



**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11



FCC TEST REPORT (Part 15, Subpart C)

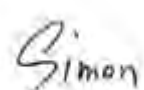

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer or Supplier:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Product:	Mobile Phone
Brand Name:	Redmi
Model Name:	2201117SG
FCC ID:	2AFZZ117SG
Date of tests:	Nov. 01, 2021 ~ Nov. 28, 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. 29, 2021	 Date: Nov. 29, 2021

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	6
1 SUMMARY OF TEST RESULTS.....	7
1.1 MEASUREMENT UNCERTAINTY	7
2 GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
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	14
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	15
2.5 DESCRIPTION OF SUPPORT UNITS	15
3 TEST TYPES AND RESULTS.....	16
3.1 CONDUCTED EMISSION MEASUREMENT	16
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	16
3.1.2 TEST INSTRUMENTS.....	16
3.1.3 TEST PROCEDURES	17
3.1.4 DEVIATION FROM TEST STANDARD	17
3.1.5 TEST SETUP	18
3.1.6 EUT OPERATING CONDITIONS	18
3.1.7 TEST RESULTS	19
3.2 RADIATED EMISSION MEASUREMENT	21
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	21
3.2.2 TEST INSTRUMENTS.....	22
3.2.3 TEST PROCEDURES	23
3.2.4 DEVIATION FROM TEST STANDARD	23
3.2.5 TEST SETUP	24
3.2.6 EUT OPERATING CONDITIONS	25
3.2.7 TEST RESULTS	26
3.3 6 DB BANDWIDTH MEASUREMENT	51
3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	51
3.3.2 TEST INSTRUMENTS.....	51
3.3.3 TEST PROCEDURE.....	51
3.3.4 DEVIATION FROM TEST STANDARD	52



3.3.5	TEST SETUP	52
3.3.6	EUT OPERATING CONDITIONS	52
3.3.7	TEST RESULTS	53
3.4	CONDUCTED OUTPUT POWER.....	54
3.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT.....	54
3.4.2	TEST SETUP	54
3.4.3	TEST INSTRUMENTS.....	54
3.4.4	TEST PROCEDURES	54
3.4.5	DEVIATION FROM TEST STANDARD	54
3.4.6	EUT OPERATING CONDITIONS	54
3.4.7	TEST RESULTS	55
3.4.7.1	MAXIMUM PEAK OUTPUT POWER	55
3.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE).....	56
3.5	POWER SPECTRAL DENSITY MEASUREMENT	57
3.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	57
3.5.2	TEST SETUP	57
3.5.3	TEST INSTRUMENTS.....	57
3.5.4	TEST PROCEDURE.....	57
3.5.5	DEVIATION FROM TEST STANDARD	57
3.5.6	EUT OPERATING CONDITION	57
3.5.7	TEST RESULTS	58
3.6	OUT OF BAND EMISSION MEASUREMENT	59
3.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	59
3.6.2	TEST SETUP	59
3.6.3	TEST INSTRUMENTS.....	59
3.6.4	TEST PROCEDURE.....	59
3.6.5	DEVIATION FROM TEST STANDARD	60
3.6.6	EUT OPERATING CONDITION	60
3.6.7	TEST RESULTS	60
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	61
5	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	62
	APPENDIX B:	62
	DTS BANDWIDTH.....	62
	TEST RESULT	62
	TEST GRAPHS.....	63



OCCUPIED CHANNEL BANDWIDTH 69

 TEST RESULT 69

 TEST GRAPHS 70

MAXIMUM CONDUCTED OUTPUT POWER 76

 PEAK POWER TEST RESULT 76

AVERAGE POWER TEST RESULT 76

MAXIMUM POWER SPECTRAL DENSITY 77

 TEST RESULT 77

 TEST GRAPHS 78

BAND EDGE MEASUREMENTS 84

 TEST RESULT 84

 TEST GRAPHS 85

CONDUCTED SPURIOUS EMISSION 89

 TEST RESULT 89

 TEST GRAPHS 91

DUTY CYCLE 109

 TEST RESULT 109

 TEST GRAPHS 110

APPENDIX C: 116

 DTS BANDWIDTH 116

 TEST RESULT 116

 TEST GRAPHS 117

99%OCCUPIED CHANNEL BANDWIDTH 122

 TEST RESULT 122

 TEST GRAPHS 123

MAXIMUM CONDUCTED OUTPUT POWER 128

 PEAK POWER TEST RESULT 128

 AVERAGE POWER TEST RESULT 128

 TEST GRAPHS 129

MAXIMUM POWER SPECTRAL DENSITY 134

 TEST RESULT 134

 TEST GRAPHS 135

BAND EDGE MEASUREMENTS 140

 TEST RESULT 140

 TEST GRAPHS 141

CONDUCTED SPURIOUS EMISSION 144



**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11

TEST RESULT	144
TEST GRAPHS.....	146
DUTY CYCLE	159
TEST RESULT	159
TEST GRAPHS.....	160



**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P21100026RF11	Original release	Nov. 29, 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	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

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 Phone
BRAND NAME	Redmi
MODEL NAME	2201117SG
NOMINAL VOLTAGE	5.0V/9.0V/11.0V/12.0V/20.0Vdc(adapter or host equipment) 3.87Vdc (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 65 Mbps BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 257.04mW (Maximum) BT-LE: 0.63mW (Maximum)
ANTENNA TYPE	PIFA Antenna with -0.31dBi gain
HW VERSION	P1.1
SW VERSION	MIUI12.5
IMEI	868909050035248
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB1 cable: unshielded without ferrite, 1.0meter USB2 cable: unshielded without ferrite, 1.0meter

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
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.



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		

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)
802.11g	1 to 11	11	OFDM	6M
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
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
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
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/9V/11V/12V/20V By Adapter	Star Le
RE≥1G	23deg. C, 70%RH	DC 5V/9V/11V/12V/20V By Adapter	Star Le
PLC	25deg. C, 52%RH	DC 5V/9V/11V/12V/20V By Adapter	Carl xie
APCM	25deg. C, 60%RH	DC 3.87V By Battery	Carl xie



2.3 Duty Cycle of Test Signal

Please Refer to Appendix B/C Of this test report.

WORST-CASE DATA:

Measured Duty Cycle		
Mode		Duty Cycle [%]
		ANT1
WIFI 2.4GHz	11B	99.76
	11G	97.89
	11N20	97.01
BT LE	BT4.0	85.20
	BT5.0	57.22
	BTS2	91.00
	BTS8	97.49

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 (dBµV)	
	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. 25,21	Feb. 24,22

- 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.

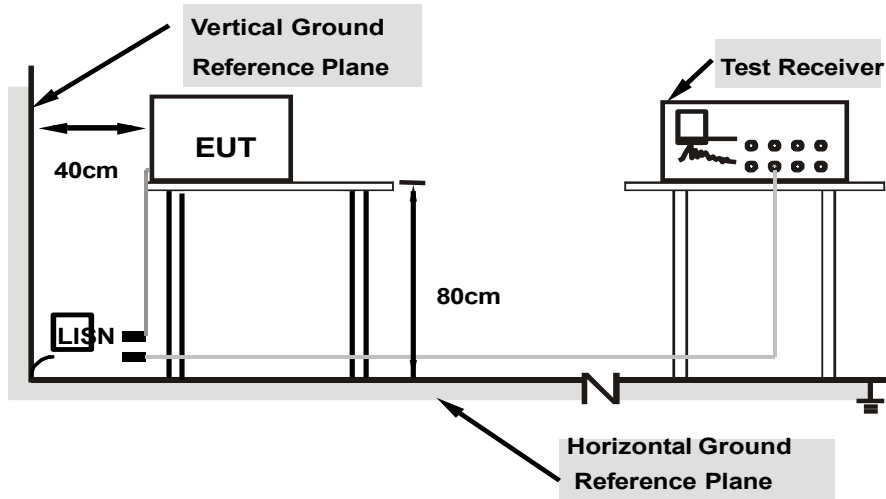
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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.



3.1.7 TEST RESULTS

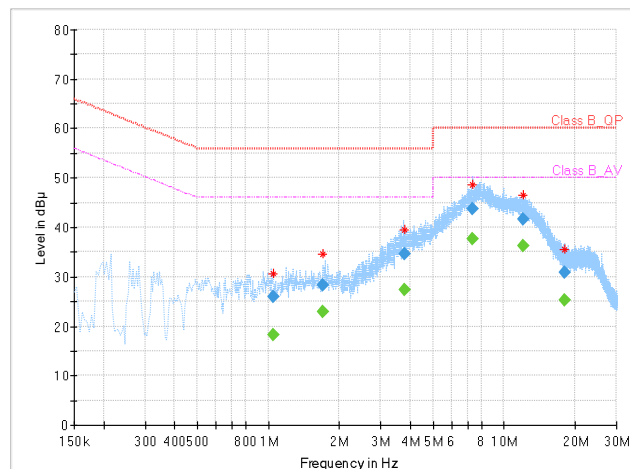
CONDUCTED WORST-CASE DATA:

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)
1.052000	---	18.33	46.00	27.67	L1	ON	9.7
1.052000	26.00	---	56.00	30.00	L1	ON	9.7
1.700000	---	23.03	46.00	22.97	L1	ON	9.7
1.700000	28.42	---	56.00	27.58	L1	ON	9.7
3.792000	---	27.31	46.00	18.69	L1	ON	9.7
3.792000	34.57	---	56.00	21.43	L1	ON	9.7
7.364000	---	37.76	50.00	12.24	L1	ON	9.7
7.364000	43.75	---	60.00	16.25	L1	ON	9.7
12.008000	---	36.14	50.00	13.86	L1	ON	9.8
12.008000	41.54	---	60.00	18.46	L1	ON	9.8
18.092000	---	25.34	50.00	24.66	L1	ON	9.8
18.092000	30.92	---	60.00	29.08	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





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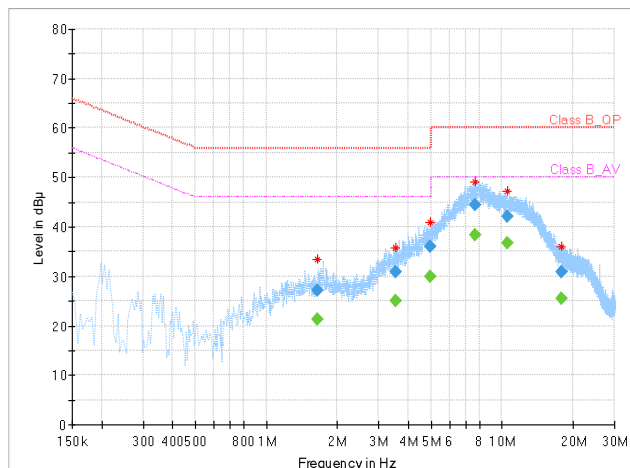
Test Report No.: W7L-P21100026RF11

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)
1.656000	---	21.18	46.00	24.82	N	ON	9.8
1.656000	27.22	---	56.00	28.78	N	ON	9.8
3.540000	---	24.94	46.00	21.06	N	ON	9.8
3.540000	30.99	---	56.00	25.01	N	ON	9.8
4.976000	---	29.88	46.00	16.12	N	ON	9.8
4.976000	36.11	---	56.00	19.89	N	ON	9.8
7.684000	---	38.41	50.00	11.59	N	ON	9.8
7.684000	44.34	---	60.00	15.66	N	ON	9.8
10.588000	---	36.65	50.00	13.35	N	ON	9.8
10.588000	42.06	---	60.00	17.94	N	ON	9.8
17.892000	---	25.50	50.00	24.50	N	ON	9.9
17.892000	30.93	---	60.00	29.07	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 = 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. 05,21	Mar. 04,22
Horn Antenna	ETS-LINDGREN	3117	00168728	Apr. 02, 21	Apr. 01, 22
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Aug. 25, 21	Aug. 24, 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. 27,21	Apr. 26,22
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 02,21	Jun. 01,22
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Apr. 30,21	Apr. 29,22
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 25,21	Aug. 24,22
Power Meter	Anritsu	ML2495A	1506002	Feb. 25,21	Feb. 24,22
Power Sensor	Anritsu	MA2411B	1339352	Feb. 25,21	Feb. 24,22
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	Feb 14,20	Feb. 13,23

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 3 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.

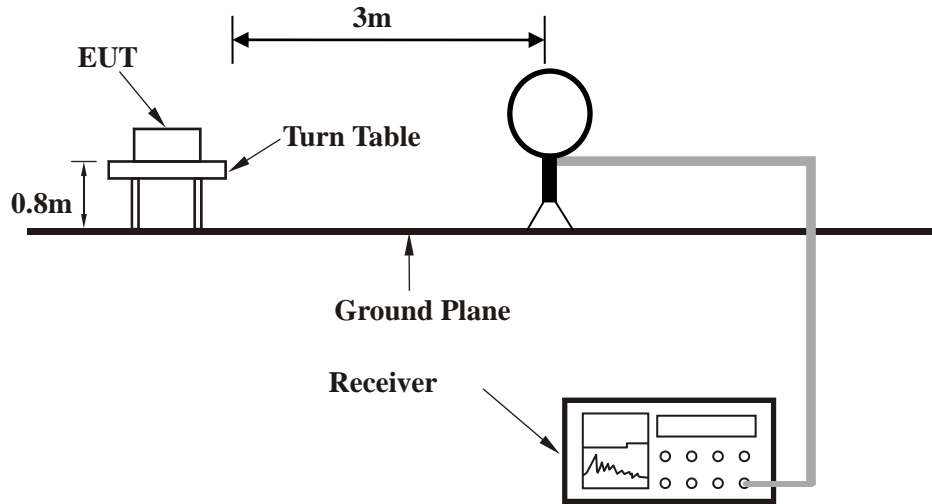
3.2.4 DEVIATION FROM TEST STANDARD

No deviation

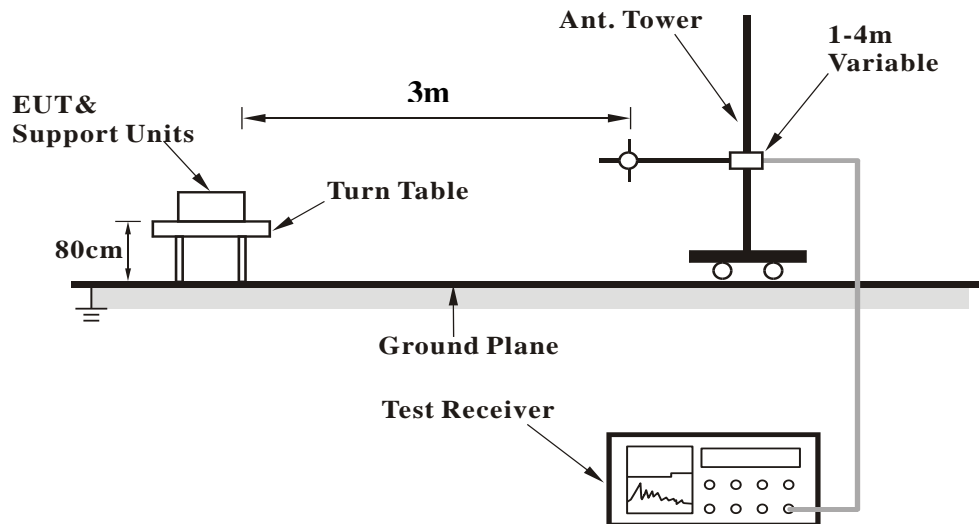


3.2.5 TEST SETUP

<Frequency Range 9KHz~30MHz >

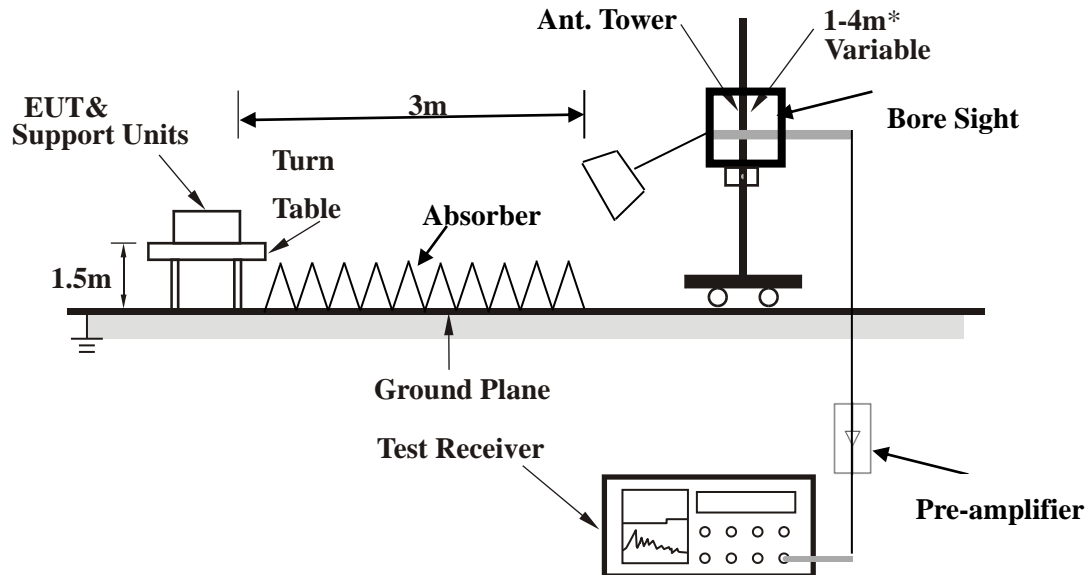


< Frequency Range 30MHz~1GHz >





<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.



3.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

Note: For frequency below 30MHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

30 MHz – 1GHz data:

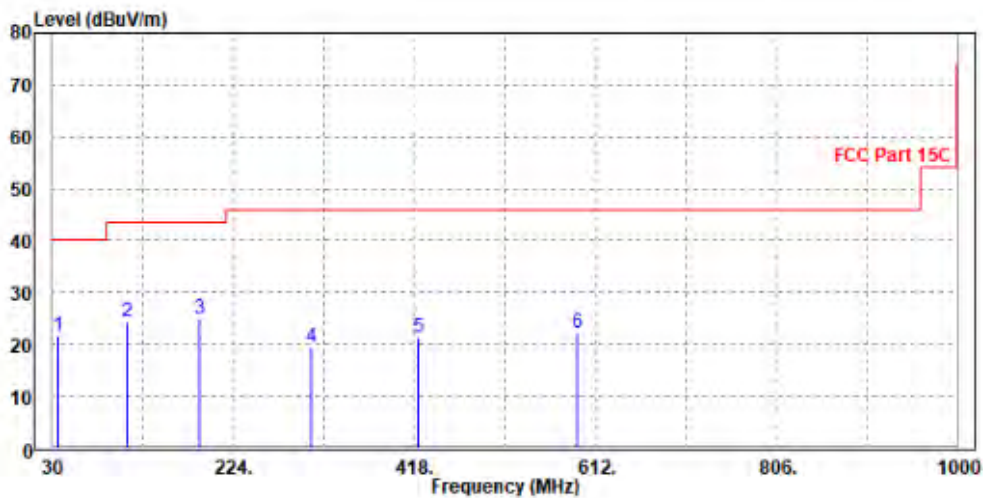
802.11g

CHANNEL	TX Channel 11	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
35.82	21.66	40.58	40	-18.34	17.9	0.77	37.59	300	360	QP
109.54	24.29	52.01	43.5	-19.21	8.06	1.34	37.12	300	360	QP
187.14	25.06	49.44	43.5	-18.44	10.49	1.74	36.61	300	360	QP
307.42	19.58	39.89	46	-26.42	14.22	2.23	36.76	300	360	QP
422.85	21.3	38.22	46	-24.7	17.31	2.64	36.87	300	360	QP
592.6	22.16	35.75	46	-23.84	20.55	3.2	37.34	300	360	QP

REMARKS:

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





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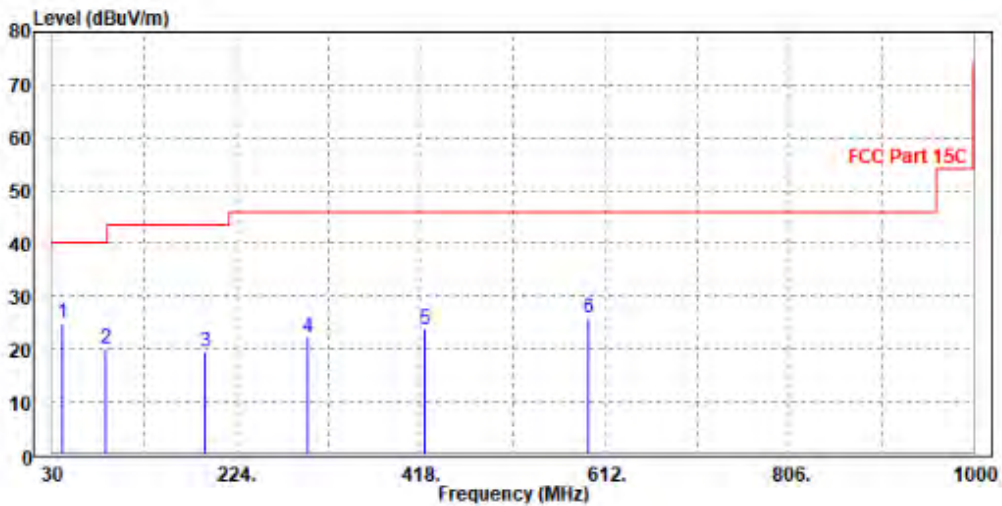
Test Report No.: W7L-P21100026RF11

CHANNEL	TX Channel 11	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
40.67	25.03	49.71	40	-14.97	11.99	0.83	37.5	200	0	QP
86.26	20.05	47.72	40	-19.95	8.43	1.18	37.28	200	0	QP
191.02	19.54	43.42	43.5	-23.96	10.96	1.75	36.59	200	0	QP
298.69	22.13	41.71	46	-23.87	14.97	2.2	36.75	200	0	QP
422.85	23.65	40.25	46	-22.35	17.63	2.64	36.87	200	0	QP
594.54	26	39.35	46	-20	20.8	3.2	37.35	200	0	QP

REMARKS:

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





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	53.81	62.57	74	-20.19	31.75	5.86	46.37	143	200	Peak
2390	44.28	53.04	54	-9.72	31.75	5.86	46.37	143	200	Average
2412	104.36	113.02			31.82	5.89	46.37	143	200	Peak
2412	103.21	111.87			31.82	5.89	46.37	143	200	Average
2483.5	53.04	61.37	74	-20.96	32.05	5.99	46.37	143	200	Peak
2483.5	45.19	53.52	54	-8.81	32.05	5.99	46.37	143	200	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	51.82	60.19	74	-22.18	32.14	5.86	46.37	100	158	Peak
2390	44.34	52.71	54	-9.66	32.14	5.86	46.37	100	158	Average
2412	99.21	107.5	/	/	32.19	5.89	46.37	100	158	Peak
2412	97.93	106.22	/	/	32.19	5.89	46.37	100	158	Average
2483.5	54.05	62.07	74	-19.95	32.36	5.99	46.37	100	158	Peak
2483.5	44.62	52.64	54	-9.38	32.36	5.99	46.37	100	158	Average

REMARKS:

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



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	51.63	60.39	74	-22.37	31.75	5.86	46.37	133	200	Peak
2390	43.95	52.71	54	-10.05	31.75	5.86	46.37	133	200	Average
2437	104.42	112.96	/	/	31.9	5.93	46.37	133	200	Peak
2437	103.17	111.71	/	/	31.9	5.93	46.37	133	200	Average
2483.5	52.54	60.87	74	-21.46	32.05	5.99	46.37	133	200	Peak
2483.5	44.83	53.16	54	-9.17	32.05	5.99	46.37	133	200	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	60.36	74	-22.01	32.14	5.86	46.37	100	160	Peak
2390	44.85	53.22	54	-9.15	32.14	5.86	46.37	100	160	Average
2437	99.61	107.8	/	/	32.25	5.93	46.37	100	160	Peak
2437	98.51	106.7	/	/	32.25	5.93	46.37	100	160	Average
2483.5	52.31	60.33	74	-21.69	32.36	5.99	46.37	100	160	Peak
2483.5	45.07	53.09	54	-8.93	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.



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	59.76	74	-23	31.75	5.86	46.37	172	190	Peak
2390	43.64	52.4	54	-10.36	31.75	5.86	46.37	172	190	Average
2462	104.84	113.27	/	/	31.98	5.96	46.37	172	190	Peak
2462	103.75	112.18	/	/	31.98	5.96	46.37	172	190	Average
2483.5	52.75	61.08	74	-21.25	32.05	5.99	46.37	172	190	Peak
2483.5	45.09	53.42	54	-8.91	32.05	5.99	46.37	172	190	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	61.14	74	-21.23	32.14	5.86	46.37	100	173	Peak
2390	43.91	52.28	54	-10.09	32.14	5.86	46.37	100	173	Average
2462	99.68	107.78	/	/	32.31	5.96	46.37	100	173	Peak
2462	98.51	106.61	/	/	32.31	5.96	46.37	100	173	Average
2483.5	52.32	60.34	74	-21.68	32.36	5.99	46.37	100	173	Peak
2483.5	44.97	52.99	54	-9.03	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	57.95	66.71	74	-16.05	31.75	5.86	46.37	173	190	Peak
2390	46.97	55.73	54	-7.03	31.75	5.86	46.37	173	190	Average
2412	106.99	115.65	/	/	31.82	5.89	46.37	173	190	Peak
2412	100.21	108.87	/	/	31.82	5.89	46.37	173	190	Average
2483.5	52.86	61.19	74	-21.14	32.05	5.99	46.37	173	190	Peak
2483.5	44.76	53.09	54	-9.24	32.05	5.99	46.37	173	190	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	54.1	62.47	74	-19.9	32.14	5.86	46.37	100	173	Peak
2390	44.99	53.36	54	-9.01	32.14	5.86	46.37	100	173	Average
2412	101.77	110.06	/	/	32.19	5.89	46.37	100	173	Peak
2412	94.93	103.22	/	/	32.19	5.89	46.37	100	173	Average
2483.5	52.68	60.7	74	-21.32	32.36	5.99	46.37	100	173	Peak
2483.5	44.38	52.4	54	-9.62	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	50.55	59.31	74	-23.45	31.75	5.86	46.37	133	190	Peak
2390	43.63	52.39	54	-10.37	31.75	5.86	46.37	133	190	Average
2437	107.22	115.76	/	/	31.9	5.93	46.37	133	190	Peak
2437	100.35	108.89	/	/	31.9	5.93	46.37	133	190	Average
2483.5	53.06	61.39	74	-20.94	32.05	5.99	46.37	133	190	Peak
2483.5	44.76	53.09	54	-9.24	32.05	5.99	46.37	133	190	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	51.34	59.71	74	-22.66	32.14	5.86	46.37	100	173	Peak
2390	44.14	52.51	54	-9.86	32.14	5.86	46.37	100	173	Average
2437	103.12	111.31	/	/	32.25	5.93	46.37	100	173	Peak
2437	96.82	105.01	/	/	32.25	5.93	46.37	100	173	Average
2483.5	52.19	60.21	74	-21.81	32.36	5.99	46.37	100	173	Peak
2483.5	44.47	52.49	54	-9.53	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	52.14	60.9	74	-21.86	31.75	5.86	46.37	173	190	Peak
2390	43.48	52.24	54	-10.52	31.75	5.86	46.37	173	190	Average
2462	105.3	113.73	/	/	31.98	5.96	46.37	173	190	Peak
2462	98.48	106.91	/	/	31.98	5.96	46.37	173	190	Average
2483.5	62.11	70.44	74	-11.89	32.05	5.99	46.37	173	190	Peak
2483.5	50.88	59.21	54	-3.12	32.05	5.99	46.37	173	190	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	51.1	59.47	74	-22.9	32.14	5.86	46.37	100	173	Peak
2390	43.95	52.32	54	-10.05	32.14	5.86	46.37	100	173	Average
2462	99.21	107.31	/	/	32.31	5.96	46.37	100	173	Peak
2462	92.82	100.92	/	/	32.31	5.96	46.37	100	173	Average
2483.5	57.67	65.69	74	-16.33	32.36	5.99	46.37	100	173	Peak
2483.5	47.71	55.73	54	-6.29	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	57.29	66.05	74	-16.71	31.75	5.86	46.37	173	190	Peak
2390	46.74	55.5	54	-7.26	31.75	5.86	46.37	173	190	Average
2412	106.18	114.84	/	/	31.82	5.89	46.37	173	190	Peak
2412	99.02	107.68	/	/	31.82	5.89	46.37	173	190	Average
2483.5	52.78	61.11	74	-21.22	32.05	5.99	46.37	173	190	Peak
2483.5	44.4	52.73	54	-9.6	32.05	5.99	46.37	173	190	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	54.02	62.39	74	-19.98	32.14	5.86	46.37	100	173	Peak
2390	45.21	53.58	54	-8.79	32.14	5.86	46.37	100	173	Average
2412	101.11	109.4	/	/	32.19	5.89	46.37	100	173	Peak
2412	94.1	102.39	/	/	32.19	5.89	46.37	100	173	Average
2483.5	52.4	60.42	74	-21.6	32.36	5.99	46.37	100	173	Peak
2483.5	44.57	52.59	54	-9.43	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	51.1	59.86	74	-22.9	31.75	5.86	46.37	150	190	Peak
2390	43.58	52.34	54	-10.42	31.75	5.86	46.37	150	190	Average
2437	106.62	115.16	/	/	31.9	5.93	46.37	150	190	Peak
2437	99.37	107.91	/	/	31.9	5.93	46.37	150	190	Average
2483.5	51.81	60.14	74	-22.19	32.05	5.99	46.37	150	190	Peak
2483.5	45.11	53.44	54	-8.89	32.05	5.99	46.37	150	190	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	51.32	59.69	74	-22.68	32.14	5.86	46.37	100	173	Peak
2390	43.86	52.23	54	-10.14	32.14	5.86	46.37	100	173	Average
2437	102.13	110.32	/	/	32.25	5.93	46.37	100	173	Peak
2437	95.07	103.26	/	/	32.25	5.93	46.37	100	173	Average
2483.5	52.27	60.29	74	-21.73	32.36	5.99	46.37	100	173	Peak
2483.5	44.37	52.39	54	-9.63	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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	51.59	60.35	74	-22.41	31.75	5.86	46.37	143	190	Peak
2390	43.24	52	54	-10.76	31.75	5.86	46.37	143	190	Average
2462	104.06	112.49	/	/	31.98	5.96	46.37	143	190	Peak
2462	96.57	105	/	/	31.98	5.96	46.37	143	190	Average
2483.5	61.08	69.41	74	-12.92	32.05	5.99	46.37	143	190	Peak
2483.5	50.73	59.06	54	-3.27	32.05	5.99	46.37	143	190	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	50.83	59.2	74	-23.17	32.14	5.86	46.37	100	173	Peak
2390	43.99	52.36	54	-10.01	32.14	5.86	46.37	100	173	Average
2462	98.5	106.6	/	/	32.31	5.96	46.37	100	173	Peak
2462	91.22	99.32	/	/	32.31	5.96	46.37	100	173	Average
2483.5	56.46	64.48	74	-17.54	32.36	5.99	46.37	100	173	Peak
2483.5	46.45	54.47	54	-7.55	32.36	5.99	46.37	100	173	Average

REMARKS:

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



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Test Report No.: W7L-P21100026RF11

BELOW 1GHz WORST-CASE DATA:

Note: For frequency below 30MHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

30 MHz – 1GHz data:

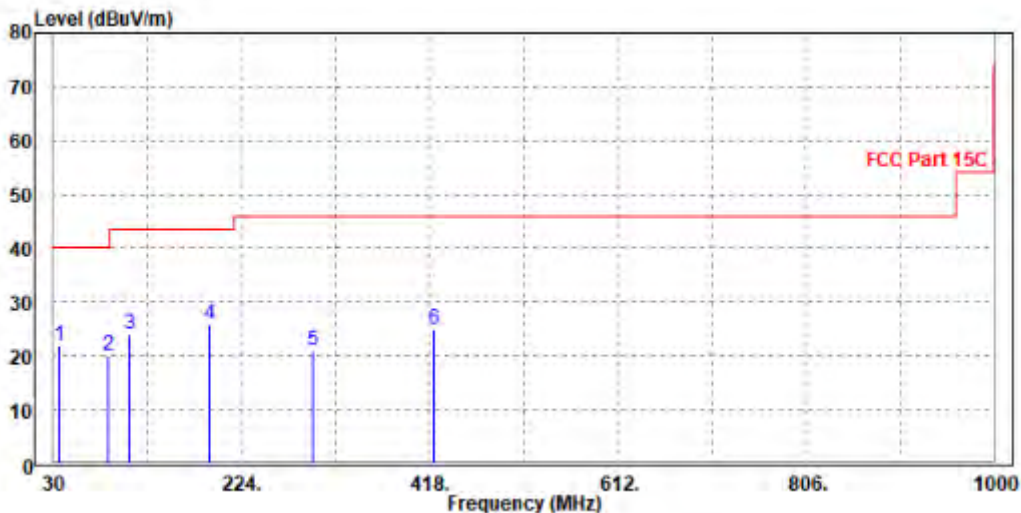
BT-LE _2M

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
35.82	22.04	40.96	40	-17.96	17.9	0.77	37.59	300	360	Peak
87.23	20.06	48.31	40	-19.94	7.83	1.19	37.27	300	360	Peak
108.57	24.13	51.86	43.5	-19.37	8.07	1.33	37.13	300	360	Peak
191.02	25.95	50.15	43.5	-17.55	10.64	1.75	36.59	300	360	Peak
296.75	21.06	41.66	46	-24.94	13.95	2.19	36.74	300	360	Peak
422.85	24.85	41.77	46	-21.15	17.31	2.64	36.87	300	360	Peak

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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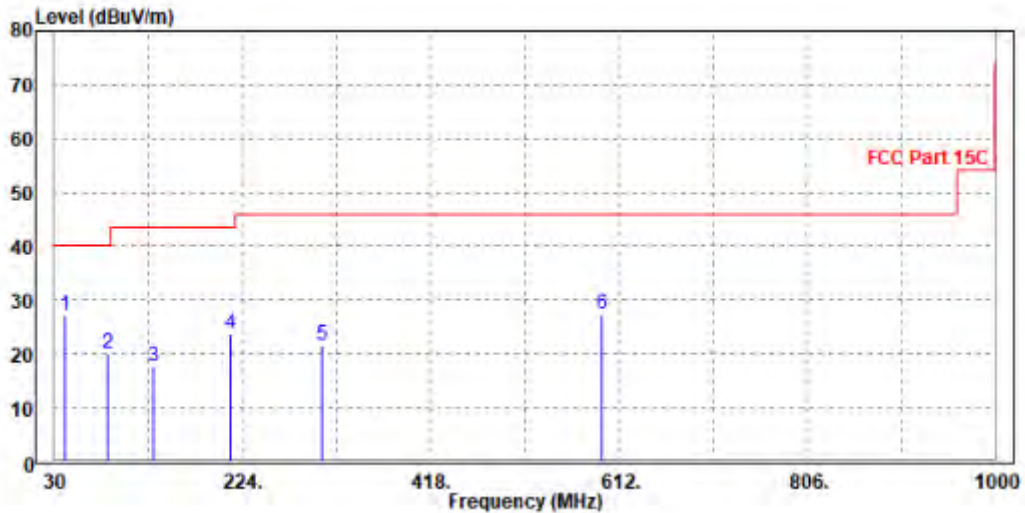
Test Report No.: W7L-P21100026RF11

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
41.64	27.05	52.01	40	-12.95	11.68	0.84	37.48	200	0	Peak
85.29	20.11	47.81	40	-19.89	8.41	1.18	37.29	200	0	Peak
132.82	17.56	45.2	43.5	-25.94	7.87	1.46	36.97	200	0	Peak
211.39	23.67	46.37	43.5	-19.83	12.02	1.85	36.57	200	0	Peak
306.45	21.6	40.99	46	-24.4	15.14	2.23	36.76	200	0	Peak
594.54	27.26	40.61	46	-18.74	20.8	3.2	37.35	200	0	Peak

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	50.49	59.25	74	-23.51	31.75	5.86	46.37	100	195	Peak
2390	43.41	52.17	54	-10.59	31.75	5.86	46.37	100	195	Average
2402	91.79	100.49	/	/	31.79	5.88	46.37	100	195	Peak
2402	89.25	97.95	/	/	31.79	5.88	46.37	100	195	Average
2483.5	52.77	61.1	74	-21.23	32.05	5.99	46.37	100	195	Peak
2483.5	43.8	52.13	54	-10.2	32.05	5.99	46.37	100	195	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	60.36	74	-22.01	32.14	5.86	46.37	100	175	Peak
2390	43.31	51.68	54	-10.69	32.14	5.86	46.37	100	175	Average
2402	85.55	93.88	/	/	32.16	5.88	46.37	100	175	Peak
2402	83.92	92.25	/	/	32.16	5.88	46.37	100	175	Average
2483.5	52.52	60.54	74	-21.48	32.36	5.99	46.37	100	175	Peak
2483.5	44.9	52.92	54	-9.1	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	52.34	61.1	74	-21.66	31.75	5.86	46.37	100	195	Peak
2390	44.66	53.42	54	-9.34	31.75	5.86	46.37	100	195	Average
2440	94.11	102.64	/	/	31.91	5.93	46.37	100	195	Peak
2440	93.18	101.71	/	/	31.91	5.93	46.37	100	195	Average
2483.5	51.99	60.32	74	-22.01	32.05	5.99	46.37	100	195	Peak
2483.5	44.38	52.71	54	-9.62	32.05	5.99	46.37	100	195	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	52.53	60.9	74	-21.47	32.14	5.86	46.37	100	175	Peak
2390	44.91	53.28	54	-9.09	32.14	5.86	46.37	100	175	Average
2440	84.75	92.93	/	/	32.26	5.93	46.37	100	175	Peak
2440	83.18	91.36	/	/	32.26	5.93	46.37	100	175	Average
2483.5	52.16	60.18	74	-21.84	32.36	5.99	46.37	100	175	Peak
2483.5	45.02	53.04	54	-8.98	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. 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	52.12	60.88	74	-21.88	31.75	5.86	46.37	100	195	Peak
2390	44.72	53.48	54	-9.28	31.75	5.86	46.37	100	195	Average
2480	94.2	102.55	/	/	32.04	5.98	46.37	100	195	Peak
2480	92.66	101.01	/	/	32.04	5.98	46.37	100	195	Average
2483.5	52.47	60.8	74	-21.53	32.05	5.99	46.37	100	195	Peak
2483.5	44.81	53.14	54	-9.19	32.05	5.99	46.37	100	195	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	52.37	60.74	74	-21.63	32.14	5.86	46.37	100	175	Peak
2390	44.61	52.98	54	-9.39	32.14	5.86	46.37	100	175	Average
2480	86.25	94.29	/	/	32.35	5.98	46.37	100	175	Peak
2480	85.27	93.31	/	/	32.35	5.98	46.37	100	175	Average
2483.5	52.5	60.52	74	-21.5	32.36	5.99	46.37	100	175	Peak
2483.5	45.09	53.11	54	-8.91	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	51.07	59.83	74	-22.93	31.75	5.86	46.37	100	195	Peak
2390	44.45	53.21	54	-9.55	31.75	5.86	46.37	100	195	Average
2402	90.57	99.27	/	/	31.79	5.88	46.37	100	195	Peak
2402	89.7	98.4	/	/	31.79	5.88	46.37	100	195	Average
2483.5	52.57	60.9	74	-21.43	32.05	5.99	46.37	100	195	Peak
2483.5	44.88	53.21	54	-9.12	32.05	5.99	46.37	100	195	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	51.09	59.46	74	-22.91	32.14	5.86	46.37	100	175	Peak
2390	44.89	53.26	54	-9.11	32.14	5.86	46.37	100	175	Average
2402	85.5	93.83	/	/	32.16	5.88	46.37	100	175	Peak
2402	82.36	90.69	/	/	32.16	5.88	46.37	100	175	Average
2483.5	53.29	61.31	74	-20.71	32.36	5.99	46.37	100	175	Peak
2483.5	44.93	52.95	54	-9.07	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	52.65	61.41	74	-21.35	31.75	5.86	46.37	100	195	Peak
2390	43.94	52.7	54	-10.06	31.75	5.86	46.37	100	195	Average
2440	93.04	101.57	/	/	31.91	5.93	46.37	100	195	Peak
2440	90.75	99.28	/	/	31.91	5.93	46.37	100	195	Average
2483.5	51.94	60.27	74	-22.06	32.05	5.99	46.37	100	195	Peak
2483.5	44.58	52.91	54	-9.42	32.05	5.99	46.37	100	195	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	53.09	61.46	74	-20.91	32.14	5.86	46.37	100	175	Peak
2390	44.26	52.63	54	-9.74	32.14	5.86	46.37	100	175	Average
2440	82.66	90.84	/	/	32.26	5.93	46.37	100	175	Peak
2440	81.21	89.39	/	/	32.26	5.93	46.37	100	175	Average
2483.5	51.77	59.79	74	-22.23	32.36	5.99	46.37	100	175	Peak
2483.5	44.55	52.57	54	-9.45	32.36	5.99	46.37	100	175	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 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	51.18	59.94	74	-22.82	31.75	5.86	46.37	100	195	Peak
2390	43.75	52.51	54	-10.25	31.75	5.86	46.37	100	195	Average
2480	93.94	102.29	/	/	32.04	5.98	46.37	100	195	Peak
2480	90.83	99.18	/	/	32.04	5.98	46.37	100	195	Average
2483.5	53.03	61.36	74	-20.97	32.05	5.99	46.37	100	195	Peak
2483.5	44.74	53.07	54	-9.26	32.05	5.99	46.37	100	195	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	52.26	60.63	74	-21.74	32.14	5.86	46.37	100	175	Peak
2390	44.58	52.95	54	-9.42	32.14	5.86	46.37	100	175	Average
2480	83.62	91.66	/	/	32.35	5.98	46.37	100	175	Peak
2480	82.45	90.49	/	/	32.35	5.98	46.37	100	175	Average
2483.5	53.4	61.42	74	-20.6	32.36	5.99	46.37	100	175	Peak
2483.5	45.2	53.22	54	-8.8	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	51.66	60.42	74	-22.34	31.75	5.86	46.37	100	195	Peak
2390	43.92	52.68	54	-10.08	31.75	5.86	46.37	100	195	Average
2402	91.48	100.18	/	/	31.79	5.88	46.37	100	195	Peak
2402	89.11	97.81	/	/	31.79	5.88	46.37	100	195	Average
2483.5	53.24	61.57	74	-20.76	32.05	5.99	46.37	100	195	Peak
2483.5	44.47	52.8	54	-9.53	32.05	5.99	46.37	100	195	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	51.86	60.23	74	-22.14	32.14	5.86	46.37	100	175	Peak
2390	44.63	53	54	-9.37	32.14	5.86	46.37	100	175	Average
2402	83.97	92.3	/	/	32.16	5.88	46.37	100	175	Peak
2402	83.24	91.57	/	/	32.16	5.88	46.37	100	175	Average
2483.5	53.63	61.65	74	-20.37	32.36	5.99	46.37	100	175	Peak
2483.5	44.62	52.64	54	-9.38	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	51.51	60.27	74	-22.49	31.75	5.86	46.37	100	195	Peak
2390	44.45	53.21	54	-9.55	31.75	5.86	46.37	100	195	Average
2440	92.6	101.13	/	/	31.91	5.93	46.37	100	195	Peak
2440	92.13	100.66	/	/	31.91	5.93	46.37	100	195	Average
2483.5	52.25	60.58	74	-21.75	32.05	5.99	46.37	100	195	Peak
2483.5	44.6	52.93	54	-9.4	32.05	5.99	46.37	100	195	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	51.4	59.77	74	-22.6	32.14	5.86	46.37	100	175	Peak
2390	44.67	53.04	54	-9.33	32.14	5.86	46.37	100	175	Average
2440	83.5	91.68	/	/	32.26	5.93	46.37	100	175	Peak
2440	82.55	90.73	/	/	32.26	5.93	46.37	100	175	Average
2483.5	52.06	60.08	74	-21.94	32.36	5.99	46.37	100	175	Peak
2483.5	45.03	53.05	54	-8.97	32.36	5.99	46.37	100	175	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 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	52.86	61.62	74	-21.14	31.75	5.86	46.37	100	195	Peak
2390	44.36	53.12	54	-9.64	31.75	5.86	46.37	100	195	Average
2480	93.44	101.79	/	/	32.04	5.98	46.37	100	195	Peak
2480	92.55	100.9	/	/	32.04	5.98	46.37	100	195	Average
2483.5	51.86	60.19	74	-22.14	32.05	5.99	46.37	100	195	Peak
2483.5	44.56	52.89	54	-9.44	32.05	5.99	46.37	100	195	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	53.25	61.62	74	-20.75	32.14	5.86	46.37	100	175	Peak
2390	44.4	52.77	54	-9.6	32.14	5.86	46.37	100	175	Average
2480	83.56	91.6	/	/	32.35	5.98	46.37	100	175	Peak
2480	83.21	91.25	/	/	32.35	5.98	46.37	100	175	Average
2483.5	52.92	60.94	74	-21.08	32.36	5.99	46.37	100	175	Peak
2483.5	44.87	52.89	54	-9.13	32.36	5.99	46.37	100	175	Average

REMARKS:

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



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	51.92	60.68	74	-22.08	31.75	5.86	46.37	100	195	Peak
2390	44.02	52.78	54	-9.98	31.75	5.86	46.37	100	195	Average
2402	90.38	99.08	/	/	31.79	5.88	46.37	100	195	Peak
2402	88.98	97.68	/	/	31.79	5.88	46.37	100	195	Average
2483.5	51.85	60.18	74	-22.15	32.05	5.99	46.37	100	195	Peak
2483.5	44.35	52.68	54	-9.65	32.05	5.99	46.37	100	195	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	52.54	60.91	74	-21.46	32.14	5.86	46.37	100	180	Peak
2390	44.74	53.11	54	-9.26	32.14	5.86	46.37	100	180	Average
2402	83.44	91.77	/	/	32.16	5.88	46.37	100	180	Peak
2402	82.91	91.24	/	/	32.16	5.88	46.37	100	180	Average
2483.5	52.23	60.25	74	-21.77	32.36	5.99	46.37	100	180	Peak
2483.5	44.45	52.47	54	-9.55	32.36	5.99	46.37	100	180	Average

REMARKS:

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



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	52.16	60.92	74	-21.84	31.75	5.86	46.37	100	195	Peak
2390	44.55	53.31	54	-9.45	31.75	5.86	46.37	100	195	Average
2440	92.74	101.27	/	/	31.91	5.93	46.37	100	195	Peak
2440	92.01	100.54	/	/	31.91	5.93	46.37	100	195	Average
2483.5	52.23	60.56	74	-21.77	32.05	5.99	46.37	100	195	Peak
2483.5	44.65	52.98	54	-9.35	32.05	5.99	46.37	100	195	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	52.31	60.68	74	-21.69	32.14	5.86	46.37	100	175	Peak
2390	44.81	53.18	54	-9.19	32.14	5.86	46.37	100	175	Average
2440	85.08	93.26	/	/	32.26	5.93	46.37	100	175	Peak
2440	84.41	92.59	/	/	32.26	5.93	46.37	100	175	Average
2483.5	51.92	59.94	74	-22.08	32.36	5.99	46.37	100	175	Peak
2483.5	44.32	52.34	54	-9.68	32.36	5.99	46.37	100	175	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 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	52.43	61.19	74	-21.57	31.75	5.86	46.37	100	195	Peak
2390	44.74	53.5	54	-9.26	31.75	5.86	46.37	100	195	Average
2480	93.18	101.53	/	/	32.04	5.98	46.37	100	195	Peak
2480	91.58	99.93	/	/	32.04	5.98	46.37	100	195	Average
2483.5	52.35	60.68	74	-21.65	32.05	5.99	46.37	100	195	Peak
2483.5	44.83	53.16	54	-9.17	32.05	5.99	46.37	100	195	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	51.41	59.78	74	-22.59	32.14	5.86	46.37	100	175	Peak
2390	44.12	52.49	54	-9.88	32.14	5.86	46.37	100	175	Average
2480	86.23	94.27	/	/	32.35	5.98	46.37	100	175	Peak
2480	84.26	92.3	/	/	32.35	5.98	46.37	100	175	Average
2483.5	52.73	60.75	74	-21.27	32.36	5.99	46.37	100	175	Peak
2483.5	44.27	52.29	54	-9.73	32.36	5.99	46.37	100	175	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2480MHz: 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. 25,21	Feb. 24,22
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 25,21	Feb. 24,22
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Apr. 26,21	Apr. 25,22
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 25,21	Feb. 24,22

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

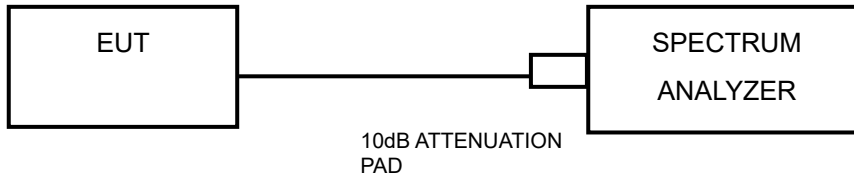
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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



BUREAU Test Report No.: W7L-P21100026RF11
VERITAS

3.3.7 TEST RESULTS

Please Refer to Appendix B/C Of this test report.



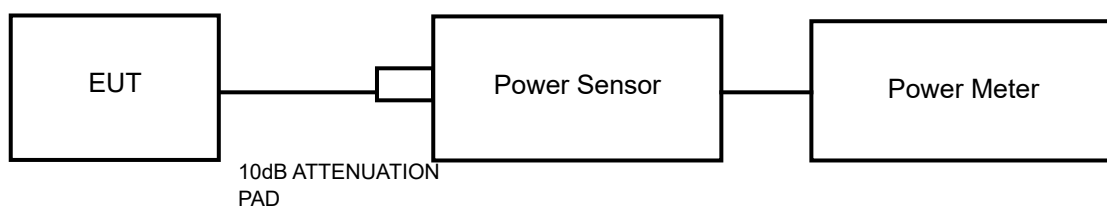
3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

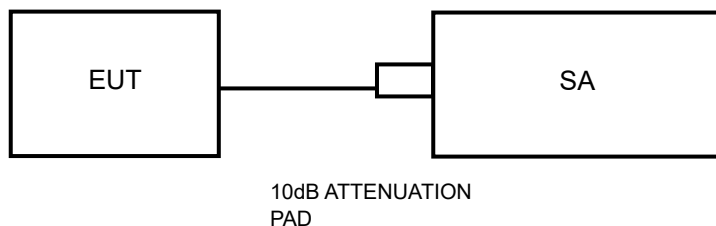
For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

3.4.2 TEST SETUP

BT:



2.4G wifi:



3.4.3 TEST INSTRUMENTS

Refer to section 3.2.2 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.



**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11

3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix B/C Of this test report.



BUREAU Test Report No.: W7L-P21100026RF11
VERITAS

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 Appendix B/C Of this test report.

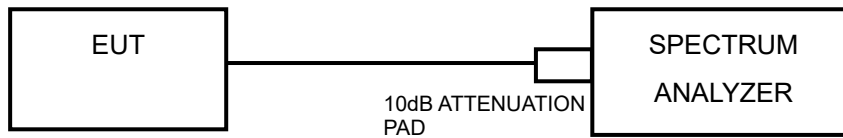


3.5 POWER SPECTRAL DENSITY MEASUREMENT

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 x 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.



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VERITAS**

Test Report No.: W7L-P21100026RF11

3.5.7 TEST RESULTS

Please Refer to Appendix B/C Of this test report.

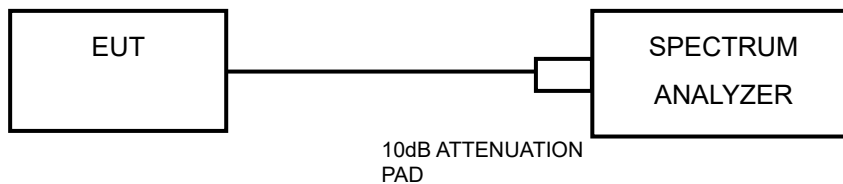


3.6 OUT OF BAND EMISSION MEASUREMENT

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 Appendix B/C Of this test report.



4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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.

Please Refer to Appendix B/C Of this test report.

APPENDIX B:

DTS BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_125K	Ant1	2402	0.688	2401.652	2402.340	0.5	PASS
		2440	0.688	2439.656	2440.344	0.5	PASS
		2480	0.684	2479.660	2480.344	0.5	PASS
BLE_1M	Ant1	2402	0.696	2401.656	2402.352	0.5	PASS
		2440	0.712	2439.640	2440.352	0.5	PASS
		2480	0.664	2479.664	2480.328	0.5	PASS
BLE_2M	Ant1	2402	1.152	2401.440	2402.592	0.5	PASS
		2440	1.292	2439.328	2440.620	0.5	PASS
		2480	1.240	2479.340	2480.580	0.5	PASS
BLE_500K	Ant1	2402	0.688	2401.652	2402.340	0.5	PASS
		2440	0.708	2439.640	2440.348	0.5	PASS
		2480	0.680	2479.648	2480.328	0.5	PASS

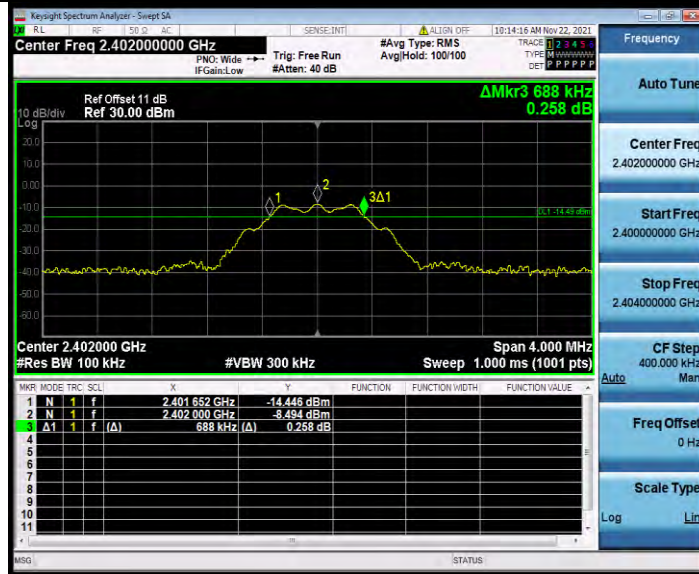


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Test Report No.: W7L-P21100026RF11

TEST GRAPHS

BLE_125K_Ant1_2402



BLE_125K_Ant1_2440

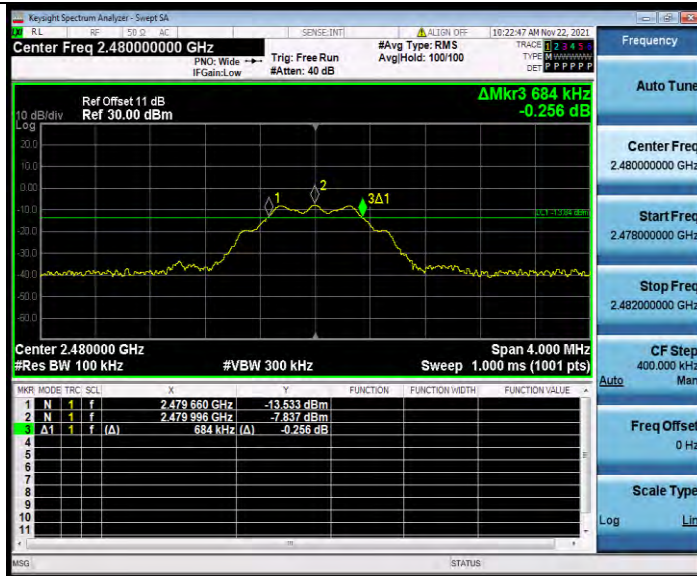


BLE_125K_Ant1_2480

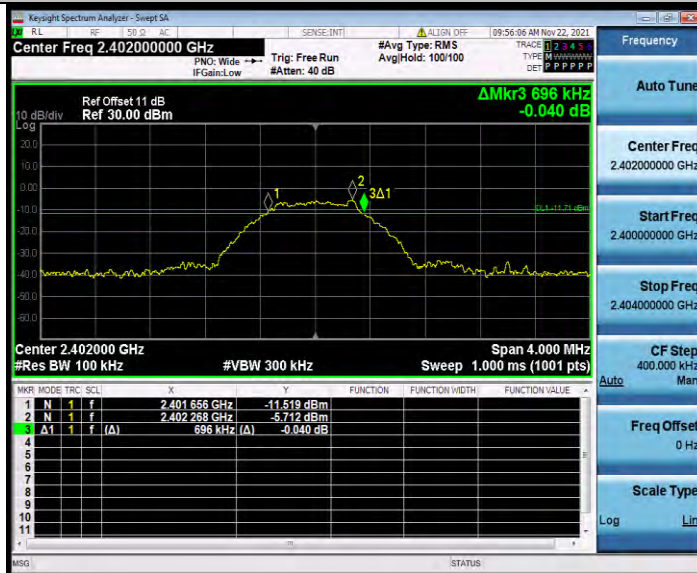


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Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440

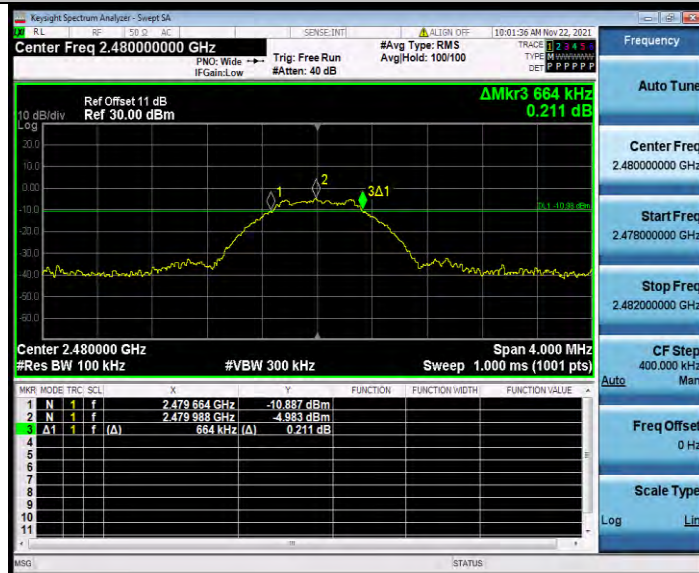


BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



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Test Report No.: W7L-P21100026RF11



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

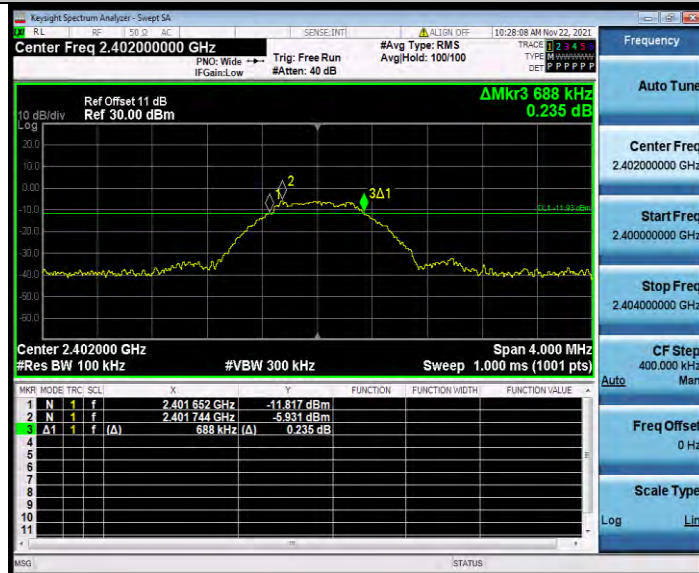


BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_500K_Ant1_2402

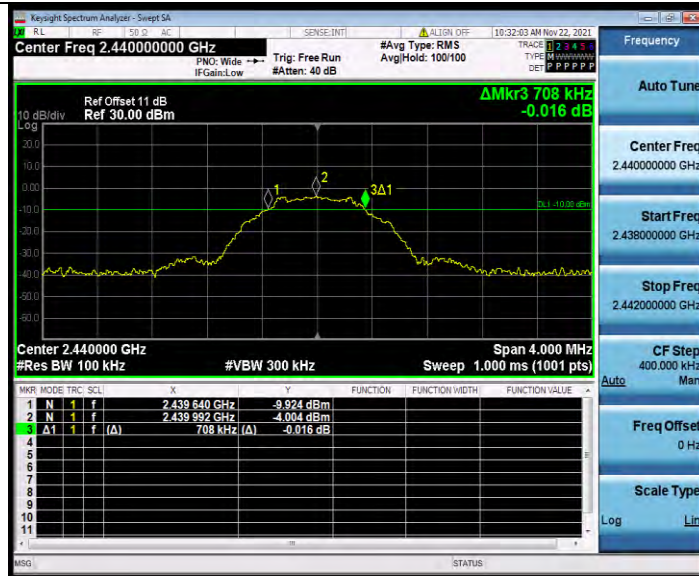


BLE_500K_Ant1_2440

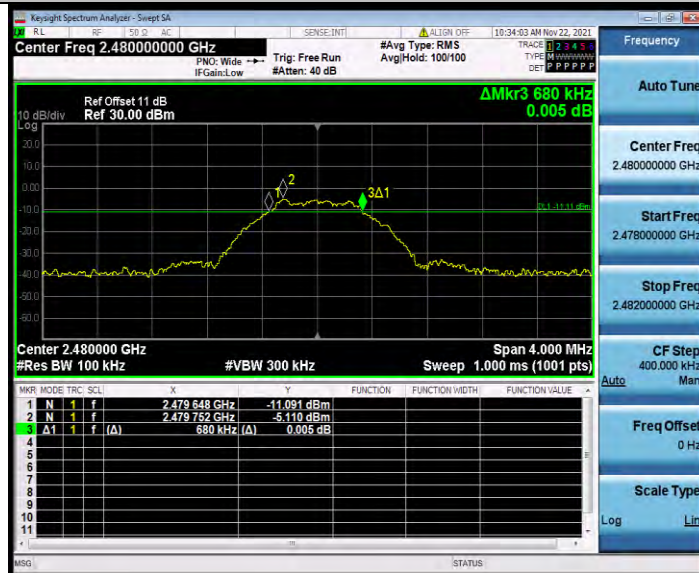


BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_500K_Ant1_2480





OCCUPIED CHANNEL BANDWIDTH TEST RESULT

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_125K	Ant1	2402	1.1137	2401.442	2402.555	---	PASS
		2440	1.0900	2439.455	2440.545	---	PASS
		2480	1.1031	2479.446	2480.549	---	PASS
BLE_1M	Ant1	2402	1.0678	2401.469	2402.537	---	PASS
		2440	1.0643	2439.472	2440.536	---	PASS
		2480	1.0701	2479.469	2480.539	---	PASS
BLE_2M	Ant1	2402	2.1148	2400.962	2403.077	---	PASS
		2440	2.1100	2438.963	2441.073	---	PASS
		2480	2.1100	2478.952	2481.062	---	PASS
BLE_500K	Ant1	2402	1.0565	2401.471	2402.528	---	PASS
		2440	1.0529	2439.473	2440.526	---	PASS
		2480	1.0538	2479.470	2480.524	---	PASS



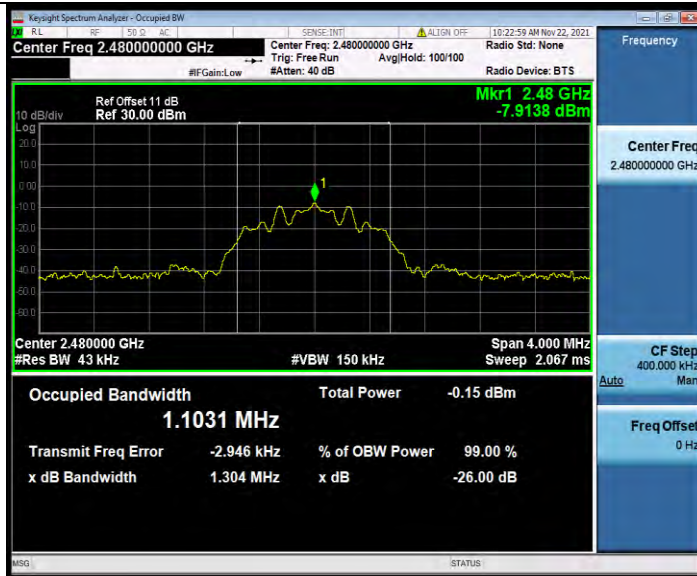
TEST GRAPHS





BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440

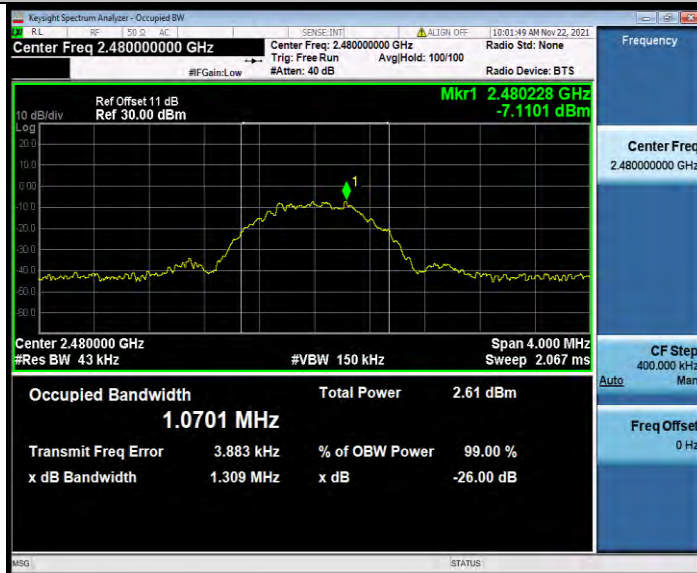


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Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480

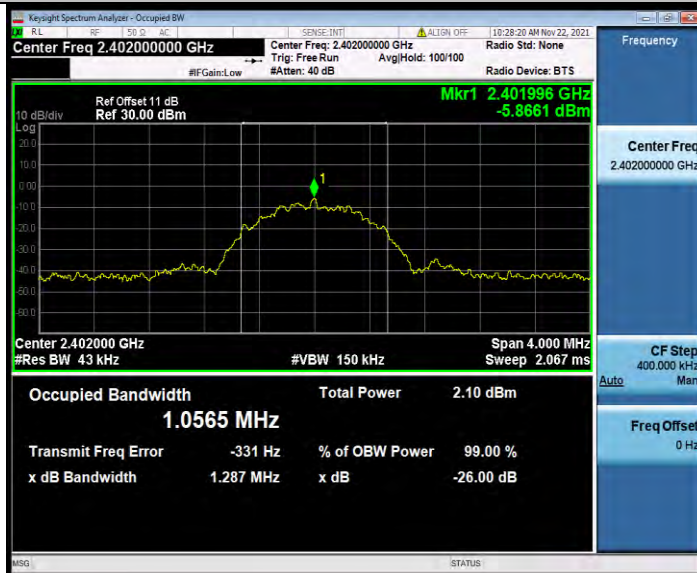


**BUREAU
VERITAS**

Test Report No.: W7L-P21100026RF11



BLE_500K_Ant1_2402



BLE_500K_Ant1_2440

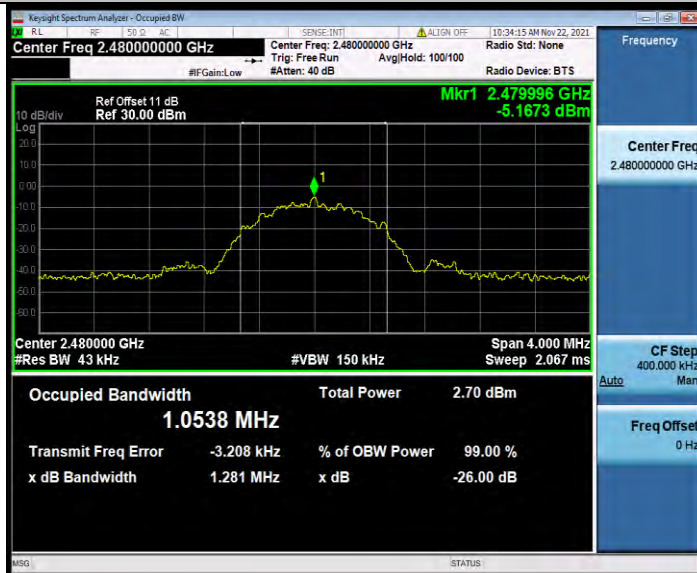


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VERITAS**

Test Report No.: W7L-P21100026RF11



BLE_500K_Ant1_2480





MAXIMUM CONDUCTED OUTPUT POWER PEAK POWER TEST RESULT

TestMode	Antenna	Channel	Result[dBm]	Result[mw]	Limit[dBm]	Verdict
BLE_125K	Ant1	2402	-3.60	0.44	≤30	PASS
		2441	-2.05	0.62	≤30	PASS
		2480	-2.81	0.52	≤30	PASS
BLE_1M	Ant1	2402	-3.56	0.44	≤30	PASS
		2441	-2.02	0.63	≤30	PASS
		2480	-2.76	0.53	≤30	PASS
BLE_2M	Ant1	2402	-3.58	0.44	≤30	PASS
		2441	-1.99	0.63	≤30	PASS
		2480	-2.84	0.52	≤30	PASS
BLE_500K	Ant1	2402	-3.56	0.44	≤30	PASS
		2441	-2.02	0.63	≤30	PASS
		2480	-2.76	0.53	≤30	PASS

Average Power Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_125K	Ant1	2402	-4.70	≤30	PASS
		2441	-2.67	≤30	PASS
		2480	-3.23	≤30	PASS
BLE_1M	Ant1	2402	-5.08	≤30	PASS
		2441	-3.02	≤30	PASS
		2480	-3.68	≤30	PASS
BLE_2M	Ant1	2402	-6.75	≤30	PASS
		2441	-4.69	≤30	PASS
		2480	-5.34	≤30	PASS
BLE_500K	Ant1	2402	-4.47	≤30	PASS
		2441	-2.42	≤30	PASS
		2480	-3.60	≤30	PASS



MAXIMUM POWER SPECTRAL DENSITY TEST RESULT

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_125K	Ant1	2402	-11.26	≤8	PASS
		2440	-9.2	≤8	PASS
		2480	-10.61	≤8	PASS
BLE_1M	Ant1	2402	-21.18	≤8	PASS
		2440	-19.05	≤8	PASS
		2480	-20.48	≤8	PASS
BLE_2M	Ant1	2402	-23.59	≤8	PASS
		2440	-21.52	≤8	PASS
		2480	-22.98	≤8	PASS
BLE_500K	Ant1	2402	-11.39	≤8	PASS
		2440	-9.26	≤8	PASS
		2480	-10.67	≤8	PASS



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TEST GRAPHS

BLE_125K_Ant1_2402



BLE_125K_Ant1_2440



BLE_125K_Ant1_2480

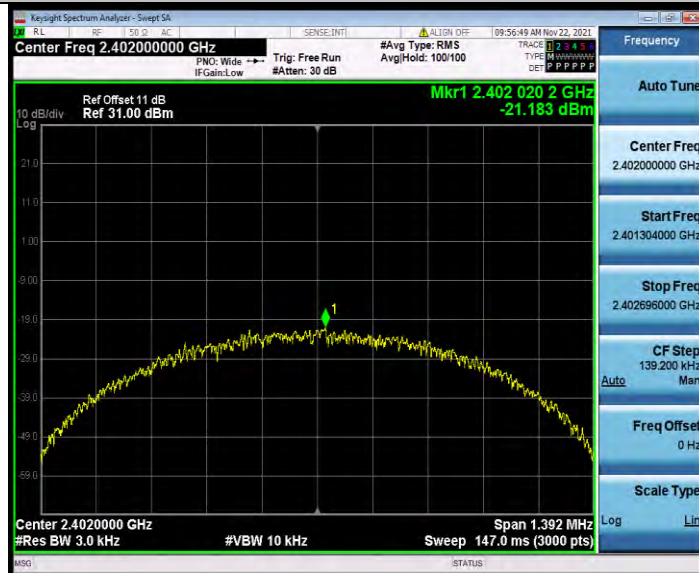


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Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2402



BLE_1M_Ant1_2440

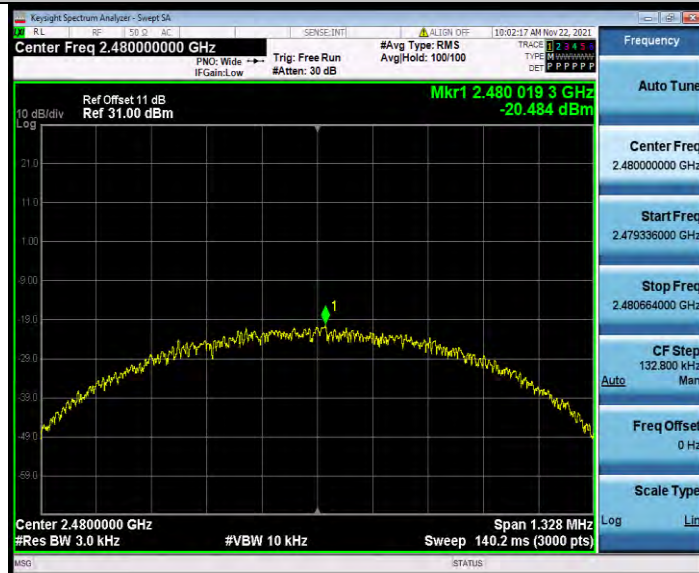


BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_1M_Ant1_2480



BLE_2M_Ant1_2402



BUREAU VERITAS

Test Report No.: W7L-P21100026RF11



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480