



**BUREAU
VERITAS**

Test Report No.: W7L-P21110009RF13



VARIANT FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States

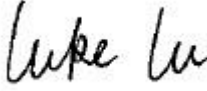
Manufacturer or Supplier:	Honeywell International Inc Honeywell Safety and Productivity Solutions
Address:	9680 Old Bailes Road, Fort Mill, SC 29707 United States
Product:	Mobile Computer
Brand Name:	Honeywell
Model Name:	CT45-L1N-G
FCC ID:	HD5-CT45L1NG
Date of tests:	Oct. 25, 2021 ~ Nov. 08, 2021

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: Nov. 09, 2021	 Date: Nov. 09, 2021

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21080006RF13	Original release	Sep. 01, 2021
W7L-P21040030RF13	Based on the original report W7L-P21080006RF13 Changed LCM to screen HD(1280*720), removing a 2nd BLE and Supercap, Increase the RTC battery, Detail refer to Product Equality Declaration	Sep. 09, 2021
W7L-P21110009RF13	Based on the original report W7L-P21040030RF13 Changing components, add a new screen, added band CA_41C by Software.	Nov. 09, 2021



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	N.A
15.247(a)(2)	6dB bandwidth	N.A
15.247(b)	Conducted Output power	N.A
15.247(e)	Power Spectral Density	N.A
15.203	Antenna Requirement	N.A

NOTE: Per the change notice provide by manufactory, the difference is changing components, add a new screen, added band CA_41C by Software. All the change no effect any RF parameter, Therefore only verify the radiated emission worse case and show the verify test data on this report. More test details please refer from the original 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 (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	Mobile Computer
BRAND NAME	Honeywell
MODEL NAME	CT45-L1N-G
NOMINAL VOLTAGE	3.85Vdc (Lithium-ion cell, 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 65 Mbps 802.11n40: up to 135 Mbps BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 169.82mW (Maximum) BT-LE: 4.88mW (Maximum)
ANTENNA TYPE	PIFA Antenna with 0.51dBi gain
HW VERSION	V1.0
SW VERSION	OS.11.002-HON.11.002
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: unshielded without ferrite, 1.25 meter Earphone cable: unshielded without ferrite, 1.27 meter

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- This product includes the following six SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case, check worst case Radiated emission:

SAMPLE	EUT CONFIGURATION INFORMATION
1	SKU ID:CT45-L1N-27D120G ,Assembled Scanner Imager: 7-S0703
2	SKU ID:CT45-L1N-28D120G ,Assembled Scanner Imager: 8 - N6803/S0803
3	SKU ID: CT45-L1N-28D120T, Assembled with Scanner: 8 - N6803/S0803 for Turkey Only
4	SKU ID: CT45-L1N-27D120T, Assembled with Scanner: 7-S0703 for Turkey Only



5	SKU ID:CT45-L1N-28D220C, Assembled with Scanner: 8 - N6803/S0803 for China Only with Android non-GMS
6	SKU ID:CT45-L1N-27D220C, Assembled with Scanner: 7-S0703 for China Only with Android non-GMS

3. 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

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

List of Accessory:

ACCESSORIES	BRAND	MODEL	SPECIFICATION
Battery	Honeywell	CT50-BTSC	Capacity : 3.85vdc 4020mAh
AC Adapter	HONOR	ADS-12B-06 05010E	I/P:100-240Vac, 0.3A O/P: 5Vdc, 2A
USB Cable	Honeywell	CT40-SN	Shielded, 1.25meter
Earphone	VIVO	N/A	Shielded, 1.27meter
LCD Panel 1	TZD	TS5099	5.0" HD(1280*720)
LCD Panel 2	TIANMA	TM050JVZG53	5.0" HD(1280*720)



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

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 HT20	1 to 11	11	OFDM	MCS0
BT-LE	0 to 39	39	GFSK	2.0

**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 HT20	1 to 11	11	OFDM	MCS0

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, 11	DSSS	1.0
802.11g	1 to 11	1, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 11	OFDM	MCS0
802.11n HT40	3 to 9	3, 9	OFDM	MCS0
BT-LE	0 to 39	0, 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	CCK	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 3.85V By Battery	Carl Xie
RE≥1G	23deg. C, 70%RH	DC 3.85V By Battery	Carl Xie
PLC	25deg. C, 52%RH	DC 3.85V By Battery	Lily Zhao
APCM	25deg. C, 60%RH	DC 3.85V By Battery	Lily Zhao



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2.3 Duty Cycle of Test Signal

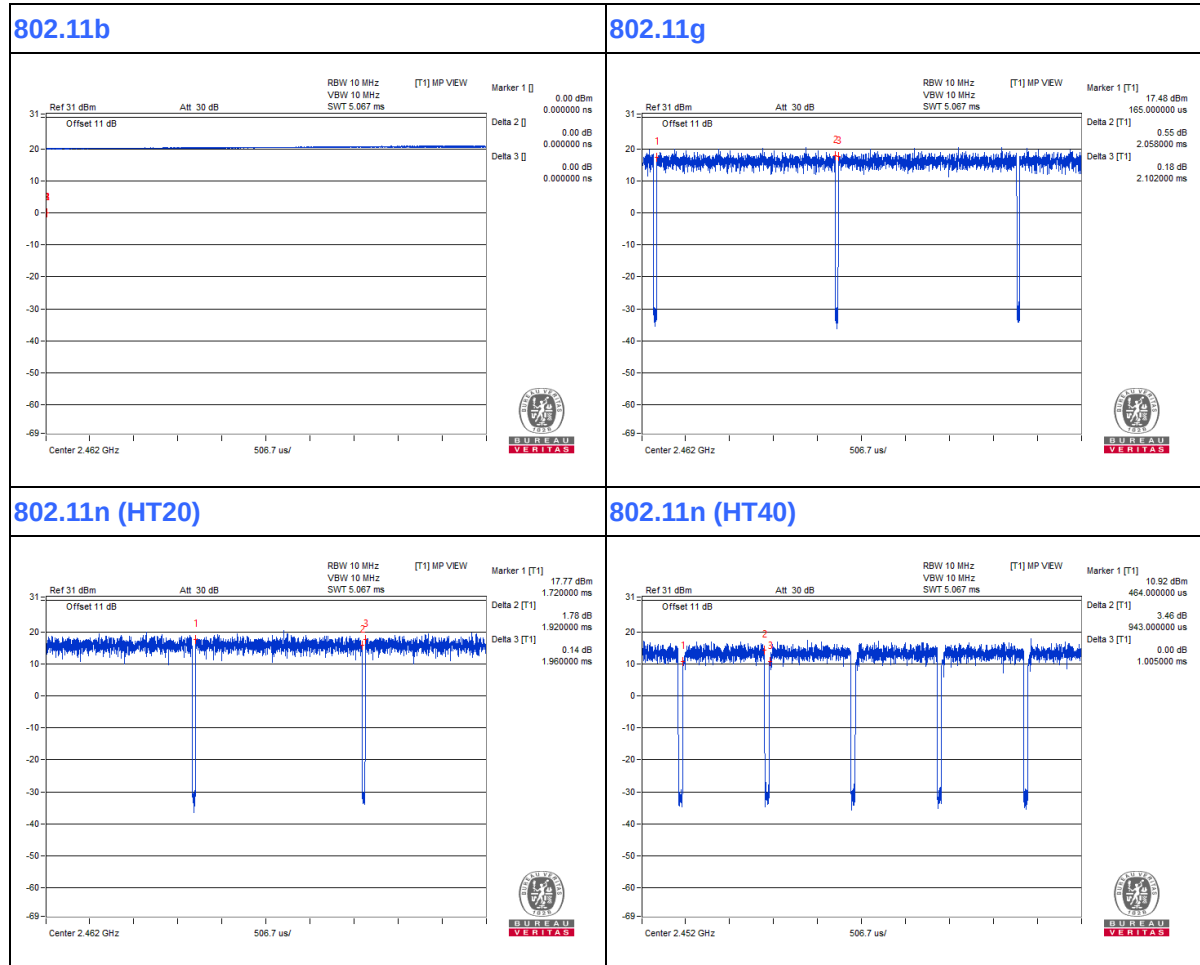
WIFI 2.4GHz

802.11b: Duty cycle = 100%, Duty factor shall not be considered

802.11g: Duty cycle = $2.058/2.102=0.979 < 98\%$, Duty factor = $10 * \log(1/0.979)=0.092$

802.11n (HT20): Duty cycle = $1.92/1.96=0.98=98\%$, Duty factor shall not be considered

802.11n (HT40): Duty cycle = $0.943/1.005=0.938 < 98\%$, Duty factor = $10 * \log(1/0.938)=0.278$





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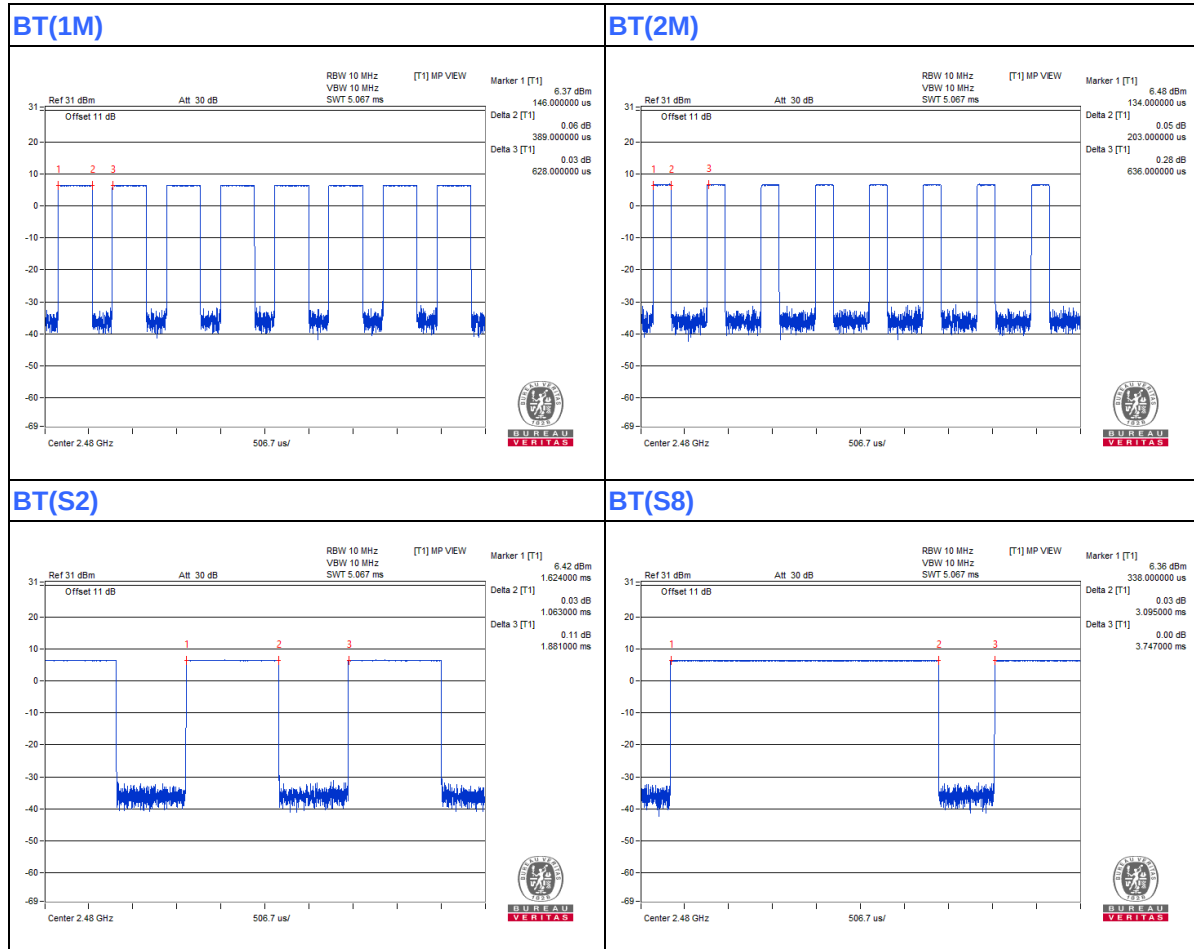
BT LE

1BLE -1M: Duty cycle = $0.389/0.628=0.619 < 98\%$, Duty factor = $10 * \log(1/0.619) = 2.083$

1BLE -2M: Duty cycle = $0.203/0.636=0.319 < 98\%$, Duty factor = $10 * \log(1/0.319) = 4.962$

1BLE -S2: Duty cycle = $1.063/1.881=0.565 < 98\%$, Duty factor = $10 * \log(1/0.565) = 2.480$

1BLE -S8: Duty cycle = $3.095/3.747=0.826 < 98\%$, Duty factor = $10 * \log(1/0.826) = 0.830$





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	Mar. 03,21	Mar. 02,22
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 22,21	Feb. 21,22

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.

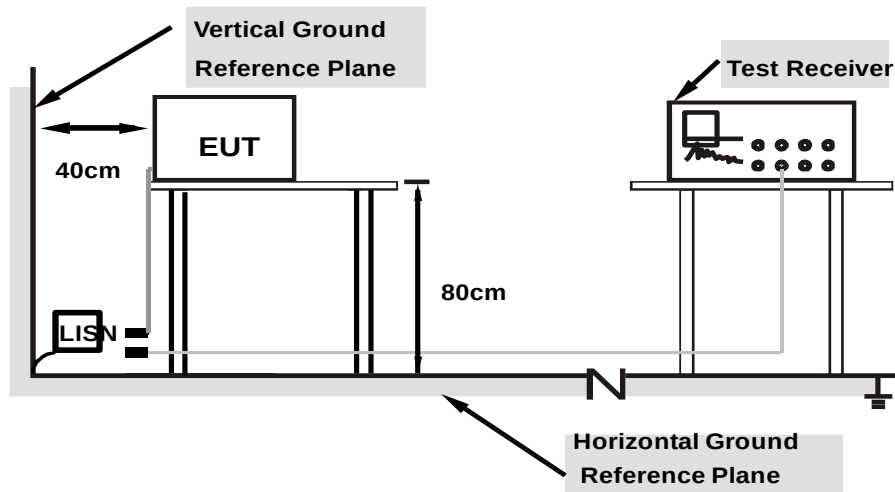
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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.



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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	25deg. C, 55%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.202000	---	37.06	53.53	16.47	L1	ON	9.7
0.202000	38.07	---	63.53	25.46	L1	ON	9.7
0.268000	---	29.23	51.18	21.95	L1	ON	9.7
0.268000	30.33	---	61.18	30.85	L1	ON	9.7
0.488000	---	10.28	46.20	35.93	L1	ON	9.7
0.488000	20.94	---	56.20	35.27	L1	ON	9.7
0.880000	---	20.09	46.00	25.91	L1	ON	9.7
0.880000	24.00	---	56.00	32.00	L1	ON	9.7
1.748000	---	21.67	46.00	24.33	L1	ON	9.7
1.748000	24.23	---	56.00	31.77	L1	ON	9.7
19.096000	---	5.14	50.00	44.86	L1	ON	9.8
19.096000	14.52	---	60.00	45.48	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.

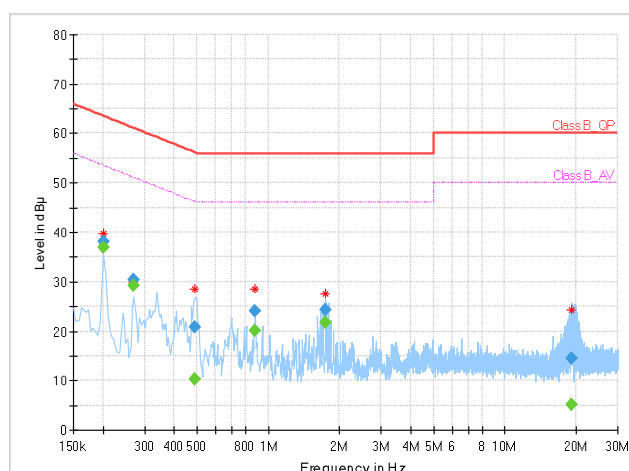
3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Emission level - Limit value

5. Correction factor = Insertion loss + Cable loss

6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





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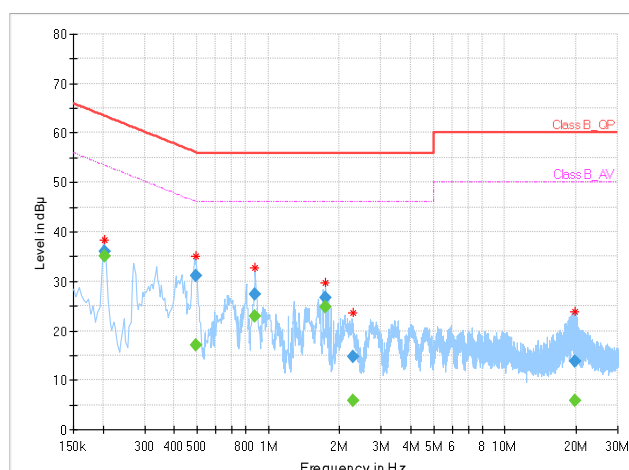
Test Report No.: W7L-P21110009RF13

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 55%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.204000	---	35.07	53.45	18.38	N	ON	9.7
0.204000	36.14	---	63.45	27.31	N	ON	9.7
0.492000	---	17.06	46.13	29.08	N	ON	9.7
0.492000	31.11	---	56.13	25.02	N	ON	9.7
0.880000	---	22.83	46.00	23.17	N	ON	9.7
0.880000	27.33	---	56.00	28.67	N	ON	9.7
1.748000	---	24.88	46.00	21.12	N	ON	9.8
1.748000	26.61	---	56.00	29.39	N	ON	9.8
2.284000	---	5.96	46.00	40.04	N	ON	9.8
2.284000	14.70	---	56.00	41.30	N	ON	9.8
19.744000	---	5.81	50.00	44.19	N	ON	9.9
19.744000	13.81	---	60.00	46.19	N	ON	9.9

- 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 = Emission level - Limit value
 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. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Aug. 21,21	Aug. 20,22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 26, 21	Aug. 25, 22
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	1505	Jun. 03,21	Jun. 02,22
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Apr. 22,21	Apr. 21,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 03,21	Jun. 02,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 22,21	Apr. 21,22

- 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.

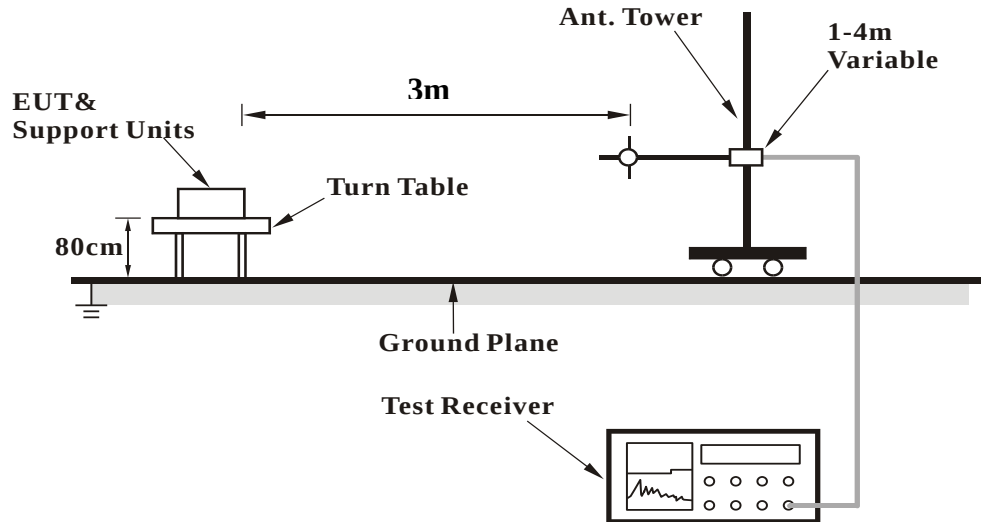
3.2.4 DEVIATION FROM TEST STANDARD

No deviation

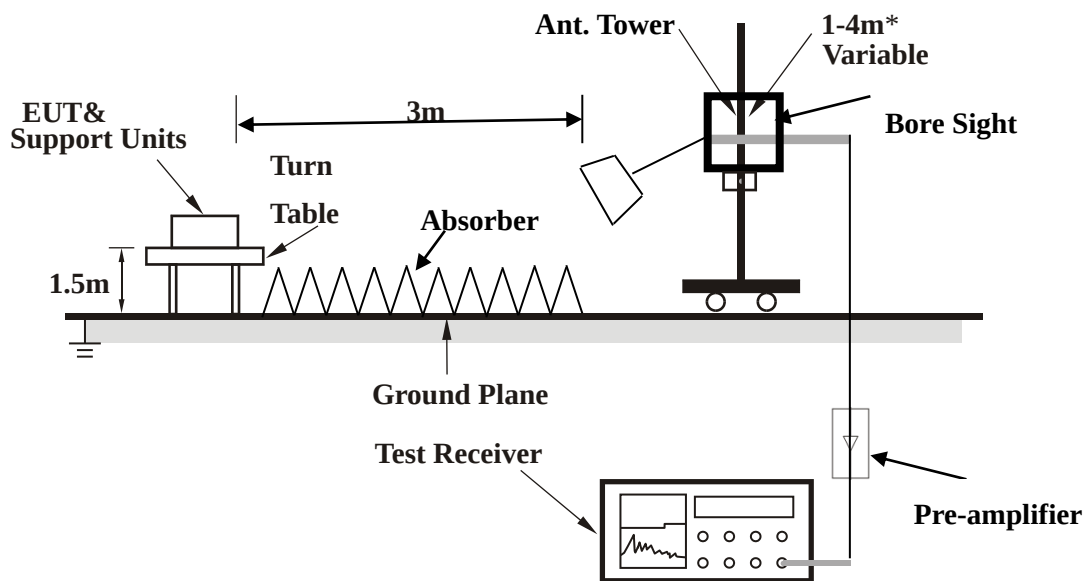


3.2.5 TEST SETUP

< 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).



Test Report No.: W7L-P21110009RF13

3.2.6 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.



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Test Report No.: W7L-P21110009RF13

3.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA :

30 MHz – 1GHz data:

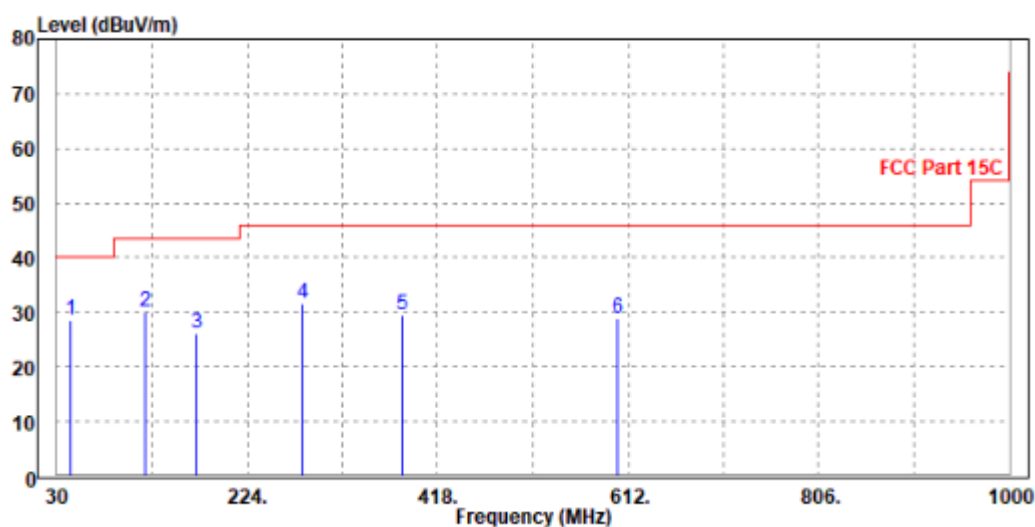
802.11n (40MHz)

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
43.58	28.61	54.14	40	-11.39	11.87	0.85	38.25	300	0	Peak
120.21	29.97	58.51	43.5	-13.53	7.89	1.4	37.83	300	0	Peak
172.59	26.3	51.7	43.5	-17.2	10.46	1.67	37.53	300	0	Peak
281.23	31.56	52.97	46	-14.44	13.7	2.13	37.24	300	0	Peak
382.11	29.48	47.93	46	-16.52	16.38	2.49	37.32	300	0	Peak
600.36	28.93	42.83	46	-17.07	20.71	3.22	37.83	300	0	Peak

REMARKS:

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





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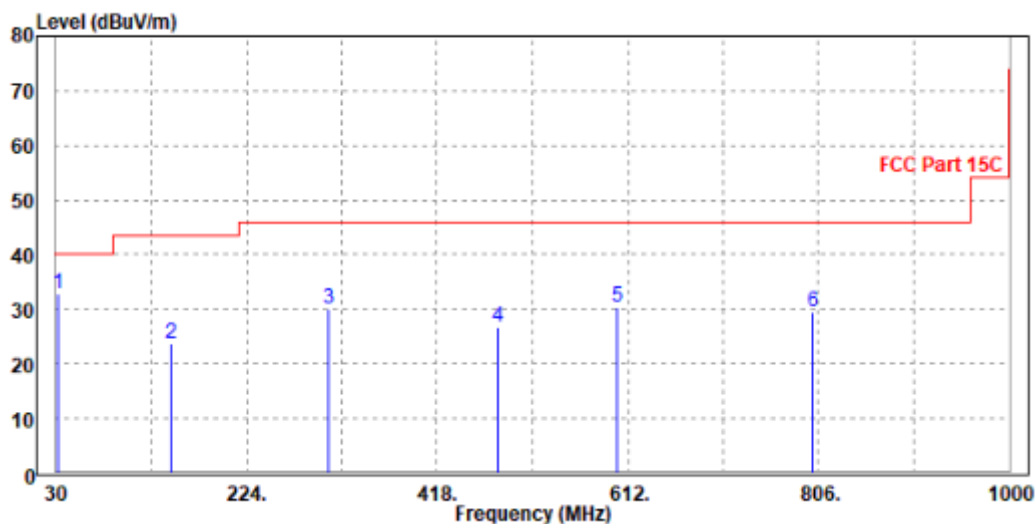
Test Report No.: W7L-P21110009RF13

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
32.91	32.79	51.19	40	-7.21	18.92	0.73	38.05	200	360	Peak
147.37	23.81	50.38	43.5	-19.69	9.55	1.55	37.67	200	360	Peak
307.42	30.14	49.97	46	-15.86	15.16	2.23	37.22	200	360	Peak
480.08	26.87	42.78	46	-19.13	18.72	2.85	37.48	200	360	Peak
601.33	30.27	43.96	46	-15.73	20.92	3.22	37.83	200	360	Peak
800.18	29.56	40.98	46	-16.44	23.1	3.81	38.33	200	360	Peak

REMARKS:

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





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Test Report No.: W7L-P21110009RF13

ABOVE 1GHz WORST-CASE DATA:

Note: For higher frequency, the emission is too low to be detected.

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	49.12	57.88	74	-24.88	31.75	5.86	46.37	195	225	Peak
2390	42.22	50.98	54	-11.78	31.75	5.86	46.37	195	225	Average
2412	99.3	107.96	-	-	31.82	5.89	46.37	195	225	Peak
2412	95.18	103.84	-	-	31.82	5.89	46.37	195	225	Average
2483.5	50.43	58.76	74	-23.57	32.05	5.99	46.37	195	225	Peak
2483.5	41.91	50.24	54	-12.09	32.05	5.99	46.37	195	225	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	51.17	59.54	74	-22.83	32.14	5.86	46.37	100	175	Peak
2390	43.52	51.89	54	-10.48	32.14	5.86	46.37	100	175	Average
2412	93.06	101.35	-	-	32.19	5.89	46.37	100	175	Peak
2412	90.99	99.28	-	-	32.19	5.89	46.37	100	175	Average
2483.5	49.88	57.9	74	-24.12	32.36	5.99	46.37	100	175	Peak
2483.5	43.84	51.86	54	-10.16	32.36	5.99	46.37	100	175	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.



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Test Report No.: W7L-P21110009RF13

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	50.78	59.54	74	-23.22	31.75	5.86	46.37	195	225	Peak
2390	42.49	51.25	54	-11.51	31.75	5.86	46.37	195	225	Average
2437	98.72	107.26	-	-	31.9	5.93	46.37	195	225	Peak
2437	95.55	104.09	-	-	31.9	5.93	46.37	195	225	Average
2483.5	51.17	59.5	74	-22.83	32.05	5.99	46.37	195	225	Peak
2483.5	42.74	51.07	54	-11.26	32.05	5.99	46.37	195	225	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	52.63	61	74	-21.37	32.14	5.86	46.37	100	155	Peak
2390	42.55	50.92	54	-11.45	32.14	5.86	46.37	100	155	Average
2437	94.46	102.65	-	-	32.25	5.93	46.37	100	155	Peak
2437	90.33	98.52	-	-	32.25	5.93	46.37	100	155	Average
2483.5	49.49	57.51	74	-24.51	32.36	5.99	46.37	100	155	Peak
2483.5	42.41	50.43	54	-11.59	32.36	5.99	46.37	100	155	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	49.82	58.58	74	-24.18	31.75	5.86	46.37	190	270	Peak
2390	41.81	50.57	54	-12.19	31.75	5.86	46.37	190	270	Average
2462	96.2	104.63	-	-	31.98	5.96	46.37	190	270	Peak
2462	93.37	101.8	-	-	31.98	5.96	46.37	190	270	Average
2483.5	50.79	59.12	74	-23.21	32.05	5.99	46.37	190	270	Peak
2483.5	43.98	52.31	54	-10.02	32.05	5.99	46.37	190	270	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	49.39	57.76	74	-24.61	32.14	5.86	46.37	100	155	Peak
2390	42.51	50.88	54	-11.49	32.14	5.86	46.37	100	155	Average
2462	94.03	102.13	-	-	32.31	5.96	46.37	100	155	Peak
2462	90.85	98.95	-	-	32.31	5.96	46.37	100	155	Average
2483.5	49.95	57.97	74	-24.05	32.36	5.99	46.37	100	155	Peak
2483.5	43.19	51.21	54	-10.81	32.36	5.99	46.37	100	155	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	56.14	64.9	74	-17.86	31.75	5.86	46.37	100	215	Peak
2390	46.88	55.64	54	-7.12	31.75	5.86	46.37	100	215	Average
2412	104.38	113.04	-	-	31.82	5.89	46.37	100	215	Peak
2412	95.53	104.19	-	-	31.82	5.89	46.37	100	215	Average
2483.5	52.92	61.25	74	-21.08	32.05	5.99	46.37	100	215	Peak
2483.5	44.39	52.72	54	-9.61	32.05	5.99	46.37	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	51.03	59.4	74	-22.97	32.14	5.86	46.37	100	160	Peak
2390	44.27	52.64	54	-9.73	32.14	5.86	46.37	100	160	Average
2412	98.83	107.12	-	-	32.19	5.89	46.37	100	160	Peak
2412	90.5	98.79	-	-	32.19	5.89	46.37	100	160	Average
2483.5	49.66	57.68	74	-24.34	32.36	5.99	46.37	100	160	Peak
2483.5	42.32	50.34	54	-11.68	32.36	5.99	46.37	100	160	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.



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Test Report No.: W7L-P21110009RF13

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	51.53	60.29	74	-22.47	31.75	5.86	46.37	100	215	Peak
2390	42.67	51.43	54	-11.33	31.75	5.86	46.37	100	215	Average
2437	104.41	112.95	-	-	31.9	5.93	46.37	100	215	Peak
2437	95.43	103.97	-	-	31.9	5.93	46.37	100	215	Average
2483.5	51.25	59.58	74	-22.75	32.05	5.99	46.37	100	215	Peak
2483.5	42.16	50.49	54	-11.84	32.05	5.99	46.37	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	51.2	59.57	74	-22.8	32.14	5.86	46.37	100	160	Peak
2390	43.11	51.48	54	-10.89	32.14	5.86	46.37	100	160	Average
2437	100.01	108.2	-	-	32.25	5.93	46.37	100	160	Peak
2437	90.99	99.18	-	-	32.25	5.93	46.37	100	160	Average
2483.5	50.86	58.88	74	-23.14	32.36	5.99	46.37	100	160	Peak
2483.5	42.34	50.36	54	-11.66	32.36	5.99	46.37	100	160	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	50.21	58.97	74	-23.79	31.75	5.86	46.37	100	215	Peak
2390	42.36	51.12	54	-11.64	31.75	5.86	46.37	100	215	Average
2462	103.98	112.41	-	-	31.98	5.96	46.37	100	215	Peak
2462	95.86	104.29	-	-	31.98	5.96	46.37	100	215	Average
2483.5	54.36	62.69	74	-19.64	32.05	5.99	46.37	100	215	Peak
2483.5	45.46	53.79	54	-8.54	32.05	5.99	46.37	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	49.95	58.32	74	-24.05	32.14	5.86	46.37	100	160	Peak
2390	43.21	51.58	54	-10.79	32.14	5.86	46.37	100	160	Average
2462	100.17	108.27	-	-	32.31	5.96	46.37	100	160	Peak
2462	96.16	104.26	-	-	32.31	5.96	46.37	100	160	Average
2483.5	51.57	59.59	74	-22.43	32.36	5.99	46.37	100	160	Peak
2483.5	43.82	51.84	54	-10.18	32.36	5.99	46.37	100	160	Average

REMARKS:

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



**BUREAU
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Test Report No.: W7L-P21110009RF13

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	55.94	64.7	74	-18.06	31.75	5.86	46.37	100	215	Peak
2390	47.78	56.54	54	-6.22	31.75	5.86	46.37	100	215	Average
2412	102.13	110.79	-	-	31.82	5.89	46.37	100	215	Peak
2412	95.16	103.82	-	-	31.82	5.89	46.37	100	215	Average
2483.5	51.64	59.97	74	-22.36	32.05	5.99	46.37	100	215	Peak
2483.5	44.18	52.51	54	-9.82	32.05	5.99	46.37	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	52.06	60.43	74	-21.94	32.14	5.86	46.37	100	175	Peak
2390	44.09	52.46	54	-9.91	32.14	5.86	46.37	100	175	Average
2412	99.07	107.36	-	-	32.19	5.89	46.37	100	175	Peak
2412	90.62	98.91	-	-	32.19	5.89	46.37	100	175	Average
2483.5	50.81	58.83	74	-23.19	32.36	5.99	46.37	100	175	Peak
2483.5	42.62	50.64	54	-11.38	32.36	5.99	46.37	100	175	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.



**BUREAU
VERITAS**

Test Report No.: W7L-P21110009RF13

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	51.53	60.29	74	-22.47	31.75	5.86	46.37	200	235	Peak
2390	44.11	52.87	54	-9.89	31.75	5.86	46.37	200	235	Average
2437	114.44	122.98	-	-	31.9	5.93	46.37	200	235	Peak
2437	97.84	106.38	-	-	31.9	5.93	46.37	200	235	Average
2483.5	52.63	60.96	74	-21.37	32.05	5.99	46.37	200	235	Peak
2483.5	46.03	54.36	54	-7.97	32.05	5.99	46.37	200	235	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	52.5	60.87	74	-21.5	32.14	5.86	46.37	105	160	Peak
2390	44.76	53.13	54	-9.24	32.14	5.86	46.37	105	160	Average
2437	101.24	109.43	-	-	32.25	5.93	46.37	105	160	Peak
2437	94.26	102.45	-	-	32.25	5.93	46.37	105	160	Average
2483.5	52.15	60.17	74	-21.85	32.36	5.99	46.37	105	160	Peak
2483.5	44.94	52.96	54	-9.06	32.36	5.99	46.37	105	160	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-P21110009RF13

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	50.81	59.57	74	-23.19	31.75	5.86	46.37	195	230	Peak
2390	43.87	52.63	54	-10.13	31.75	5.86	46.37	195	230	Average
2462	104.44	112.87	-	-	31.98	5.96	46.37	195	230	Peak
2462	97.9	106.33	-	-	31.98	5.96	46.37	195	230	Average
2483.5	56.78	65.11	74	-17.22	32.05	5.99	46.37	195	230	Peak
2483.5	48.03	56.36	54	-5.97	32.05	5.99	46.37	195	230	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	52.25	60.62	74	-21.75	32.14	5.86	46.37	100	160	Peak
2390	44.4	52.77	54	-9.6	32.14	5.86	46.37	100	160	Average
2462	100.07	108.17	-	-	32.31	5.96	46.37	100	160	Peak
2462	93.25	101.35	-	-	32.31	5.96	46.37	100	160	Average
2483.5	52.68	60.7	74	-21.32	32.36	5.99	46.37	100	160	Peak
2483.5	44.86	52.88	54	-9.14	32.36	5.99	46.37	100	160	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-P21110009RF13

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	59.22	67.98	74	-14.78	31.75	5.86	46.37	100	215	Peak
2390	50.86	59.62	54	-3.14	31.75	5.86	46.37	100	215	Average
2422	100.81	109.42	-	-	31.85	5.91	46.37	100	215	Peak
2422	94.6	103.21	-	-	31.85	5.91	46.37	100	215	Average
2483.5	52.79	61.12	74	-21.21	32.05	5.99	46.37	100	215	Peak
2483.5	45.02	53.35	54	-8.98	32.05	5.99	46.37	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	54.47	62.84	74	-19.53	32.14	5.86	46.37	100	170	Peak
2390	47.02	55.39	54	-6.98	32.14	5.86	46.37	100	170	Average
2422	98.04	106.29	-	-	32.21	5.91	46.37	100	170	Peak
2422	91.86	100.11	-	-	32.21	5.91	46.37	100	170	Average
2483.5	52.12	60.14	74	-21.88	32.36	5.99	46.37	100	170	Peak
2483.5	45.5	53.52	54	-8.5	32.36	5.99	46.37	100	170	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-P21110009RF13

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	56.32	65.08	74	-17.68	31.75	5.86	46.37	100	215	Peak
2390	47.81	56.57	54	-6.19	31.75	5.86	46.37	100	215	Average
2437	103	111.54	-	-	31.9	5.93	46.37	100	215	Peak
2437	95.77	104.31	-	-	31.9	5.93	46.37	100	215	Average
2483.5	57.54	65.87	74	-16.46	32.05	5.99	46.37	100	215	Peak
2483.5	48.14	56.47	54	-5.86	32.05	5.99	46.37	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	54.37	62.74	74	-19.63	32.14	5.86	46.37	100	160	Peak
2390	45.2	53.57	54	-8.8	32.14	5.86	46.37	100	160	Average
2437	99.55	107.74	-	-	32.25	5.93	46.37	100	160	Peak
2437	92.67	100.86	-	-	32.25	5.93	46.37	100	160	Average
2483.5	53.03	61.05	74	-20.97	32.36	5.99	46.37	100	160	Peak
2483.5	45.91	53.93	54	-8.09	32.36	5.99	46.37	100	160	Average

REMARKS:

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



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VERITAS**

Test Report No.: W7L-P21110009RF13

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	51.49	59.47	74	-22.51	31.75	5.86	45.59	100	215	Peak
2390	43.07	51.05	54	-10.93	31.75	5.86	45.59	100	215	Average
2452	100.59	108.23	-	-	31.95	5.95	45.54	100	215	Peak
2452	92.29	99.93	-	-	31.95	5.95	45.54	100	215	Average
2483.5	57.38	64.86	74	-16.62	32.05	5.99	45.52	100	215	Peak
2483.5	48.7	56.18	54	-5.3	32.05	5.99	45.52	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	52.75	60.34	74	-21.25	32.14	5.86	45.59	100	150	Peak
2390	44.39	51.98	54	-9.61	32.14	5.86	45.59	100	150	Average
2452	97.27	104.58	-	-	32.28	5.95	45.54	100	150	Peak
2452	89.79	97.1	-	-	32.28	5.95	45.54	100	150	Average
2483.5	55.34	62.51	74	-18.66	32.36	5.99	45.52	100	150	Peak
2483.5	46.83	54	54	-7.17	32.36	5.99	45.52	100	150	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-P21110009RF13

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

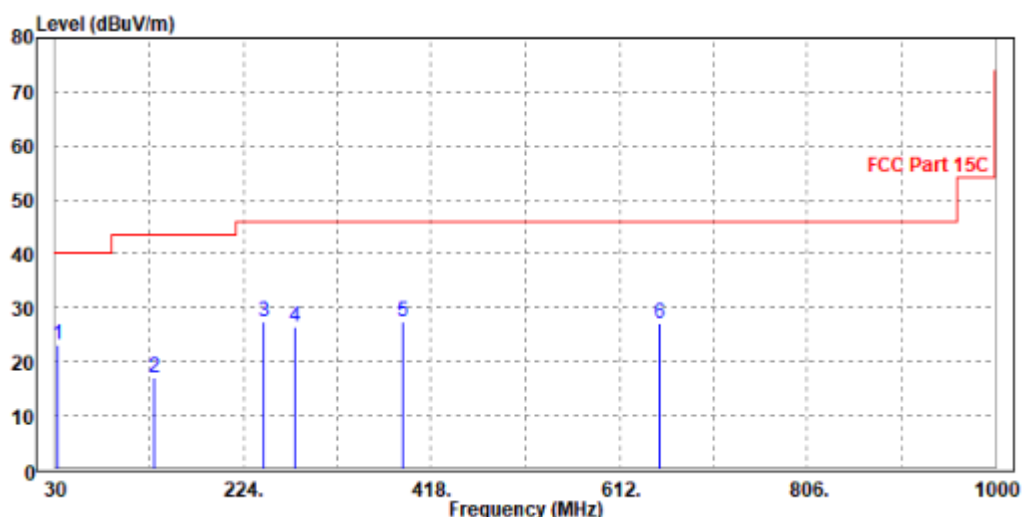
BT-LE _2M

CHANNEL	TX Channel 0	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
31.94	23.18	39.87	40	-16.82	19.93	0.8	37.42	100	0	QP
131.47	17.12	45.29	43.5	-26.38	7.33	1.49	36.99	100	0	QP
244.37	27.27	48.79	46	-18.73	13.11	2.01	36.64	100	0	QP
277.35	26.35	47.37	46	-19.65	13.55	2.13	36.7	100	0	QP
388.84	27.26	45.07	46	-18.74	16.44	2.57	36.82	100	0	QP
653.71	26.98	39.62	46	-19.02	21.46	3.36	37.46	100	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





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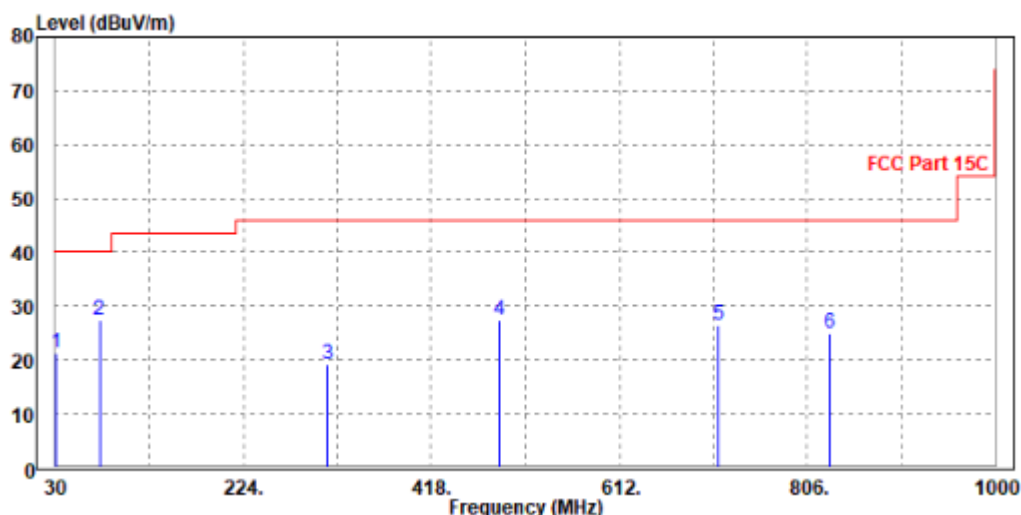
Test Report No.: W7L-P21110009RF13

CHANNEL	TX Channel 0	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
30.97	21.39	37.54	40	-18.61	20.42	0.79	37.36	100	0	QP
75.59	27.46	56.28	40	-12.54	7.32	1.2	37.34	100	0	QP
310.31	19.17	39.75	46	-26.83	13.93	2.25	36.76	100	0	QP
487.84	27.43	42.55	46	-18.57	18.91	2.95	36.98	100	0	QP
713.85	26.47	37.54	46	-19.53	22.9	3.58	37.55	100	0	QP
828.31	25.09	35.3	46	-20.91	23.58	3.93	37.72	100	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





ABOVE 1GHz TEST DATA

Note: For higher frequency, the emission is too low to be detected.

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	50.61	59.37	74	-23.39	31.75	5.86	46.37	120	220	Peak
2390	44.04	52.8	54	-9.96	31.75	5.86	46.37	120	220	Average
2402	99.8	108.5	-	-	31.79	5.88	46.37	120	220	Peak
2402	99.14	107.84	-	-	31.79	5.88	46.37	120	220	Average
2483.5	51.11	59.44	74	-22.89	32.05	5.99	46.37	120	220	Peak
2483.5	43.85	52.18	54	-10.15	32.05	5.99	46.37	120	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	51.28	59.65	74	-22.72	32.14	5.86	46.37	100	150	Peak
2390	43.73	52.1	54	-10.27	32.14	5.86	46.37	100	150	Average
2402	97.29	105.62	-	-	32.16	5.88	46.37	100	150	Peak
2402	95.85	104.18	-	-	32.16	5.88	46.37	100	150	Average
2483.5	52.71	60.73	74	-21.29	32.36	5.99	46.37	100	150	Peak
2483.5	44.52	52.54	54	-9.48	32.36	5.99	46.37	100	150	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-P21110009RF13

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	50.38	59.14	74	-23.62	31.75	5.86	46.37	100	220	Peak
2390	43.31	52.07	54	-10.69	31.75	5.86	46.37	100	220	Average
2440	100.86	109.39	-	-	31.91	5.93	46.37	100	220	Peak
2440	99.61	108.14	-	-	31.91	5.93	46.37	100	220	Average
2483.5	52.21	60.54	74	-21.79	32.05	5.99	46.37	100	220	Peak
2483.5	43.87	52.2	54	-10.13	32.05	5.99	46.37	100	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	50.91	59.28	74	-23.09	32.14	5.86	46.37	100	150	Peak
2390	44.45	52.82	54	-9.55	32.14	5.86	46.37	100	150	Average
2440	97.79	105.97	-	-	32.26	5.93	46.37	100	150	Peak
2440	95.62	103.8	-	-	32.26	5.93	46.37	100	150	Average
2483.5	53.52	61.54	74	-20.48	32.36	5.99	46.37	100	150	Peak
2483.5	45	53.02	54	-9	32.36	5.99	46.37	100	150	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-P21110009RF13

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	50.92	59.68	74	-23.08	31.75	5.86	46.37	100	220	Peak
2390	43.25	52.01	54	-10.75	31.75	5.86	46.37	100	220	Average
2480	101.15	109.5	–	–	32.04	5.98	46.37	100	220	Peak
2480	100.49	108.84	–	–	32.04	5.98	46.37	100	220	Average
2483.5	54.54	62.87	74	-19.46	32.05	5.99	46.37	100	220	Peak
2483.5	44.25	52.58	54	-9.75	32.05	5.99	46.37	100	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	51.22	59.59	74	-22.78	32.14	5.86	46.37	100	155	Peak
2390	43.71	52.08	54	-10.29	32.14	5.86	46.37	100	155	Average
2480	98.21	106.25	–	–	32.35	5.98	46.37	100	155	Peak
2480	96.23	104.27	–	–	32.35	5.98	46.37	100	155	Average
2483.5	52.57	60.59	74	-21.43	32.36	5.99	46.37	100	155	Peak
2483.5	44.48	52.5	54	-9.52	32.36	5.99	46.37	100	155	Average

REMARKS:

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



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VERITAS**

Test Report No.: W7L-P21110009RF13

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	51.26	60.02	74	-22.74	31.75	5.86	46.37	120	220	Peak
2390	42.12	50.88	54	-11.88	31.75	5.86	46.37	120	220	Average
2402	99.74	108.44	-	-	31.79	5.88	46.37	120	220	Peak
2402	97.06	105.76	-	-	31.79	5.88	46.37	120	220	Average
2483.5	50.75	59.08	74	-23.25	32.05	5.99	46.37	120	220	Peak
2483.5	43.61	51.94	54	-10.39	32.05	5.99	46.37	120	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	50.71	59.08	74	-23.29	32.14	5.86	46.37	100	155	Peak
2390	43.18	51.55	54	-10.82	32.14	5.86	46.37	100	155	Average
2402	96.88	105.21	-	-	32.16	5.88	46.37	100	155	Peak
2402	93.37	101.7	-	-	32.16	5.88	46.37	100	155	Average
2483.5	51.97	59.99	74	-22.03	32.36	5.99	46.37	100	155	Peak
2483.5	44.63	52.65	54	-9.37	32.36	5.99	46.37	100	155	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-P21110009RF13

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	51.05	59.81	74	-22.95	31.75	5.86	46.37	120	220	Peak
2390	43.69	52.45	54	-10.31	31.75	5.86	46.37	120	220	Average
2440	98.58	107.11	-	-	31.91	5.93	46.37	120	220	Peak
2440	95.73	104.26	-	-	31.91	5.93	46.37	120	220	Average
2483.5	51.18	59.51	74	-22.82	32.05	5.99	46.37	120	220	Peak
2483.5	43.89	52.22	54	-10.11	32.05	5.99	46.37	120	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	51.75	60.12	74	-22.25	32.14	5.86	46.37	100	150	Peak
2390	43.79	52.16	54	-10.21	32.14	5.86	46.37	100	150	Average
2440	95.99	104.17	-	-	32.26	5.93	46.37	100	150	Peak
2440	92.4	100.58	-	-	32.26	5.93	46.37	100	150	Average
2483.5	51.54	59.56	74	-22.46	32.36	5.99	46.37	100	150	Peak
2483.5	44.04	52.06	54	-9.96	32.36	5.99	46.37	100	150	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-P21110009RF13

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	50.9	59.66	74	-23.1	31.75	5.86	46.37	100	220	Peak
2390	42.28	51.04	54	-11.72	31.75	5.86	46.37	100	220	Average
2480	100.81	109.16	-	-	32.04	5.98	46.37	100	220	Peak
2480	97.41	105.76	-	-	32.04	5.98	46.37	100	220	Average
2483.5	52.93	61.26	74	-21.07	32.05	5.99	46.37	100	220	Peak
2483.5	44.25	52.58	54	-9.75	32.05	5.99	46.37	100	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	50.74	59.11	74	-23.26	32.14	5.86	46.37	100	150	Peak
2390	43.84	52.21	54	-10.16	32.14	5.86	46.37	100	150	Average
2480	97.19	105.23	-	-	32.35	5.98	46.37	100	150	Peak
2480	94.72	102.76	-	-	32.35	5.98	46.37	100	150	Average
2483.5	54.58	62.6	74	-19.42	32.36	5.99	46.37	100	150	Peak
2483.5	43.64	51.66	54	-10.36	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	51.42	60.18	74	-22.58	31.75	5.86	46.37	100	220	Peak
2390	43.38	52.14	54	-10.62	31.75	5.86	46.37	100	220	Average
2402	97.71	106.41	-	-	31.79	5.88	46.37	100	220	Peak
2402	96.97	105.67	-	-	31.79	5.88	46.37	100	220	Average
2483.5	51.38	59.71	74	-22.62	32.05	5.99	46.37	100	220	Peak
2483.5	43.52	51.85	54	-10.48	32.05	5.99	46.37	100	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	51.71	60.08	74	-22.29	32.14	5.86	46.37	100	150	Peak
2390	43.55	51.92	54	-10.45	32.14	5.86	46.37	100	150	Average
2402	95.76	104.09	-	-	32.16	5.88	46.37	100	150	Peak
2402	94.74	103.07	-	-	32.16	5.88	46.37	100	150	Average
2483.5	51.56	59.58	74	-22.44	32.36	5.99	46.37	100	150	Peak
2483.5	43.62	51.64	54	-10.38	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	50.07	58.83	74	-23.93	31.75	5.86	46.37	100	220	Peak
2390	42.68	51.44	54	-11.32	31.75	5.86	46.37	100	220	Average
2440	99.12	107.65	-	-	31.91	5.93	46.37	100	220	Peak
2440	98.13	106.66	-	-	31.91	5.93	46.37	100	220	Average
2483.5	50.06	58.39	74	-23.94	32.05	5.99	46.37	100	220	Peak
2483.5	42.53	50.86	54	-11.47	32.05	5.99	46.37	100	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	50.07	58.44	74	-23.93	32.14	5.86	46.37	100	150	Peak
2390	43.17	51.54	54	-10.83	32.14	5.86	46.37	100	150	Average
2440	94.13	102.31	-	-	32.26	5.93	46.37	100	150	Peak
2440	92.52	100.7	-	-	32.26	5.93	46.37	100	150	Average
2483.5	51.42	59.44	74	-22.58	32.36	5.99	46.37	100	150	Peak
2483.5	43.71	51.73	54	-10.29	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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	49.75	58.51	74	-24.25	31.75	5.86	46.37	100	220	Peak
2390	43.32	52.08	54	-10.68	31.75	5.86	46.37	100	220	Average
2480	100.38	108.73	-	-	32.04	5.98	46.37	100	220	Peak
2480	99.31	107.66	-	-	32.04	5.98	46.37	100	220	Average
2483.5	52.64	60.97	74	-21.36	32.05	5.99	46.37	100	220	Peak
2483.5	44.01	52.34	54	-9.99	32.05	5.99	46.37	100	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	51.31	59.68	74	-22.69	32.14	5.86	46.37	100	150	Peak
2390	43.03	51.4	54	-10.97	32.14	5.86	46.37	100	150	Average
2480	97.13	105.17	-	-	32.35	5.98	46.37	100	150	Peak
2480	95.41	103.45	-	-	32.35	5.98	46.37	100	150	Average
2483.5	52.15	60.17	74	-21.85	32.36	5.99	46.37	100	150	Peak
2483.5	44.36	52.38	54	-9.64	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	49.69	58.45	74	-24.31	31.75	5.86	46.37	100	220	Peak
2390	42.59	51.35	54	-11.41	31.75	5.86	46.37	100	220	Average
2402	96.65	105.35	-	-	31.79	5.88	46.37	100	220	Peak
2402	95.72	104.42	-	-	31.79	5.88	46.37	100	220	Average
2483.5	50.49	58.82	74	-23.51	32.05	5.99	46.37	100	220	Peak
2483.5	43.18	51.51	54	-10.82	32.05	5.99	46.37	100	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	50.76	59.13	74	-23.24	32.14	5.86	46.37	100	150	Peak
2390	43.36	51.73	54	-10.64	32.14	5.86	46.37	100	150	Average
2402	96.63	104.96	-	-	32.16	5.88	46.37	100	150	Peak
2402	94.24	102.57	-	-	32.16	5.88	46.37	100	150	Average
2483.5	49.38	57.4	74	-24.62	32.36	5.99	46.37	100	150	Peak
2483.5	43.37	51.39	54	-10.63	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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VERITAS**

Test Report No.: W7L-P21110009RF13

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	50.55	59.31	74	-23.45	31.75	5.86	46.37	100	220	Peak
2390	42.66	51.42	54	-11.34	31.75	5.86	46.37	100	220	Average
2440	98.52	107.05	-	-	31.91	5.93	46.37	100	220	Peak
2440	96.69	105.22	-	-	31.91	5.93	46.37	100	220	Average
2483.5	49.69	58.02	74	-24.31	32.05	5.99	46.37	100	220	Peak
2483.5	42.95	51.28	54	-11.05	32.05	5.99	46.37	100	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	49.98	58.35	74	-24.02	32.14	5.86	46.37	100	150	Peak
2390	43.13	51.5	54	-10.87	32.14	5.86	46.37	100	150	Average
2440	93.76	101.94	-	-	32.26	5.93	46.37	100	150	Peak
2440	91.67	99.85	-	-	32.26	5.93	46.37	100	150	Average
2483.5	51.57	59.59	74	-22.43	32.36	5.99	46.37	100	150	Peak
2483.5	42.85	50.87	54	-11.15	32.36	5.99	46.37	100	150	Average

REMARKS:

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



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Test Report No.: W7L-P21110009RF13

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	50.75	59.51	74	-23.25	31.75	5.86	46.37	100	220	Peak
2390	42.6	51.36	54	-11.4	31.75	5.86	46.37	100	220	Average
2480	99.6	107.95	-	-	32.04	5.98	46.37	100	220	Peak
2480	97.4	105.75	-	-	32.04	5.98	46.37	100	220	Average
2483.5	50.87	59.2	74	-23.13	32.05	5.99	46.37	100	220	Peak
2483.5	42.99	51.32	54	-11.01	32.05	5.99	46.37	100	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	50.44	58.81	74	-23.56	32.14	5.86	46.37	100	150	Peak
2390	44	52.37	54	-10	32.14	5.86	46.37	100	150	Average
2480	97.66	105.7	-	-	32.35	5.98	46.37	100	150	Peak
2480	96.91	104.95	-	-	32.35	5.98	46.37	100	150	Average
2483.5	51.54	59.56	74	-22.46	32.36	5.99	46.37	100	150	Peak
2483.5	43.64	51.66	54	-10.36	32.36	5.99	46.37	100	150	Average

REMARKS:

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



Test Report No.: W7L-P21110009RF13

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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5 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.

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