE

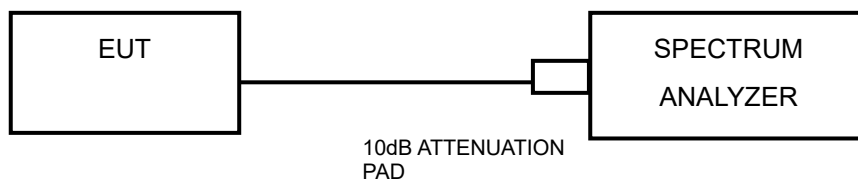
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

3.3.5 TEST SETUP



3.3.6 EUT OPERATING CONDITIONS

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



Test Report No.: W7L-P22070038RF02

3.3.7 TEST RESULTS

Please Refer to Appendix1/2 Of this test report.

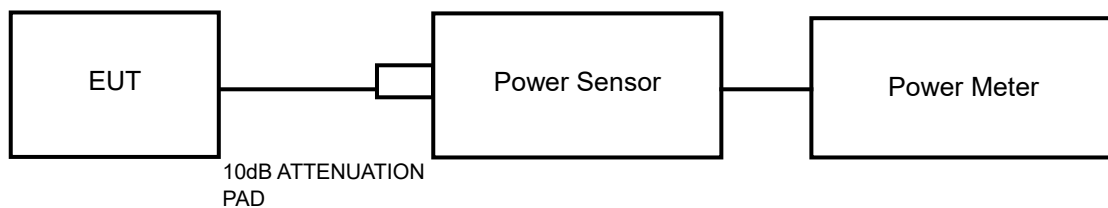


3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.4.4 TEST PROCEDURES

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

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

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



Test Report No.: W7L-P22070038RF02

3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix1/2 Of this test report.



Test Report No.: W7L-P22070038RF02

3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average 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.

Please Refer to Appendix1/2 Of this test report.

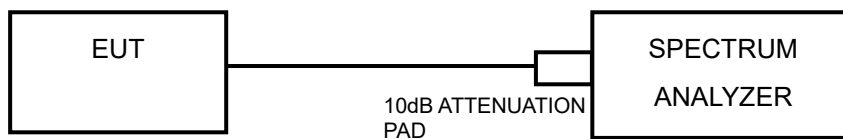


3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

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



Test Report No.: W7L-P22070038RF02

3.5.7 TEST RESULTS

Please Refer to Appendix1/2 Of this test report.

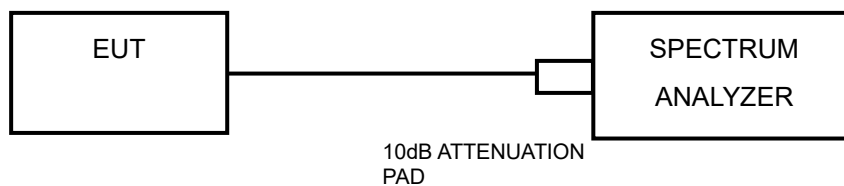


3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

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

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

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 OOB

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.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 EUT OPERATING CONDITION

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

3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix1/2 Of this test report.



Test Report No.: W7L-P22070038RF02

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: W7L-P22070038RF02

5 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.



6 Appendix 1 WLAN 2.4G

DTS BANDWIDTH

TEST RESULT

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.480	2417.040	0.5	PASS
		2437	9.600	2432.440	2442.040	0.5	PASS
		2462	9.600	2456.960	2466.560	0.5	PASS
11G	Ant1	2412	16.040	2404.120	2420.160	0.5	PASS
		2437	16.360	2428.800	2445.160	0.5	PASS
		2462	16.320	2453.840	2470.160	0.5	PASS
11N20SISO	Ant1	2412	16.800	2403.720	2420.520	0.5	PASS
		2437	17.160	2428.320	2445.480	0.5	PASS
		2462	16.960	2453.640	2470.600	0.5	PASS
11N40SISO	Ant1	2422	35.440	2404.480	2439.920	0.5	PASS
		2437	35.600	2418.920	2454.520	0.5	PASS
		2452	35.520	2434.480	2470.000	0.5	PASS



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02

TEST GRAPHS

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462

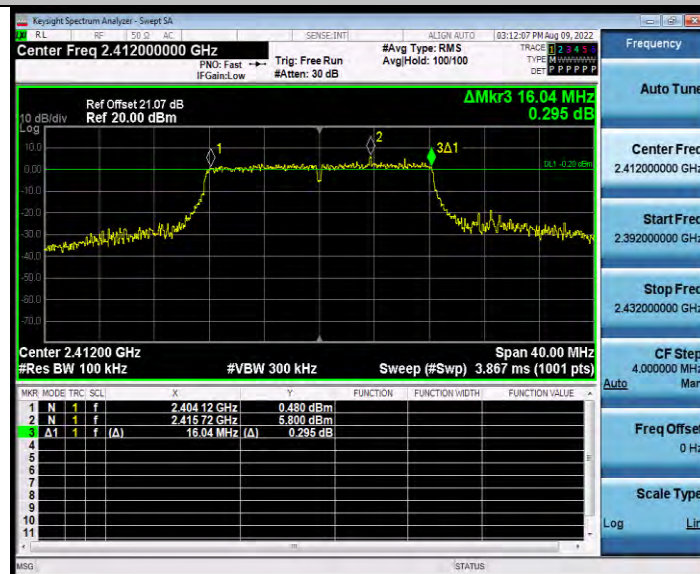


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11G_Ant1_2412

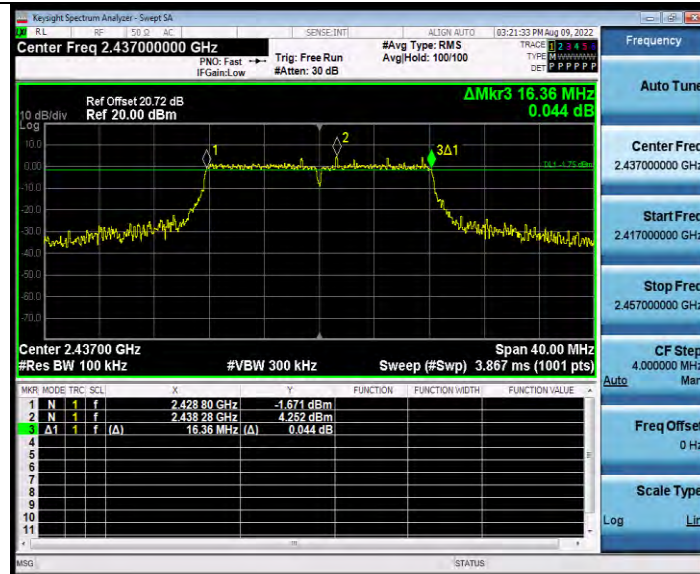


11G_Ant1_2437



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11G_Ant1_2462



11N20SISO_Ant1_2412



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462

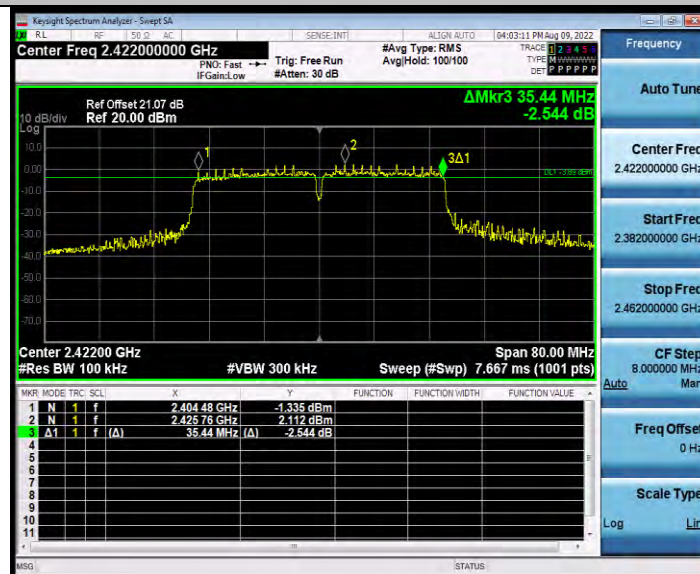


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11N40SISO_Ant1_2422

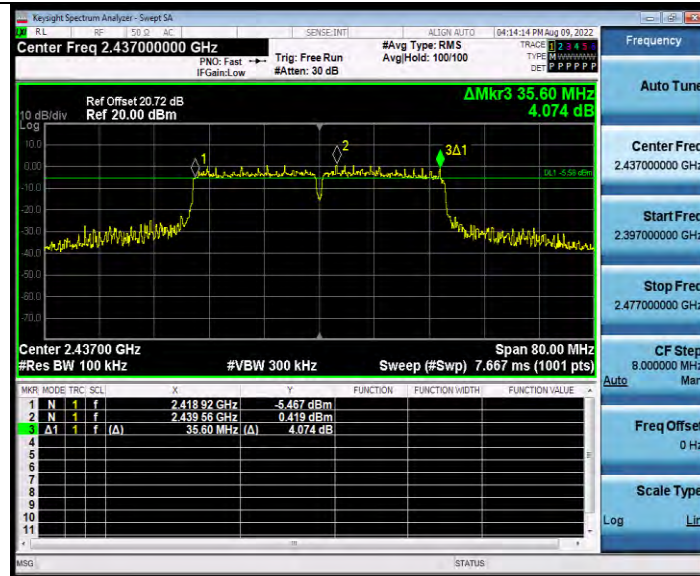


11N40SISO_Ant1_2437

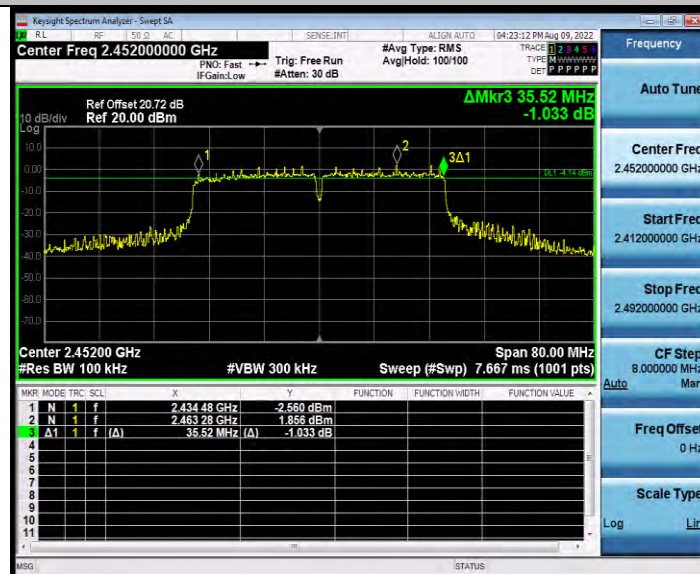


BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11N40SISO_Ant1_2452



BV 7Layers Communications Technology
(Shenzhen) Co., Ltd

No.B102, Dazu Chuangxin Mansion, North of Beihuan
Avenue, North Area, Hi-Tech Industrial Park, Nanshan
District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566
Fax: +86 755 8869 6577
Email: customerservice.sw@bureauveritas.com



OCCUPIED CHANNEL BANDWIDTH TEST RESULT

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	11.920	2406.138	2418.058	---	---
		2437	12.044	2430.969	2443.013	---	---
		2462	11.960	2456.042	2468.002	---	---
11G	Ant1	2412	16.684	2403.713	2420.397	---	---
		2437	16.600	2428.726	2445.326	---	---
		2462	16.598	2453.705	2470.303	---	---
11N20SISO	Ant1	2412	17.650	2403.246	2420.896	---	---
		2437	17.724	2428.132	2445.856	---	---
		2462	17.611	2453.228	2470.839	---	---
11N40SISO	Ant1	2422	36.225	2403.989	2440.214	---	---
		2437	36.142	2418.858	2455.000	---	---
		2452	36.133	2434.014	2470.147	---	---

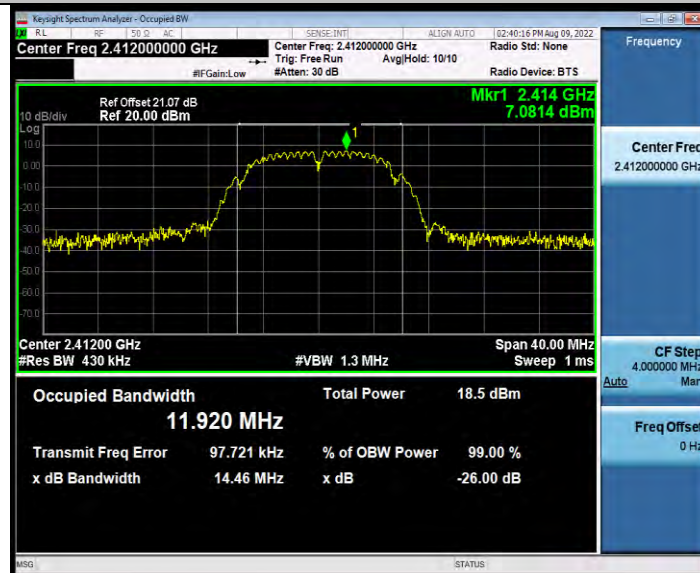


BUREAU
VERITAS

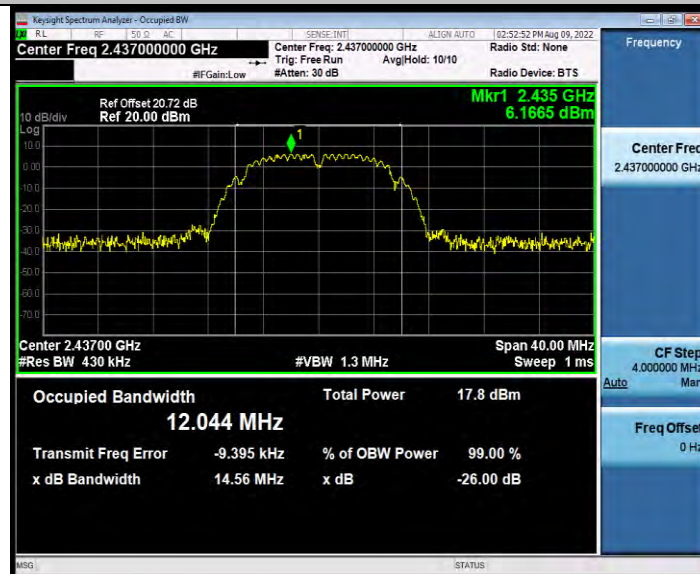
Test Report No.: W7L-P22070038RF02

TEST GRAPHS

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462



BUREAU
VERITAS

Test Report No.: W7L-P22070038RF02



11G_Ant1_2412



11G_Ant1_2437