

FCC TEST REPORT

(Part 15, Subpart C)



Applicant:	Fibocom Wireless Inc.
Address:	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China

Manufacturer or Supplier:	Fibocom Wireless Inc.
Address:	5/F, Tower A, Technology Building II, 1057 Nanhai Avenue, Shenzhen, China
Product:	BT Module
Brand Name:	Fibocom
Model Name:	B830-GL
FCC ID:	ZMOB830GL
Date of tests:	Oct 23, 2019 ~ Nov 12, 2019

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 Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Nov 13, 2019	 Date: Nov 13, 2019

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TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
1.1 MEASUREMENT UNCERTAINTY	5
2 GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	7
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	8
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	8
2.3 DUTY CYCLE OF TEST SIGNAL	11
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	12
2.5 DESCRIPTION OF SUPPORT UNITS	12
2.6 ANTENNA REQUIREMENT	13
CONCLUSION:.....	13
3 TEST TYPES AND RESULTS.....	14
3.1 RADIATED EMISSION MEASUREMENT	14
3.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT	19
3.1.2 TEST INSTRUMENTS.....	20
3.1.3 TEST PROCEDURES	21
3.1.4 DEVIATION FROM TEST STANDARD	21
3.1.5 TEST SETUP	22
3.1.6 EUT OPERATING CONDITIONS	23
3.1.7 TEST RESULTS	24
3.2 6 DB BANDWIDTH MEASUREMENT	52
3.2.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	52
3.2.2 TEST INSTRUMENTS.....	52
3.2.3 TEST PROCEDURE.....	52
3.2.4 DEVIATION FROM TEST STANDARD	52
3.2.5 TEST SETUP	53
3.2.6 EUT OPERATING CONDITIONS	53
3.2.7 TEST RESULTS	54
3.3 CONDUCTED OUTPUT POWER.....	58
3.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	58
3.3.2 TEST SETUP	58
3.3.3 TEST INSTRUMENTS.....	58



**BUREAU
VERITAS**

Test Report No.: RF191023W004

3.3.4	TEST PROCEDURES	58
3.3.5	DEVIATION FROM TEST STANDARD	58
3.3.6	EUT OPERATING CONDITIONS	58
3.3.7	TEST RESULTS	59
3.3.7.1	MAXIMUM PEAK OUTPUT POWER	59
3.4	POWER SPECTRAL DENSITY MEASUREMENT	60
3.4.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	60
3.4.2	TEST SETUP	60
3.4.3	TEST INSTRUMENTS	60
3.4.4	TEST PROCEDURE	60
3.4.5	DEVIATION FROM TEST STANDARD	60
3.4.6	EUT OPERATING CONDITION	60
3.4.7	TEST RESULTS	61
3.5	OUT OF BAND EMISSION MEASUREMENT	65
3.5.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	65
3.5.2	TEST SETUP	65
3.5.3	TEST INSTRUMENTS	65
3.5.4	TEST PROCEDURE	65
3.5.5	DEVIATION FROM TEST STANDARD	66
3.5.6	EUT OPERATING CONDITION	66
3.5.7	TEST RESULTS	66
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	75
5	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	76



**BUREAU
VERITAS**

Test Report No.: RF191023W004

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF190813W001	Original release	Sep. 03, 2019
RF191023W004	According the Product equivalence declaration provide by manufacturer, Based on the original product add optional antenna2 and change tune-up conducted power to 8dBm .This report verify the antenna1's RSE worst case from the Original Report RF191023W004,other test data was new.	Nov. 13, 2019



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	$\pm 2.70\text{dB}$
Radiated emissions (30MHz~1GMHz)	$\pm 4.98\text{dB}$
Radiated emissions (1GMHz ~6GMHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GMHz ~18GMHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GMHz ~40GMHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Power Spectral Density	$\pm 0.85\text{ dB}$

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	BT Module
BRAND NAME	Fibocom
MODEL NAME	B830-GL
NOMINAL VOLTAGE	DC 3.3V
MODULATION	GFSK
TRANSMISSION RATE	BT_LE 5.0: 1 Mbps/2 Mbps/0.125 Mbps/0.5 Mbps
OPERATING FREQUENCY	2402-2480MHz for BT-LE
MAX. OUTPUT POWER	5.888mW (Maximum conducted power)
MAX. TARGET OUTPUT POWER	6.310mW(Maximum conducted power)
ANTENNA TYPE	External monopole antenna with 2dBi gain for ANT1 External PIFA antenna with 2dBi gain for ANT2
HW VERSION	V1.0.3
SW VERSION	B830-GL-02-TA-V1.0.1
I/O PORTS	Refer to user's manual

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
BT-LE CODED(S=2)	1TX /1RX
BT-LE CODED(S=8)	1TX /1RX
BT-LE(1M)	1TX /1RX
BT-LE(2M)	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

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
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
APCM: Antenna Port Conducted Measurement
ery.

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)
BT-LE(2M)	0 to 39	39	GFSK	2

**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)
BT-LE CODED(S=2)	0 to 39	0,19, 39	GFSK	0.125
BT-LE CODED(S=8)	0 to 39	0,19, 39	GFSK	0.5
BT-LE(1M)	0 to 39	0,19, 39	GFSK	1
BT-LE(2M)	0 to 39	0,19, 39	GFSK	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)
BT-LE(2M)	0 to 39	39	GFSK	2

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)
BT-LE CODED(S=2)	0 to 39	0,19, 39	GFSK	0.125
BT-LE CODED(S=8)	0 to 39	0,19, 39	GFSK	0.5
BT-LE(1M)	0 to 39	0,19, 39	GFSK	1
BT-LE(2M)	0 to 39	0,19, 39	GFSK	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)
BT-LE CODED(S=2)	0 to 39	0,19, 39	GFSK	0.125
BT-LE CODED(S=8)	0 to 39	0,19, 39	GFSK	0.5
BT-LE(1M)	0 to 39	0,19, 39	GFSK	1
BT-LE(2M)	0 to 39	0,19, 39	GFSK	2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 3.3V from battery	Tony
RE≥1G	23deg. C, 70%RH	DC 3.3V from battery	Tony
PLC	25deg. C, 52%RH	DC 3.3V By DC source	Tony
APCM	25deg. C, 60%RH	DC 3.3V from battery	Big Wang



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Test Report No.: RF191023W004

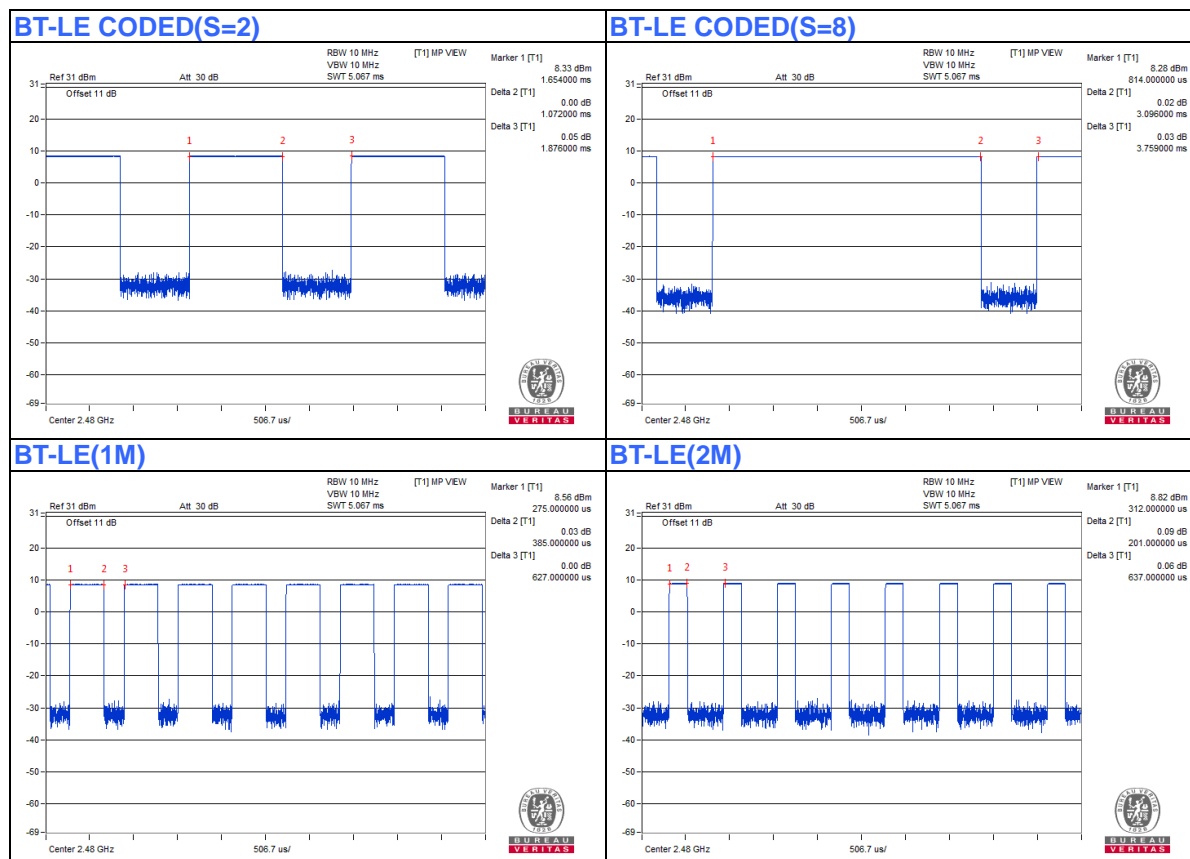
2.3 Duty Cycle of Test Signal

BT-LE CODED(S=2): Duty cycle = $1.072/1.876 = 0.571 < 98\%$, Duty factor = $10 * \log(1/0.571) = 2.430$

BT-LE CODED(S=8): Duty cycle = $3.096/3.759 = 0.824 < 98\%$, Duty factor = $10 * \log(1/0.824) = 0.843$

BT-LE (1M): Duty cycle = $385/627 = 0.614 < 98\%$, Duty factor = $10 * \log(1/0.614) = 2.118$

BT-LE (2M): Duty cycle = $201/637 = 0.316 < 98\%$, Duty factor = $10 * \log(1/0.316) = 5.009$





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

558074 D01 15.247 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 (sDOC). 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	DC source	LONG WEI	PS-6403D	010934269	N/A
2	PC	HP	A6608CN	3CR83825X3	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.0m
2	AC Line: Unshielded, Detachable 1.5m



2.6 ANTENNA REQUIREMENT

Per FCC Part 15.203. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Conclusion:

The EUT use one External antenna that was permanently attached and the detail information list as below:

ANT Gain	Type	TX/RX	Frequency range
2 dBi	External monopole Antenna 1	TX & RX	2400~2483.5GHz
2 dBi	External PIFA Antenna 2	TX & RX	2400~2483.5GHz



3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

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

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

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 26,19	Feb. 25,20
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 26,19	Feb. 25,20

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.

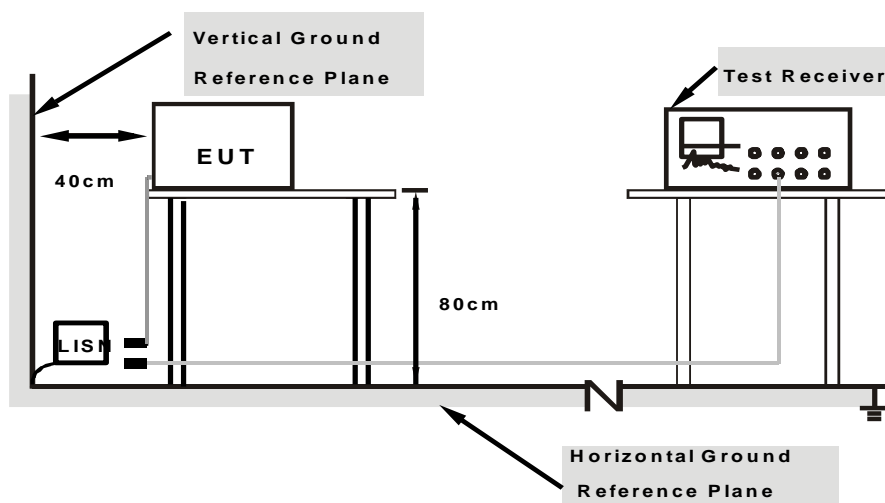
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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 cm 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

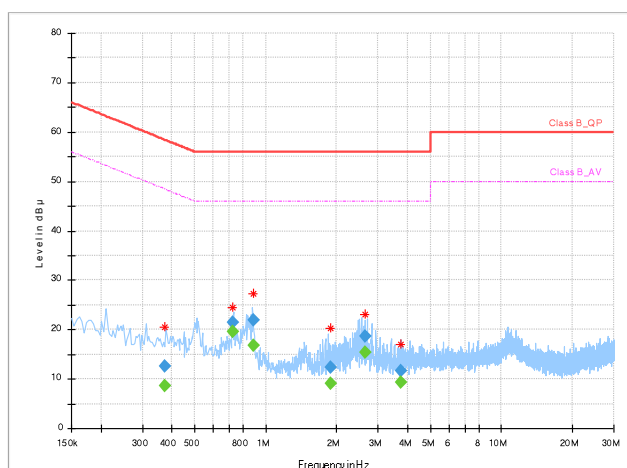
CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	DC 3.3V	Environmental Conditions	25deg. C, 52RH
Tested By	Tony		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.372000	---	8.55	48.46	39.90	L1	ON	10.0
0.372000	12.65	---	58.46	45.81	L1	ON	10.0
0.728000	---	19.69	46.00	26.31	L1	ON	10.0
0.728000	21.40	---	56.00	34.60	L1	ON	10.0
0.884000	---	16.77	46.00	29.23	L1	ON	10.1
0.884000	21.86	---	56.00	34.14	L1	ON	10.1
1.880000	---	9.19	46.00	36.81	L1	ON	10.1
1.880000	12.31	---	56.00	43.69	L1	ON	10.1
2.644000	---	15.39	46.00	30.61	L1	ON	10.1
2.644000	18.55	---	56.00	37.45	L1	ON	10.1
3.756000	---	9.27	46.00	36.73	L1	ON	10.2
3.756000	11.77	---	56.00	44.23	L1	ON	10.2

- 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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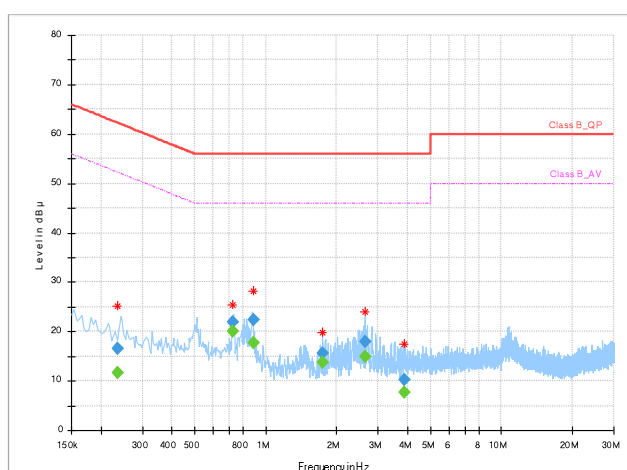
Test Report No.: RF191023W004

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	DC 3.3V	Environmental Conditions	25deg. C, 52RH
Tested By	Tony		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV))	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.236000	---	11.58	52.24	40.66	N	ON	9.9
0.236000	16.55	---	62.24	45.69	N	ON	9.9
0.728000	---	20.02	46.00	25.98	N	ON	9.9
0.728000	21.82	---	56.00	34.18	N	ON	9.9
0.884000	---	17.79	46.00	28.21	N	ON	10.0
0.884000	22.29	---	56.00	33.71	N	ON	10.0
1.746000	---	13.76	46.00	32.24	N	ON	10.0
1.746000	15.54	---	56.00	40.46	N	ON	10.0
2.640000	---	15.01	46.00	30.99	N	ON	10.1
2.640000	18.02	---	56.00	37.98	N	ON	10.1
3.872000	---	7.74	46.00	38.26	N	ON	10.1
3.872000	10.29	---	56.00	45.71	N	ON	10.1

- 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	Feb. 26,19	Feb. 25,20
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
Horn Antenna	ETS-LINDGREN	3117	00168728	Feb. 26,19	Feb. 25,20
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Nov. 21, 18	Nov. 20, 19
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. 24,19	Jun. 23,20
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jun. 24,19	Jun. 23,20

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 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 3MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

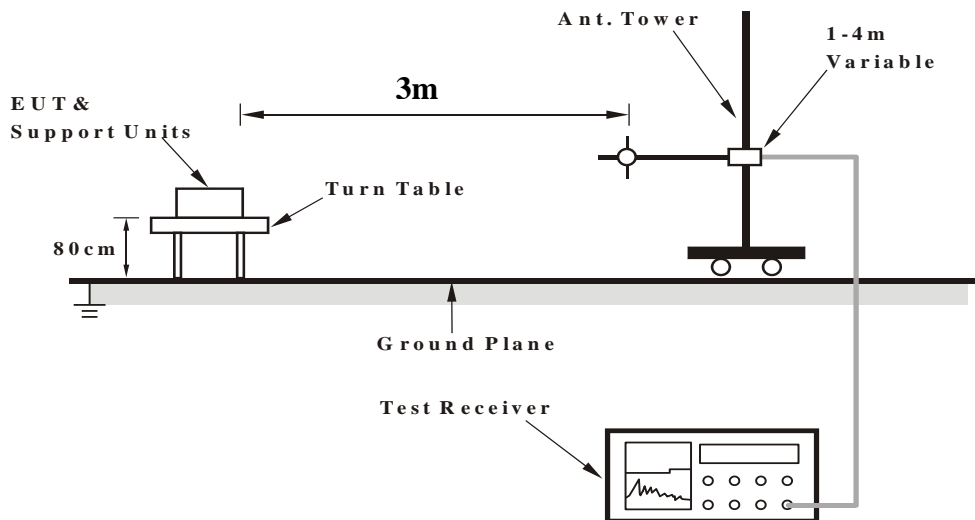


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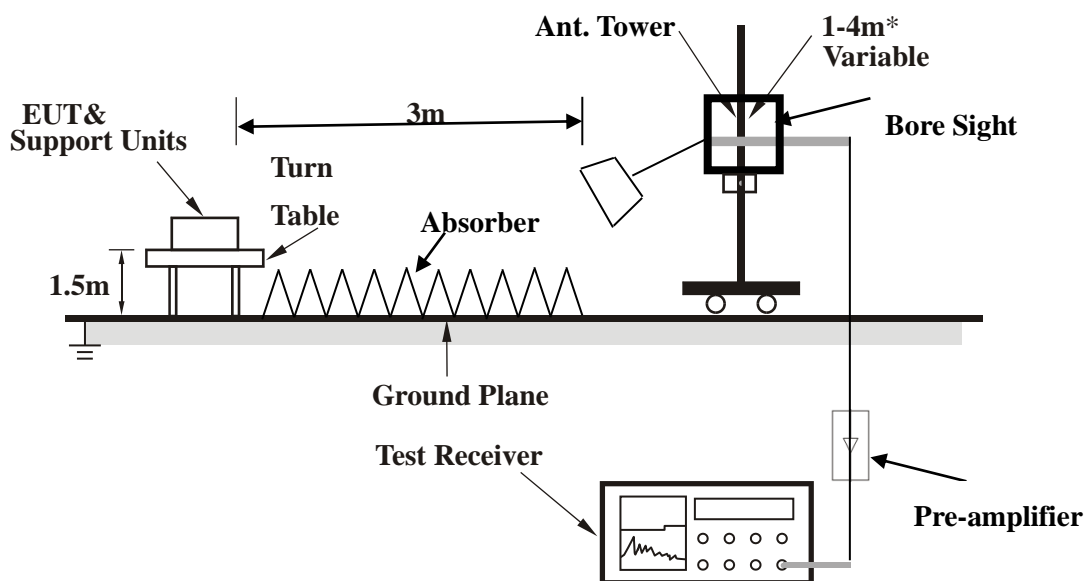
Test Report No.: RF191023W004

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.: RF191023W004

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.: RF191023W004

3.2.7 TEST RESULTS

Ant-1

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

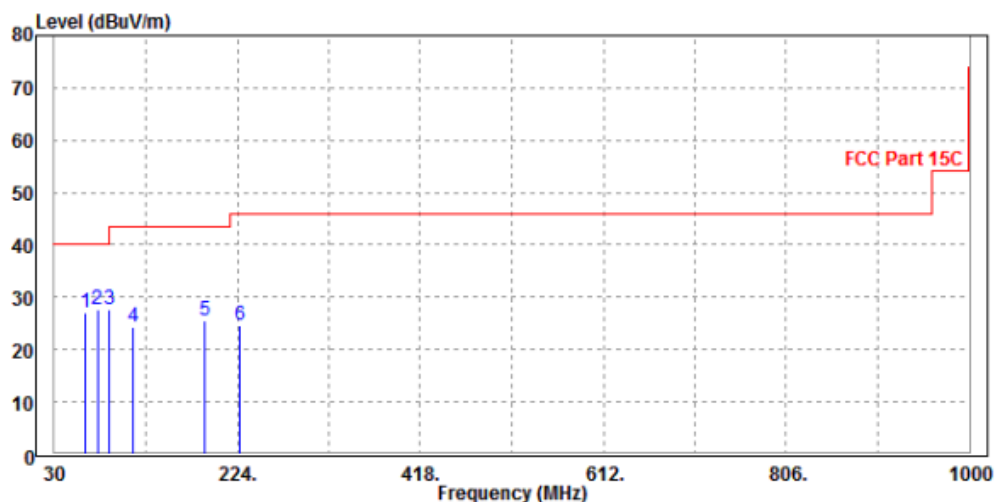
BT LE (2M)

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
62.98	27.05	56.23	40	-12.95	7.04	1.11	37.33	200	360	Peak
75.59	27.55	55.7	40	-12.45	7.99	1.2	37.34	200	360	Peak
88.2	27.8	55.25	43.5	-15.7	8.55	1.27	37.27	200	360	Peak
113.42	24.24	50.89	43.5	-19.26	9.06	1.4	37.11	200	360	Peak
189.08	25.4	49.68	43.5	-18.1	10.58	1.74	36.6	200	360	Peak
226.91	24.78	47.37	46	-21.22	12.09	1.92	36.6	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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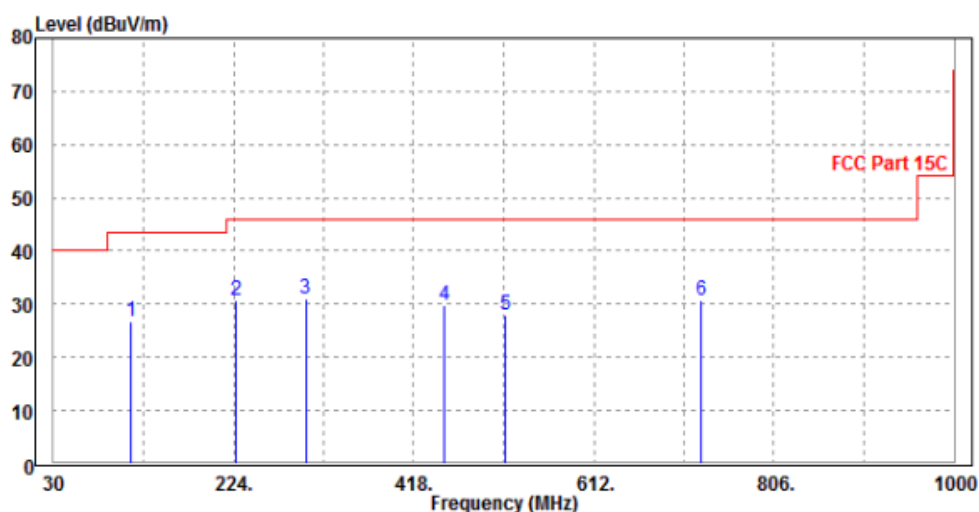
Test Report No.: RF191023W004

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
113.42	26.62	53.44	43.5	-16.88	8.89	1.4	37.11	100	360	Peak
226.91	30.69	53.39	46	-15.31	11.98	1.92	36.6	100	360	Peak
301.6	30.93	51.31	46	-15.07	14.15	2.22	36.75	100	360	Peak
450.98	29.76	46.01	46	-16.24	17.86	2.81	36.92	100	360	Peak
515.97	28.01	43.29	46	-17.99	18.76	3.02	37.06	100	360	Peak
728.4	30.59	41.43	46	-15.41	23.11	3.63	37.58	100	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.: RF191023W004

ABOVE 1GHz WORST-CASE DATA:

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

BT_LE CODED 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	59.8	63.26	74	-14.2	33.1	4.88	41.44	186	66	Peak
2390	45.48	48.94	54	-8.52	33.1	4.88	41.44	186	66	Average
2402	107.07	110.5			33.12	4.89	41.44	186	66	Peak
2402	101.77	105.2			33.12	4.89	41.44	186	66	Average
2483.5	57.23	60.44	74	-16.77	33.27	4.98	41.46	186	66	Peak
2483.5	44.68	47.89	54	-9.32	33.27	4.98	41.46	186	66	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	62.26	66.61	74	-11.74	32.21	4.88	41.44	155	110	Peak
2390	44.31	48.66	54	-9.69	32.21	4.88	41.44	155	110	Average
2402	111.64	115.94			32.25	4.89	41.44	155	110	Peak
2402	101.1	105.4			32.25	4.89	41.44	155	110	Average
2483.5	57.38	61.4	74	-16.62	32.46	4.98	41.46	155	110	Peak
2483.5	43.69	47.71	54	-10.31	32.46	4.98	41.46	155	110	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.: RF191023W004

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	63.11	66.57	74	-10.89	33.1	4.88	41.44	160	200	Peak
2390	45.69	49.15	54	-8.31	33.1	4.88	41.44	160	200	Average
2440	106.4	109.72			33.19	4.94	41.45	160	200	Peak
2440	100.88	104.2			33.19	4.94	41.45	160	200	Average
2483.5	57.42	60.63	74	-16.58	33.27	4.98	41.46	160	200	Peak
2483.5	44.74	47.95	54	-9.26	33.27	4.98	41.46	160	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	56.72	61.07	74	-17.28	32.21	4.88	41.44	150	105	Peak
2390	43.24	47.59	54	-10.76	32.21	4.88	41.44	150	105	Average
2440	109.09	113.26			32.34	4.94	41.45	150	105	Peak
2440	100.33	104.5			32.34	4.94	41.45	150	105	Average
2483.5	57.25	61.27	74	-16.75	32.46	4.98	41.46	150	105	Peak
2483.5	43.75	47.77	54	-10.25	32.46	4.98	41.46	150	105	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.: RF191023W004

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	57.74	61.2	74	-16.26	33.1	4.88	41.44	120	220	Peak
2390	44.73	48.19	54	-9.27	33.1	4.88	41.44	120	220	Average
2480	106.22	109.44			33.26	4.98	41.46	120	220	Peak
2480	100.29	103.51			33.26	4.98	41.46	120	220	Average
2483.5	60.96	64.17	74	-13.04	33.27	4.98	41.46	120	220	Peak
2483.5	45.69	48.9	54	-8.31	33.27	4.98	41.46	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	56.97	61.32	74	-17.03	32.21	4.88	41.44	100	0	Peak
2390	43.81	48.16	54	-10.19	32.21	4.88	41.44	100	0	Average
2480	109.79	113.82			32.45	4.98	41.46	100	0	Peak
2480	101.37	105.4			32.45	4.98	41.46	100	0	Average
2483.5	63.59	67.61	74	-10.41	32.46	4.98	41.46	100	0	Peak
2483.5	46.07	50.09	54	-7.93	32.46	4.98	41.46	100	0	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.: RF191023W004

BT_LE CODED 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	59.12	62.58	74	-14.88	33.1	4.88	41.44	145	75	Peak
2390	44.63	48.09	54	-9.37	33.1	4.88	41.44	145	75	Average
2402	107.33	110.76			33.12	4.89	41.44	145	75	Peak
2402	98.77	102.2			33.12	4.89	41.44	145	75	Average
2483.5	57.9	61.11	74	-16.1	33.27	4.98	41.46	145	75	Peak
2483.5	45.04	48.25	54	-8.96	33.27	4.98	41.46	145	75	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	56.71	61.06	74	-17.29	32.21	4.88	41.44	100	100	Peak
2390	44.04	48.39	54	-9.96	32.21	4.88	41.44	100	100	Average
2402	109.25	113.55			32.25	4.89	41.44	100	100	Peak
2402	98.4	102.7			32.25	4.89	41.44	100	100	Average
2483.5	56.46	60.48	74	-17.54	32.46	4.98	41.46	100	100	Peak
2483.5	44.13	48.15	54	-9.87	32.46	4.98	41.46	100	100	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.: RF191023W004

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	57.3	60.76	74	-16.7	33.1	4.88	41.44	162	70	Peak
2390	44.38	47.84	54	-9.62	33.1	4.88	41.44	162	70	Average
2440	103.25	106.57			33.19	4.94	41.45	162	70	Peak
2440	95.52	98.84			33.19	4.94	41.45	162	70	Average
2483.5	57.47	60.68	74	-16.53	33.27	4.98	41.46	162	70	Peak
2483.5	44.76	47.97	54	-9.24	33.27	4.98	41.46	162	70	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	58.13	62.48	74	-15.87	32.21	4.88	41.44	150	100	Peak
2390	44.23	48.58	54	-9.77	32.21	4.88	41.44	150	100	Average
2440	108.98	113.15			32.34	4.94	41.45	150	100	Peak
2440	98.43	102.6			32.34	4.94	41.45	150	100	Average
2483.5	56.86	60.88	74	-17.14	32.46	4.98	41.46	150	100	Peak
2483.5	43.92	47.94	54	-10.08	32.46	4.98	41.46	150	100	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.: RF191023W004

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	58.61	62.07	74	-15.39	33.1	4.88	41.44	160	220	Peak
2390	44.77	48.23	54	-9.23	33.1	4.88	41.44	160	220	Average
2480	106.01	109.23			33.26	4.98	41.46	160	220	Peak
2480	96.59	99.81			33.26	4.98	41.46	160	220	Average
2483.5	63.1	66.31	74	-10.9	33.27	4.98	41.46	160	220	Peak
2483.5	45.61	48.82	54	-8.39	33.27	4.98	41.46	160	220	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	57.84	62.19	74	-16.16	32.21	4.88	41.44	100	360	Peak
2390	43.65	48	54	-10.35	32.21	4.88	41.44	100	360	Average
2480	109.6	113.63			32.45	4.98	41.46	100	360	Peak
2480	98.27	102.3			32.45	4.98	41.46	100	360	Average
2483.5	63.32	67.34	74	-10.68	32.46	4.98	41.46	100	360	Peak
2483.5	45.35	49.37	54	-8.65	32.46	4.98	41.46	100	360	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.: RF191023W004

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	67.98	71.44	74	-6.02	33.1	4.88	41.44	160	71	Peak
2390	43.95	47.41	54	-10.05	33.1	4.88	41.44	160	71	Average
2402	104.97	108.4			33.12	4.89	41.44	160	71	Peak
2402	98.27	101.7			33.12	4.89	41.44	160	71	Average
2483.5	57.72	60.93	74	-16.28	33.27	4.98	41.46	160	71	Peak
2483.5	44.23	47.44	54	-9.77	33.27	4.98	41.46	160	71	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	59.12	63.47	74	-14.88	32.21	4.88	41.44	100	126	Peak
2390	43.75	48.1	54	-10.25	32.21	4.88	41.44	100	126	Average
2402	109.39	113.69			32.25	4.89	41.44	100	126	Peak
2402	99.4	103.7			32.25	4.89	41.44	100	126	Average
2483.5	56.41	60.43	74	-17.59	32.46	4.98	41.46	100	126	Peak
2483.5	43.84	47.86	54	-10.16	32.46	4.98	41.46	100	126	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.: RF191023W004

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	59.88	63.34	74	-14.12	33.1	4.88	41.44	106	46	Peak
2390	44.96	48.42	54	-9.04	33.1	4.88	41.44	106	46	Average
2440	107.67	110.99			33.19	4.94	41.45	106	46	Peak
2440	100.48	103.8			33.19	4.94	41.45	106	46	Average
2483.5	58.04	61.25	74	-15.96	33.27	4.98	41.46	106	46	Peak
2483.5	44.9	48.11	54	-9.1	33.27	4.98	41.46	106	46	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	56.63	60.98	74	-17.37	32.21	4.88	41.44	100	120	Peak
2390	43.09	47.44	54	-10.91	32.21	4.88	41.44	100	120	Average
2440	109.52	113.69			32.34	4.94	41.45	100	120	Peak
2440	99.13	103.3			32.34	4.94	41.45	100	120	Average
2483.5	56.43	60.45	74	-17.57	32.46	4.98	41.46	100	120	Peak
2483.5	43.62	47.64	54	-10.38	32.46	4.98	41.46	100	120	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.: RF191023W004

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	56.8	60.26	74	-17.2	33.1	4.88	41.44	158	45	Peak
2390	44.09	47.55	54	-9.91	33.1	4.88	41.44	158	45	Average
2480	104.91	108.13			33.26	4.98	41.46	158	45	Peak
2480	97.19	100.41			33.26	4.98	41.46	158	45	Average
2483.5	61.02	64.23	74	-12.98	33.27	4.98	41.46	158	45	Peak
2483.5	44.91	48.12	54	-9.09	33.27	4.98	41.46	158	45	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	56.95	61.3	74	-17.05	32.21	4.88	41.44	150	110	Peak
2390	43.87	48.22	54	-10.13	32.21	4.88	41.44	150	110	Average
2480	112.14	116.17			32.45	4.98	41.46	150	110	Peak
2480	98.57	102.6			32.45	4.98	41.46	150	110	Average
2483.5	67.1	71.12	74	-6.9	32.46	4.98	41.46	150	110	Peak
2483.5	48.68	52.7	54	-5.32	32.46	4.98	41.46	150	110	Average

REMARKS:

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



BUREAU VERITAS Test Report No.: RF191023W004

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	57.44	60.9	74	-16.56	33.1	4.88	41.44	121	70	Peak
2390	44.78	48.24	54	-9.22	33.1	4.88	41.44	121	70	Average
2402	107.64	111.07			33.12	4.89	41.44	121	70	Peak
2402	89.82	93.25			33.12	4.89	41.44	121	70	Average
2483.5	59.3	62.51	74	-14.7	33.27	4.98	41.46	121	70	Peak
2483.5	45.19	48.4	54	-8.81	33.27	4.98	41.46	121	70	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	57.01	61.36	74	-16.99	32.21	4.88	41.44	100	120	Peak
2390	44.17	48.52	54	-9.83	32.21	4.88	41.44	100	120	Average
2402	109.28	113.58			32.25	4.89	41.44	100	120	Peak
2402	90.1	94.4			32.25	4.89	41.44	100	120	Average
2483.5	57.47	61.49	74	-16.53	32.46	4.98	41.46	100	120	Peak
2483.5	44.56	48.58	54	-9.44	32.46	4.98	41.46	100	120	Average

REMARKS:

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



**BUREAU
VERITAS**

Test Report No.: RF191023W004

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	59.27	62.73	74	-14.73	33.1	4.88	41.44	140	70	Peak
2390	45	48.46	54	-9	33.1	4.88	41.44	140	70	Average
2440	108.29	111.61			33.19	4.94	41.45	140	70	Peak
2440	91.46	94.78			33.19	4.94	41.45	140	70	Average
2483.5	57.74	60.95	74	-16.26	33.27	4.98	41.46	140	70	Peak
2483.5	45.02	48.23	54	-8.98	33.27	4.98	41.46	140	70	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	57.38	61.73	74	-16.62	32.21	4.88	41.44	100	112	Peak
2390	44.32	48.67	54	-9.68	32.21	4.88	41.44	100	112	Average
2440	111.68	115.85			32.34	4.94	41.45	100	112	Peak
2440	89.58	93.75			32.34	4.94	41.45	100	112	Average
2483.5	57.62	61.64	74	-16.38	32.46	4.98	41.46	100	112	Peak
2483.5	44.42	48.44	54	-9.58	32.46	4.98	41.46	100	112	Average

REMARKS:

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



**BUREAU
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Test Report No.: RF191023W004

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	57.22	60.68	74	-16.78	33.1	4.88	41.44	100	45	Peak
2390	44.68	48.14	54	-9.32	33.1	4.88	41.44	100	45	Average
2480	105.25	108.47			33.26	4.98	41.46	100	45	Peak
2480	87.96	91.18			33.26	4.98	41.46	100	45	Average
2483.5	62.39	65.6	74	-11.61	33.27	4.98	41.46	100	45	Peak
2483.5	46.04	49.25	54	-7.96	33.27	4.98	41.46	100	45	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	59.59	63.94	74	-14.41	32.21	4.88	41.44	130	110	Peak
2390	43.86	48.21	54	-10.14	32.21	4.88	41.44	130	110	Average
2480	111.57	115.6			32.45	4.98	41.46	130	110	Peak
2480	90.3	94.33			32.45	4.98	41.46	130	110	Average
2483.5	67.53	71.55	74	-6.47	32.46	4.98	41.46	130	110	Peak
2483.5	49.44	53.46	54	-4.56	32.46	4.98	41.46	130	110	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.: RF191023W004

Ant-2

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

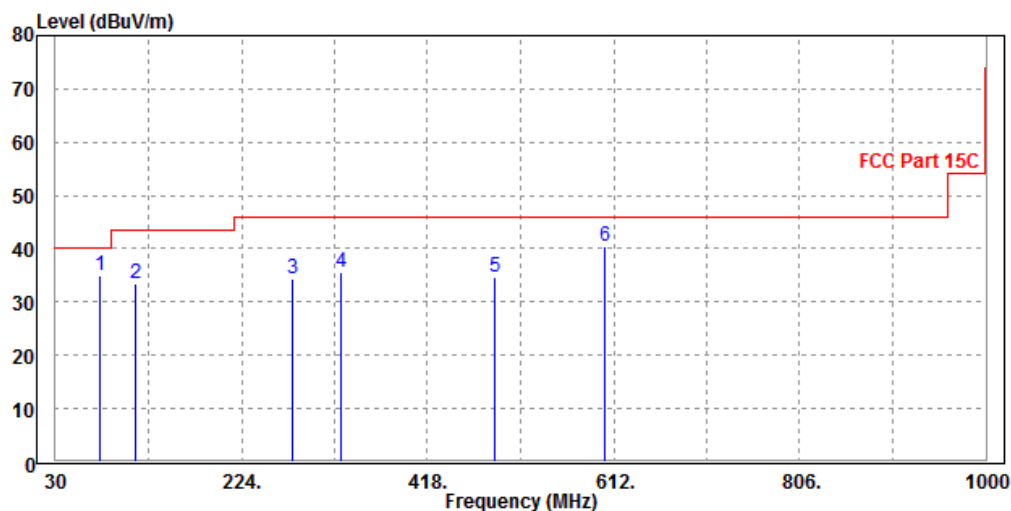
BT LE (2M)

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
76.115	34.85	63.12	40	-5.15	7.87	1.2	37.34	100	0	Peak
114.335	33.51	60.36	43.5	-9.99	8.84	1.41	37.1	100	0	Peak
277.665	34.37	55.34	46	-11.63	13.61	2.13	36.71	100	0	Peak
327.254	35.62	55.13	46	-10.38	14.94	2.32	36.77	100	0	Peak
487.84	34.55	50.24	46	-11.45	18.34	2.95	36.98	100	0	Peak
603.114	40.32	54.33	46	-5.68	20.19	3.17	37.37	100	0	Peak

REMARKS:

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





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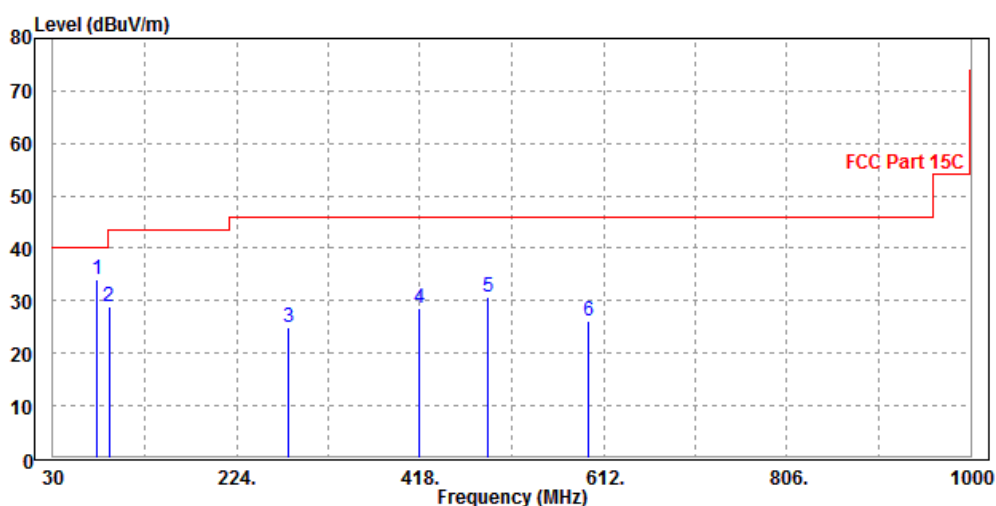
Test Report No.: RF191023W004

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
76.125	34.01	62.12	40	-5.99	8.03	1.2	37.34	200	0	Peak
89.115	28.92	56.34	43.5	-14.58	8.57	1.27	37.26	200	0	Peak
278.63	24.83	45.63	46	-21.17	13.77	2.14	36.71	200	0	Peak
416.89	28.59	45.23	46	-17.41	17.54	2.68	36.86	200	0	Peak
490.115	30.87	46.34	46	-15.13	18.56	2.95	36.98	200	0	Peak
595.347	26.05	40.22	46	-19.95	20.03	3.15	37.35	200	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.: RF191023W004

ABOVE 1GHz WORST-CASE DATA:

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

BT_LE CODED 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	60.77	64.23	74	-13.23	33.1	4.88	41.44	186	66	Peak
2390	44.17	47.63	54	-9.83	33.1	4.88	41.44	186	66	Average
2402	110.13	113.56			33.12	4.89	41.44	186	66	Peak
2402	102.91	106.34			33.12	4.89	41.44	186	66	Average
2483.5	55.13	58.34	74	-18.87	33.27	4.98	41.46	186	66	Peak
2483.5	45.02	48.23	54	-8.98	33.27	4.98	41.46	186	66	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	62.26	66.61	74	-11.74	32.21	4.88	41.44	155	110	Peak
2390	44.31	48.66	54	-9.69	32.21	4.88	41.44	155	110	Average
2402	111.64	115.94			32.25	4.89	41.44	155	110	Peak
2402	101.1	105.4			32.25	4.89	41.44	155	110	Average
2483.5	57.38	61.4	74	-16.62	32.46	4.98	41.46	155	110	Peak
2483.5	43.69	47.71	54	-10.31	32.46	4.98	41.46	155	110	Average

REMARKS:

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



**BUREAU
VERITAS**

Test Report No.: RF191023W004

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	61.86	65.32	74	-12.14	33.1	4.88	41.44	160	200	Peak
2390	46.79	50.25	54	-7.21	33.1	4.88	41.44	160	200	Average
2440	106.93	110.25			33.19	4.94	41.45	160	200	Peak
2440	103.53	106.85			33.19	4.94	41.45	160	200	Average
2483.5	56.46	59.67	74	-17.54	33.27	4.98	41.46	160	200	Peak
2483.5	45.13	48.34	54	-8.87	33.27	4.98	41.46	160	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	54.88	59.23	74	-19.12	32.21	4.88	41.44	150	105	Peak
2390	44.28	48.63	54	-9.72	32.21	4.88	41.44	150	105	Average
2440	110.17	114.34			32.34	4.94	41.45	150	105	Peak
2440	101.81	105.98			32.34	4.94	41.45	150	105	Average
2483.5	59.21	63.23	74	-14.79	32.46	4.98	41.46	150	105	Peak
2483.5	42.24	46.26	54	-11.76	32.46	4.98	41.46	150	105	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.: RF191023W004

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	58.87	62.33	74	-15.13	33.1	4.88	41.44	120	220	Peak
2390	45.86	49.32	54	-8.14	33.1	4.88	41.44	120	220	Average
2480	107.45	110.67			33.26	4.98	41.46	120	220	Peak
2480	101.47	104.69			33.26	4.98	41.46	120	220	Average
2483.5	60.01	63.22	74	-13.99	33.27	4.98	41.46	120	220	Peak
2483.5	43.91	47.12	54	-10.09	33.27	4.98	41.46	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	57.87	62.22	74	-16.13	32.21	4.88	41.44	100	0	Peak
2390	45.32	49.67	54	-8.68	32.21	4.88	41.44	100	0	Average
2480	111.08	115.11			32.45	4.98	41.46	100	0	Peak
2480	102.72	106.75			32.45	4.98	41.46	100	0	Average
2483.5	62.1	66.12	74	-11.9	32.46	4.98	41.46	100	0	Peak
2483.5	45.32	49.34	54	-8.68	32.46	4.98	41.46	100	0	Average

REMARKS:

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



**BUREAU
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Test Report No.: RF191023W004

BT_LE CODED 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	60.76	64.22	74	-13.24	33.1	4.88	41.44	145	75	Peak
2390	46.2	49.66	54	-7.8	33.1	4.88	41.44	145	75	Average
2402	109.22	112.65			33.12	4.89	41.44	145	75	Peak
2402	100.42	103.85			33.12	4.89	41.44	145	75	Average
2483.5	59.35	62.56	74	-14.65	33.27	4.98	41.46	145	75	Peak
2483.5	46.48	49.69	54	-7.52	33.27	4.98	41.46	145	75	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	57.7	62.05	74	-16.3	32.21	4.88	41.44	100	100	Peak
2390	44.98	49.33	54	-9.02	32.21	4.88	41.44	100	100	Average
2402	111.05	115.35			32.25	4.89	41.44	100	100	Peak
2402	98.98	103.28			32.25	4.89	41.44	100	100	Average
2483.5	57.83	61.85	74	-16.17	32.46	4.98	41.46	100	100	Peak
2483.5	45.64	49.66	54	-8.36	32.46	4.98	41.46	100	100	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.: RF191023W004

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	58.43	61.89	74	-15.57	33.1	4.88	41.44	162	70	Peak
2390	45.53	48.99	54	-8.47	33.1	4.88	41.44	162	70	Average
2440	104.34	107.66			33.19	4.94	41.45	162	70	Peak
2440	97.33	100.65			33.19	4.94	41.45	162	70	Average
2483.5	58.32	61.53	74	-15.68	33.27	4.98	41.46	162	70	Peak
2483.5	43.32	46.53	54	-10.68	33.27	4.98	41.46	162	70	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	58.13	62.48	74	-15.87	32.21	4.88	41.44	150	100	Peak
2390	44.23	48.58	54	-9.77	32.21	4.88	41.44	150	100	Average
2440	108.98	113.15			32.34	4.94	41.45	150	100	Peak
2440	98.43	102.6			32.34	4.94	41.45	150	100	Average
2483.5	56.86	60.88	74	-17.14	32.46	4.98	41.46	150	100	Peak
2483.5	43.92	47.94	54	-10.08	32.46	4.98	41.46	150	100	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.: RF191023W004

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	59.69	63.15	74	-14.31	33.1	4.88	41.44	160	220	Peak
2390	46.19	49.65	54	-7.81	33.1	4.88	41.44	160	220	Average
2480	107.48	110.7			33.26	4.98	41.46	160	220	Peak
2480	97.77	100.99			33.26	4.98	41.46	160	220	Average
2483.5	64.12	67.33	74	-9.88	33.27	4.98	41.46	160	220	Peak
2483.5	46.43	49.64	54	-7.57	33.27	4.98	41.46	160	220	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	57.51	61.86	74	-16.49	32.21	4.88	41.44	100	360	Peak
2390	44.76	49.11	54	-9.24	32.21	4.88	41.44	100	360	Average
2480	111.63	115.66			32.45	4.98	41.46	100	360	Peak
2480	99.86	103.89			32.45	4.98	41.46	100	360	Average
2483.5	64.94	68.96	74	-9.06	32.46	4.98	41.46	100	360	Peak
2483.5	46.24	50.26	54	-7.76	32.46	4.98	41.46	100	360	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.: RF191023W004

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	56.53	64.92	74	-17.47	33.1	4.88	46.37	100	296	Peak
2390	39.68	48.07	54	-14.32	33.1	4.88	46.37	100	296	Average
2402	105.54	113.9			33.12	4.89	46.37	100	296	Peak
2402	97.15	105.51			33.12	4.89	46.37	100	296	Average
2483.5	55.6	63.72	74	-18.4	33.27	4.98	46.37	100	296	Peak
2483.5	39.59	47.71	54	-14.41	33.27	4.98	46.37	100	296	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	54.41	63.69	74	-19.59	32.21	4.88	46.37	100	200	Peak
2390	39.39	48.67	54	-14.61	32.21	4.88	46.37	100	200	Average
2402	100.35	109.58			32.25	4.89	46.37	100	200	Peak
2402	88.18	97.41			32.25	4.89	46.37	100	200	Average
2483.5	54.84	63.77	74	-19.16	32.46	4.98	46.37	100	200	Peak
2483.5	38.75	47.68	54	-15.25	32.46	4.98	46.37	100	200	Average

REMARKS:

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



**BUREAU
VERITAS**

Test Report No.: RF191023W004

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	57.58	65.97	74	-16.42	33.1	4.88	46.37	100	330	Peak
2390	40.24	48.63	54	-13.76	33.1	4.88	46.37	100	330	Average
2440	104.39	112.63			33.19	4.94	46.37	100	330	Peak
2440	95.66	103.9			33.19	4.94	46.37	100	330	Average
2483.5	55.76	63.88	74	-18.24	33.27	4.98	46.37	100	330	Peak
2483.5	41.53	49.65	54	-12.47	33.27	4.98	46.37	100	330	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	53.92	63.2	74	-20.08	32.21	4.88	46.37	100	198	Peak
2390	38.69	47.97	54	-15.31	32.21	4.88	46.37	100	198	Average
2440	99.98	109.07			32.34	4.94	46.37	100	198	Peak
2440	92.41	101.5			32.34	4.94	46.37	100	198	Average
2483.5	54.96	63.89	74	-19.04	32.46	4.98	46.37	100	198	Peak
2483.5	41.28	50.21	54	-12.72	32.46	4.98	46.37	100	198	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.: RF191023W004

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	57.03	65.42	74	-16.97	33.1	4.88	46.37	100	97	Peak
2390	38.5	46.89	54	-15.5	33.1	4.88	46.37	100	97	Average
2480	106.05	114.18			33.26	4.98	46.37	100	97	Peak
2480	97.97	106.1			33.26	4.98	46.37	100	97	Average
2483.5	60.49	68.61	74	-13.51	33.27	4.98	46.37	100	97	Peak
2483.5	42.09	50.21	54	-11.91	33.27	4.98	46.37	100	97	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	54.58	63.86	74	-19.42	32.21	4.88	46.37	100	205	Peak
2390	39.39	48.67	54	-14.61	32.21	4.88	46.37	100	205	Average
2480	102.34	111.28			32.45	4.98	46.37	100	205	Peak
2480	92.51	101.45			32.45	4.98	46.37	100	205	Average
2483.5	55.36	64.29	74	-18.64	32.46	4.98	46.37	100	205	Peak
2483.5	40.73	49.66	54	-13.27	32.46	4.98	46.37	100	205	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.: RF191023W004

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	57.77	61.23	74	-16.23	33.1	4.88	41.44	121	70	Peak
2390	46.1	49.56	54	-7.9	33.1	4.88	41.44	121	70	Average
2402	110.24	113.67			33.12	4.89	41.44	121	70	Peak
2402	91.24	94.67			33.12	4.89	41.44	121	70	Average
2483.5	59.91	63.12	74	-14.09	33.27	4.98	41.46	121	70	Peak
2483.5	47.01	50.22	54	-6.99	33.27	4.98	41.46	121	70	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	58.77	63.12	74	-15.23	32.21	4.88	41.44	100	120	Peak
2390	45.77	50.12	54	-8.23	32.21	4.88	41.44	100	120	Average
2402	111.33	115.63			32.25	4.89	41.44	100	120	Peak
2402	91.88	96.18			32.25	4.89	41.44	100	120	Average
2483.5	59.76	63.78	74	-14.24	32.46	4.98	41.46	100	120	Peak
2483.5	47.21	51.23	54	-6.79	32.46	4.98	41.46	100	120	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.: RF191023W004

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	60.66	64.12	74	-13.34	33.1	4.88	41.44	140	70	Peak
2390	46.66	50.12	54	-7.34	33.1	4.88	41.44	140	70	Average
2440	107.34	110.66			33.19	4.94	41.45	140	70	Peak
2440	90.34	93.66			33.19	4.94	41.45	140	70	Average
2483.5	58.13	61.34	74	-15.87	33.27	4.98	41.46	140	70	Peak
2483.5	46.95	50.16	54	-7.05	33.27	4.98	41.46	140	70	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	58.32	62.67	74	-15.68	32.21	4.88	41.44	100	112	Peak
2390	45.83	50.18	54	-8.17	32.21	4.88	41.44	100	112	Average
2440	112.05	116.22			32.34	4.94	41.45	100	112	Peak
2440	90.94	95.11			32.34	4.94	41.45	100	112	Average
2483.5	58.16	62.18	74	-15.84	32.46	4.98	41.46	100	112	Peak
2483.5	46.32	50.34	54	-7.68	32.46	4.98	41.46	100	112	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.: RF191023W004

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	58.66	62.12	74	-15.34	33.1	4.88	41.44	100	45	Peak
2390	46.66	50.12	54	-7.34	33.1	4.88	41.44	100	45	Average
2480	108.15	111.37			33.26	4.98	41.46	100	45	Peak
2480	91.01	94.23			33.26	4.98	41.46	100	45	Average
2483.5	60.91	64.12	74	-13.09	33.27	4.98	41.46	100	45	Peak
2483.5	49.13	52.34	54	-4.87	33.27	4.98	41.46	100	45	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	60.97	65.32	74	-13.03	32.21	4.88	41.44	130	110	Peak
2390	45.87	50.22	54	-8.13	32.21	4.88	41.44	130	110	Average
2480	112.33	116.36			32.45	4.98	41.46	130	110	Peak
2480	91.14	95.17			32.45	4.98	41.46	130	110	Average
2483.5	66.23	70.25	74	-7.77	32.46	4.98	41.46	130	110	Peak
2483.5	48.32	52.34	54	-5.68	32.46	4.98	41.46	130	110	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 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. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 26,19	Feb. 25,20
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	Feb. 26,19	Feb. 25,20
Power Sensor	ANRITSU	MA2411B	1339352	Feb. 26,19	Feb. 25,20

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

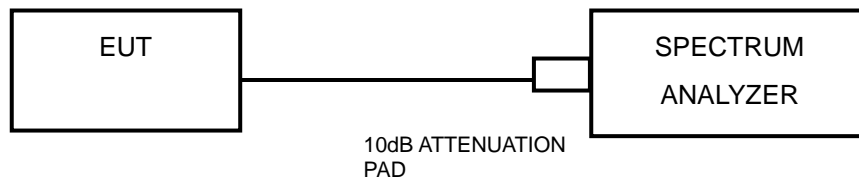
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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



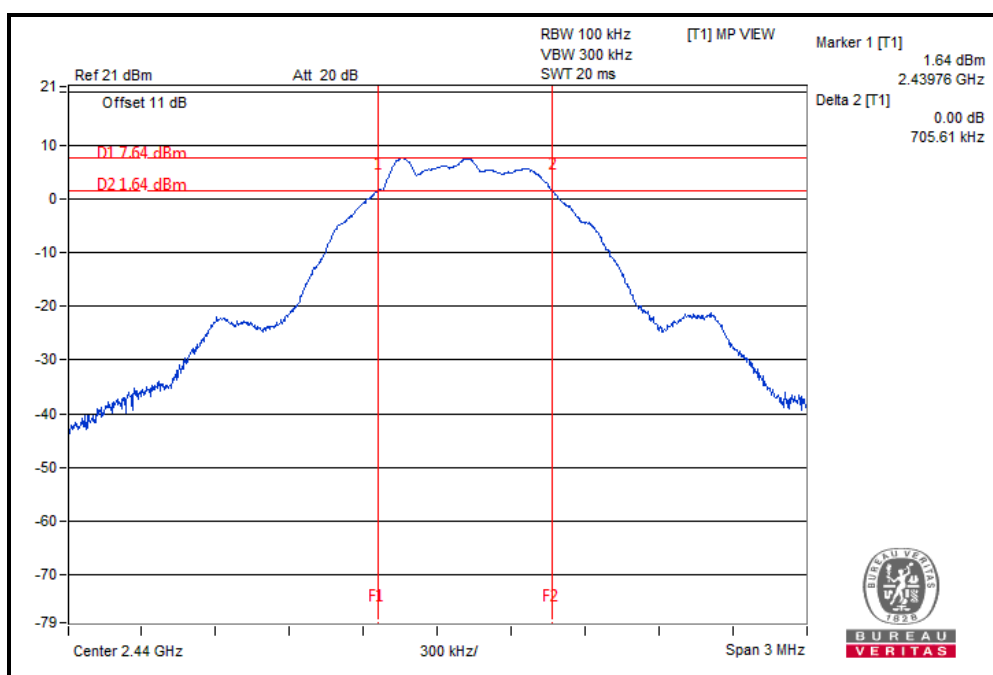
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Test Report No.: RF191023W004

3.3.7 TEST RESULTS

BT_LE CODED S2

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.70	0.5	PASS
19	2440	0.71	0.5	PASS
39	2480	0.70	0.5	PASS



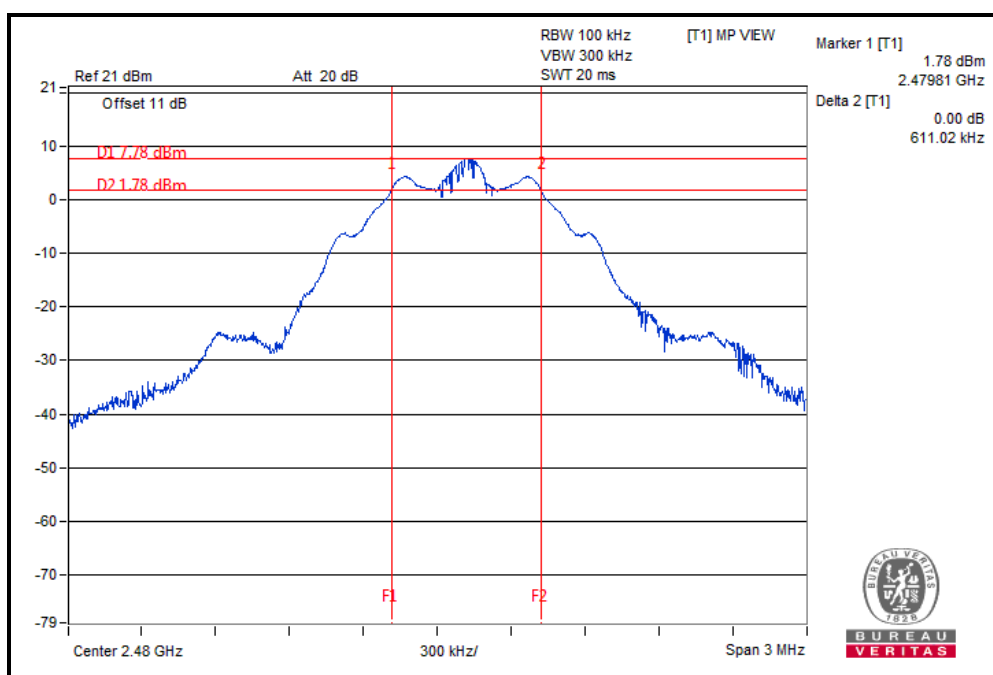


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Test Report No.: RF191023W004

BT_LE CODED S8

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.61	0.5	PASS
19	2440	0.61	0.5	PASS
39	2480	0.61	0.5	PASS



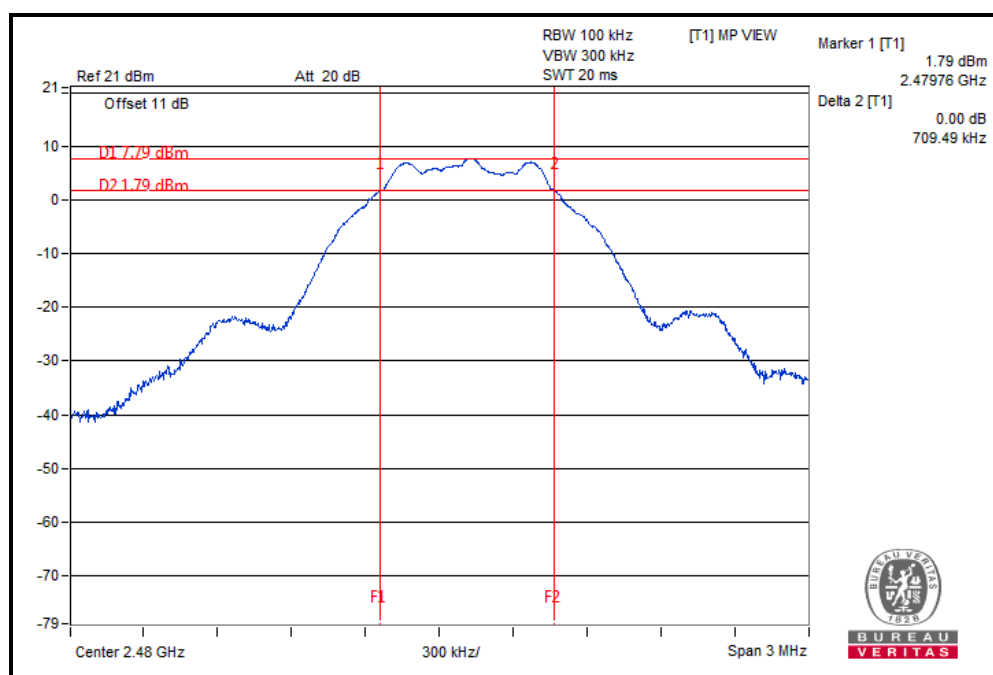


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Test Report No.: RF191023W004

BT_LE (1M)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.70	0.5	PASS
19	2440	0.69	0.5	PASS
39	2480	0.71	0.5	PASS



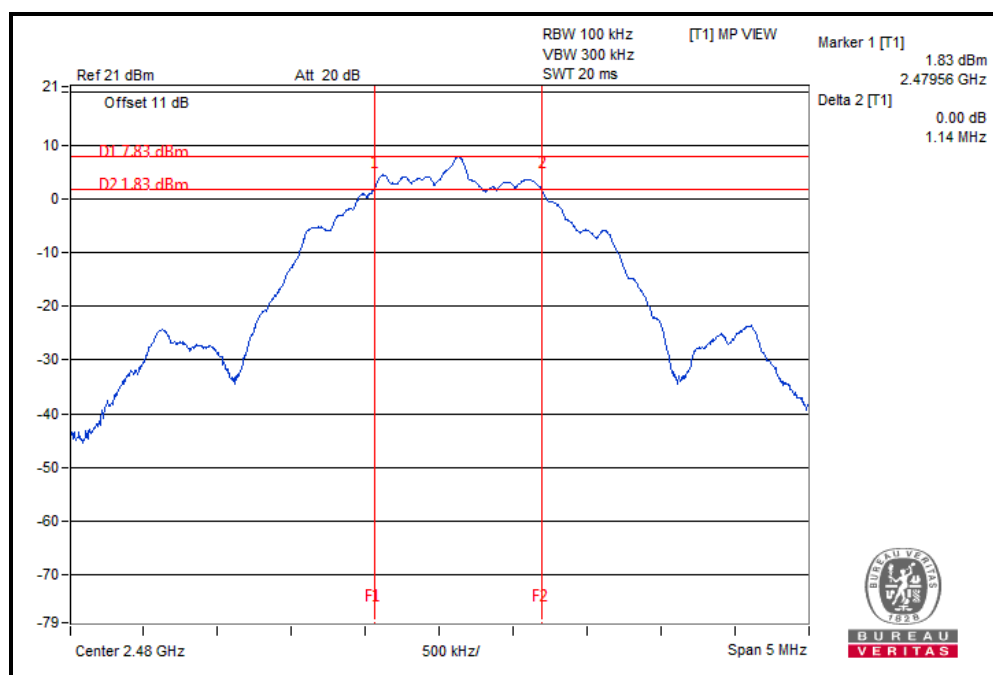


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Test Report No.: RF191023W004

BT_LE (2M)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.13	0.5	PASS
19	2440	1.13	0.5	PASS
39	2480	1.14	0.5	PASS



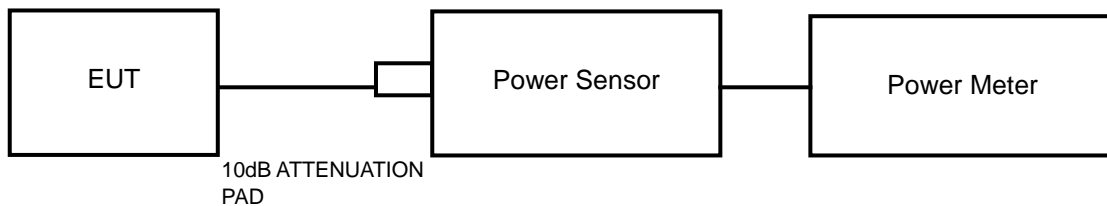


3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.4.4 TEST PROCEDURES

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

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

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



3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

BT_LE CODED S2

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	7.14	5.176	1	PASS
19	2440	7.33	5.408	1	PASS
39	2480	7.55	5.689	1	PASS

BT_LE CODED S8

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	7.14	5.176	1	PASS
19	2440	7.33	5.408	1	PASS
39	2480	7.54	5.675	1	PASS

BT_LE (1M)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	7.29	5.358	1	PASS
19	2440	7.46	5.572	1	PASS
39	2480	7.69	5.875	1	PASS

BT_LE (2M)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	7.30	5.370	1	PASS
19	2440	7.48	5.598	1	PASS
39	2480	7.70	5.888	1	PASS



3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.5.4 TEST PROCEDURE

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

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

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



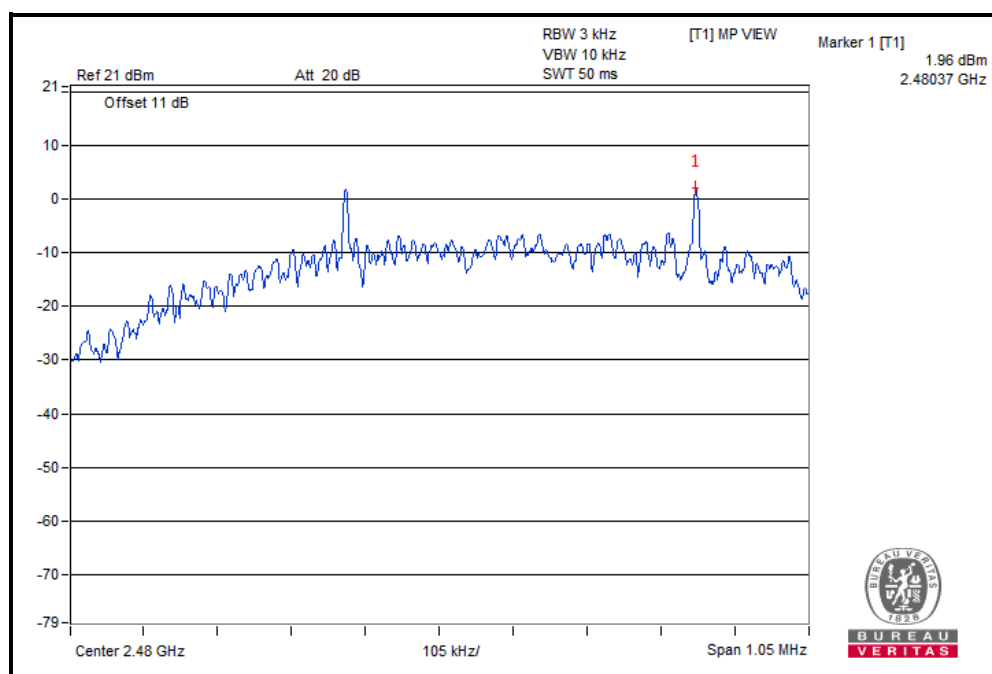
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3.5.7 TEST RESULTS

BT_LE CODED S2

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	1.44	8	PASS
19	2440	1.68	8	PASS
39	2480	1.96	8	PASS



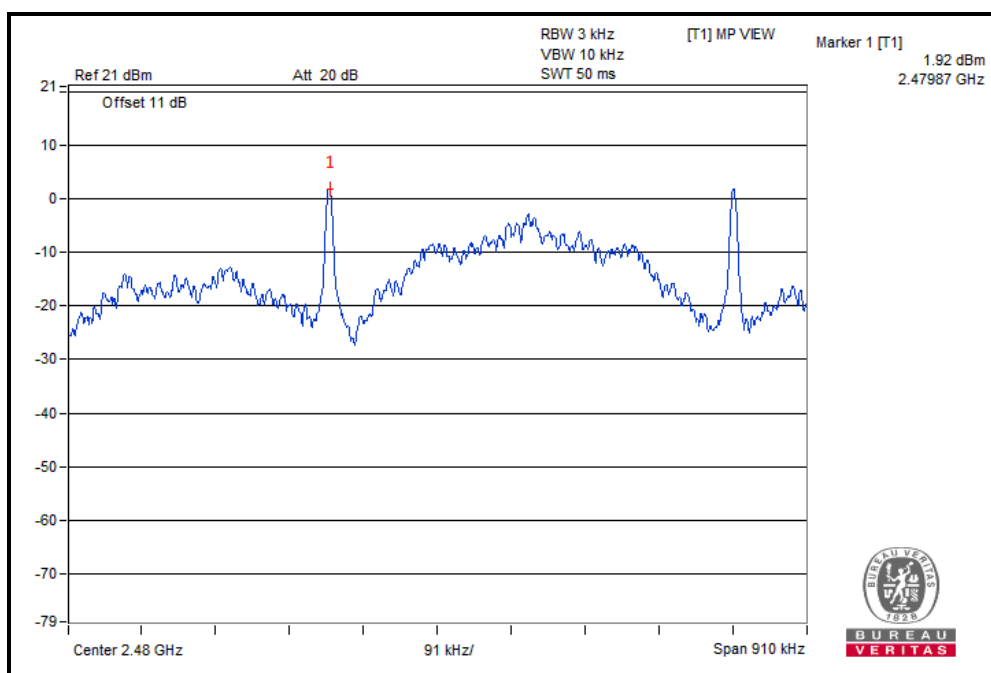


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Test Report No.: RF191023W004

BT_LE CODED S8

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	1.39	8	PASS
19	2440	1.65	8	PASS
39	2480	1.92	8	PASS



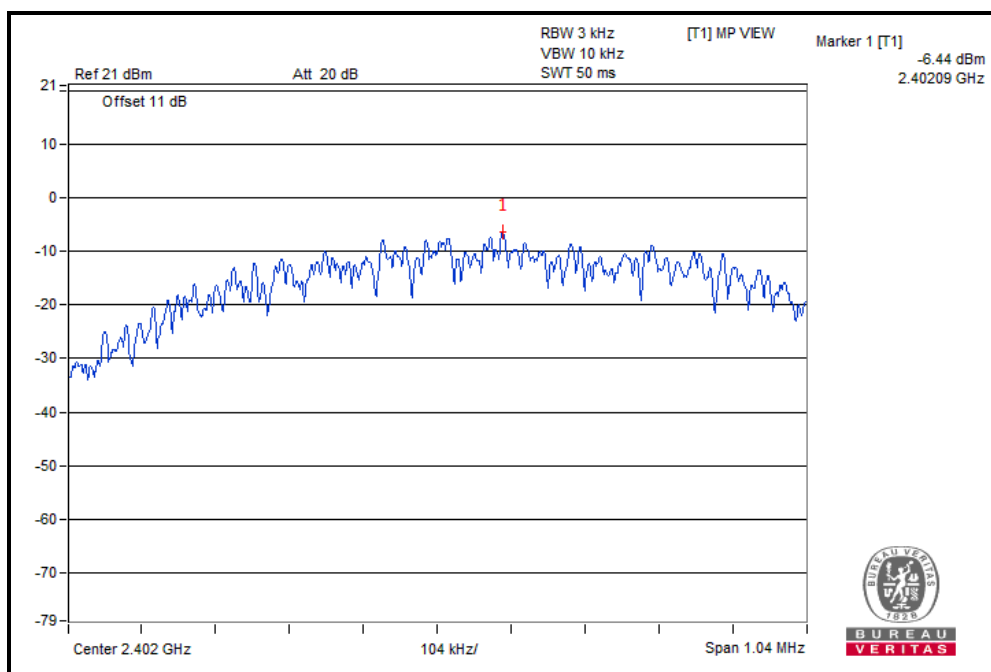


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Test Report No.: RF191023W004

BT_LE (1M)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-6.44	8	PASS
19	2440	-6.65	8	PASS
39	2480	-6.68	8	PASS



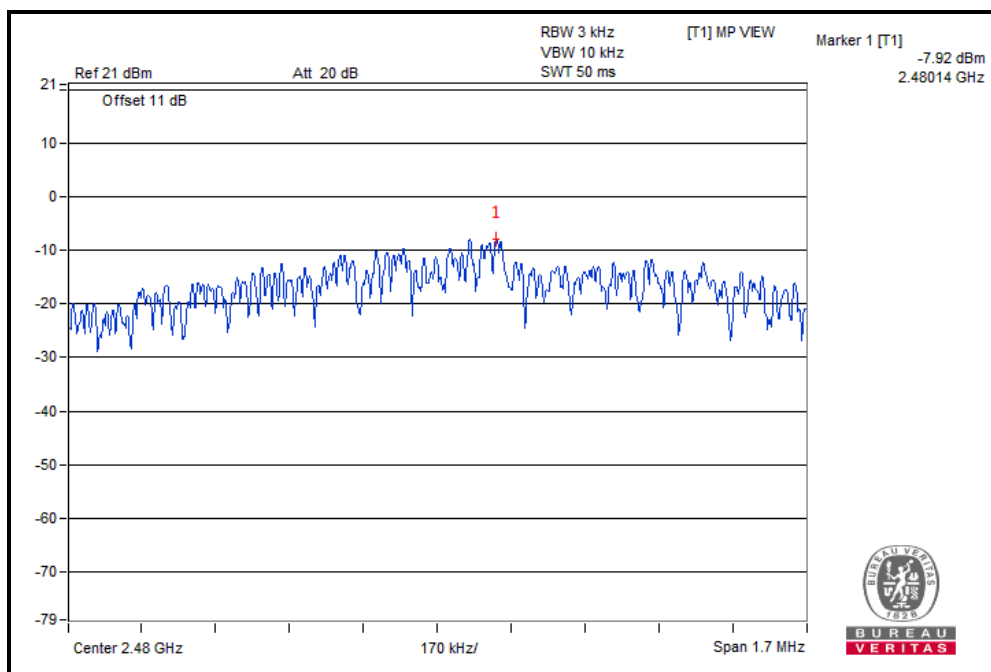


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VERITAS

Test Report No.: RF191023W004

BT_LE (2M)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-8.37	8	PASS
19	2440	-8.19	8	PASS
39	2480	-7.92	8	PASS



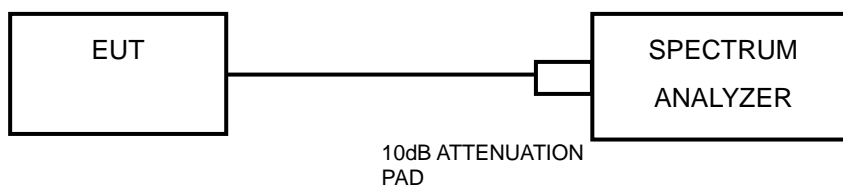


3.6 OUT OF BAND EMISSION MEASUREMENT

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.

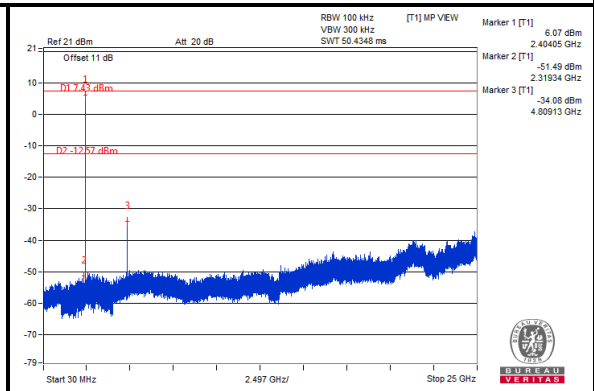
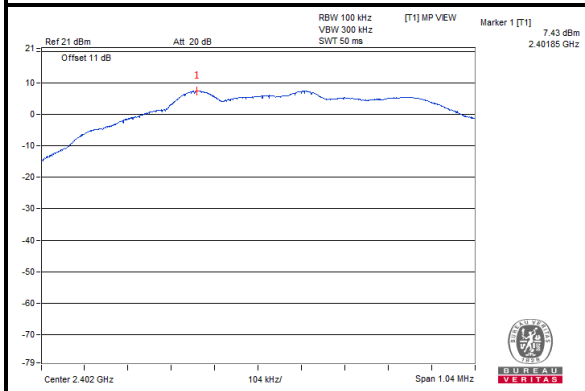


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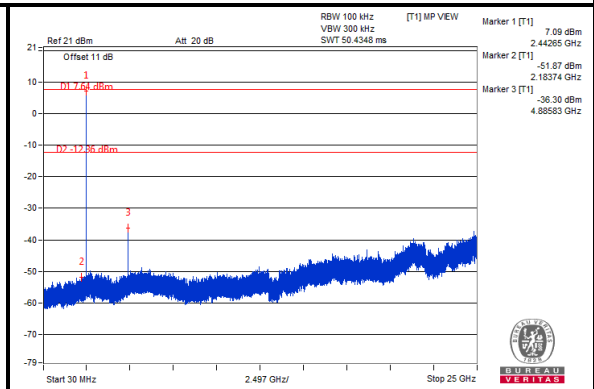
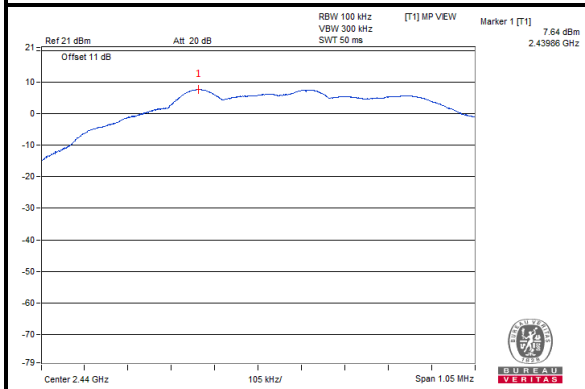
Test Report No.: RF191023W004

BT_LE CODED S2

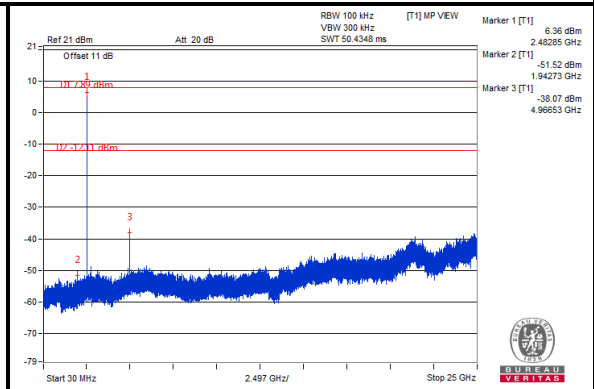
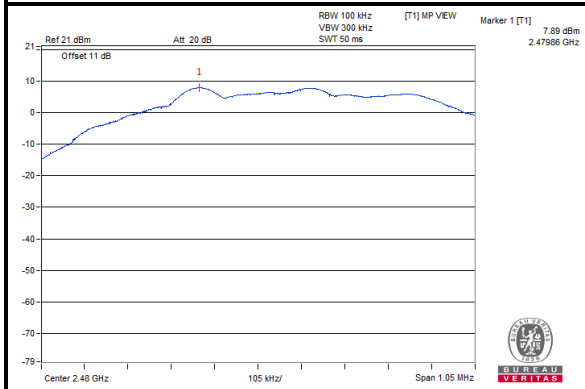
CH 0



CH 19



CH 39

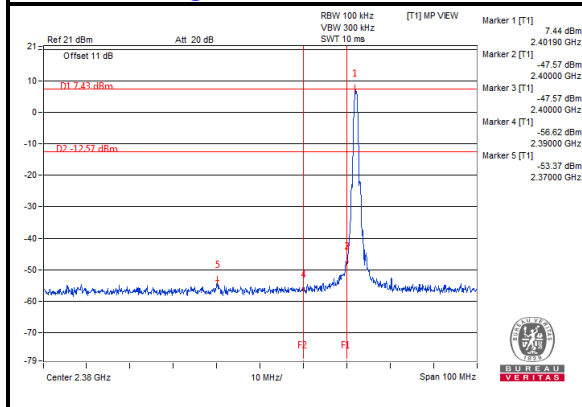




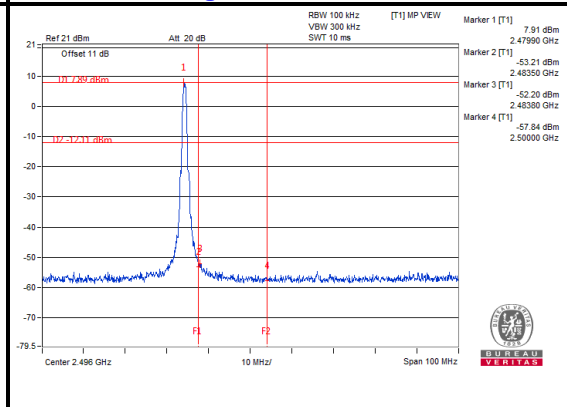
BUREAU
VERITAS

Test Report No.: RF191023W004

CH 0 Band Edge



CH 39 Band Edge



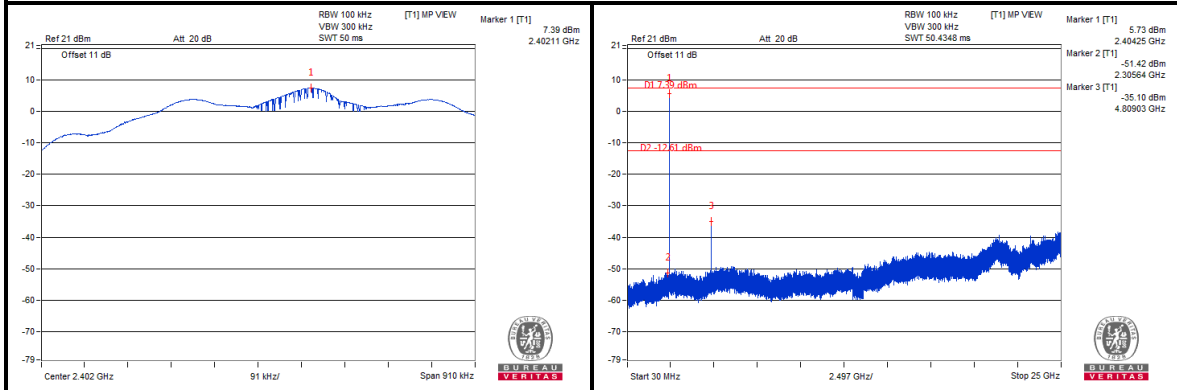


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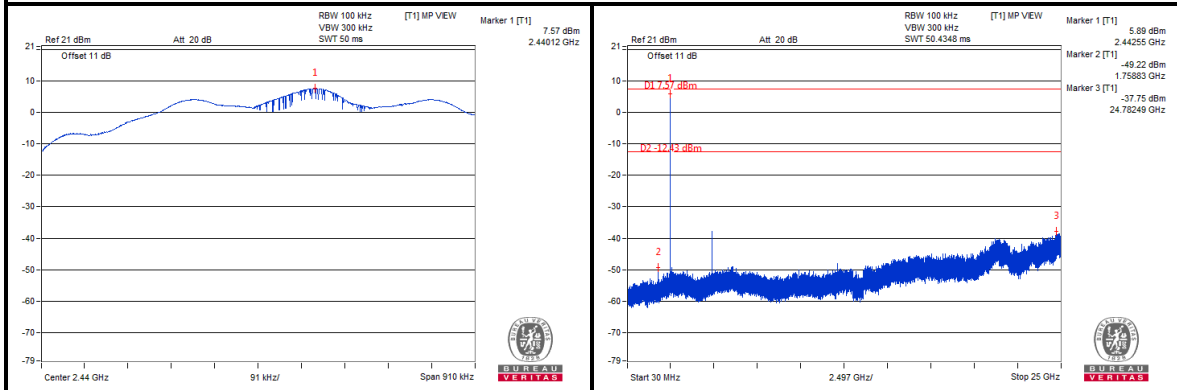
Test Report No.: RF191023W004

BT_LE CODED S8

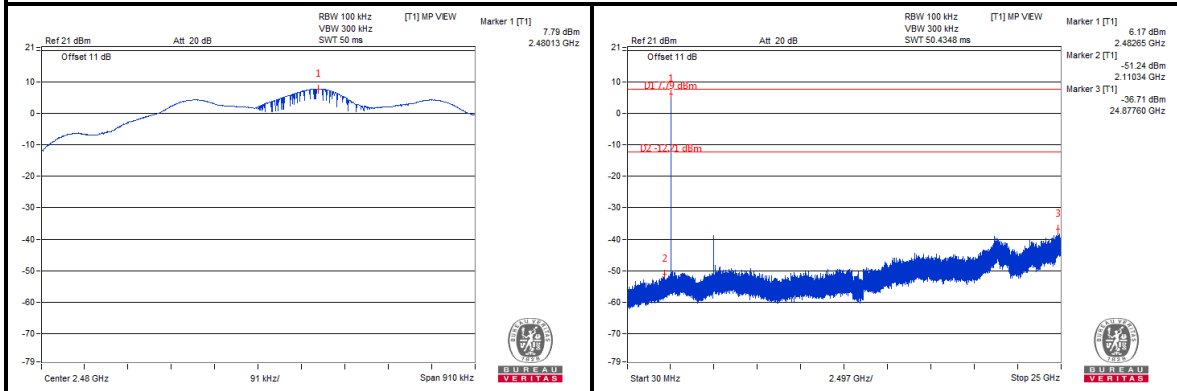
CH 0



CH 19



CH 39

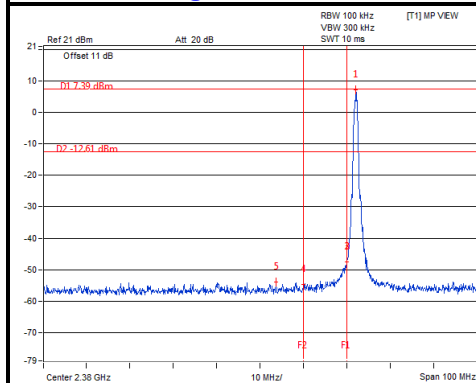




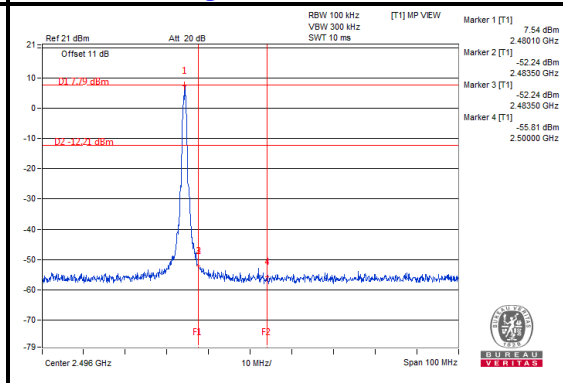
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VERITAS

Test Report No.: RF191023W004

CH 0 Band Edge



CH 39 Band Edge



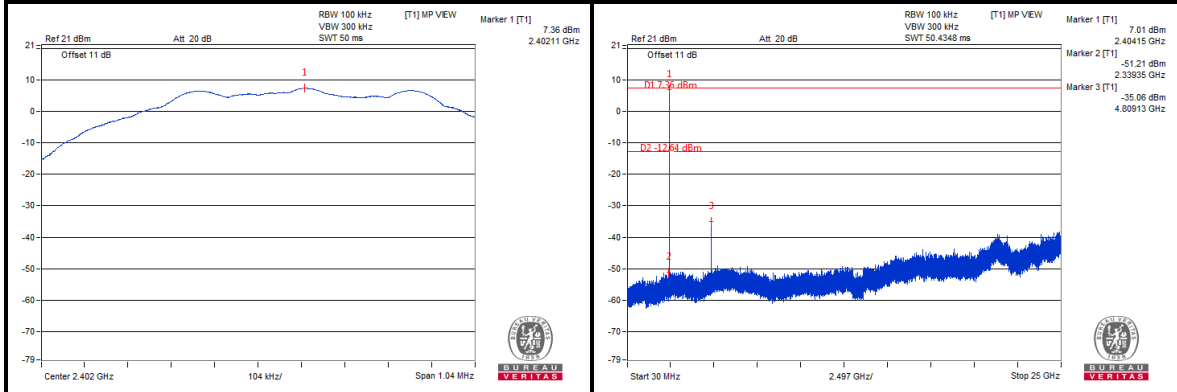


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VERITAS

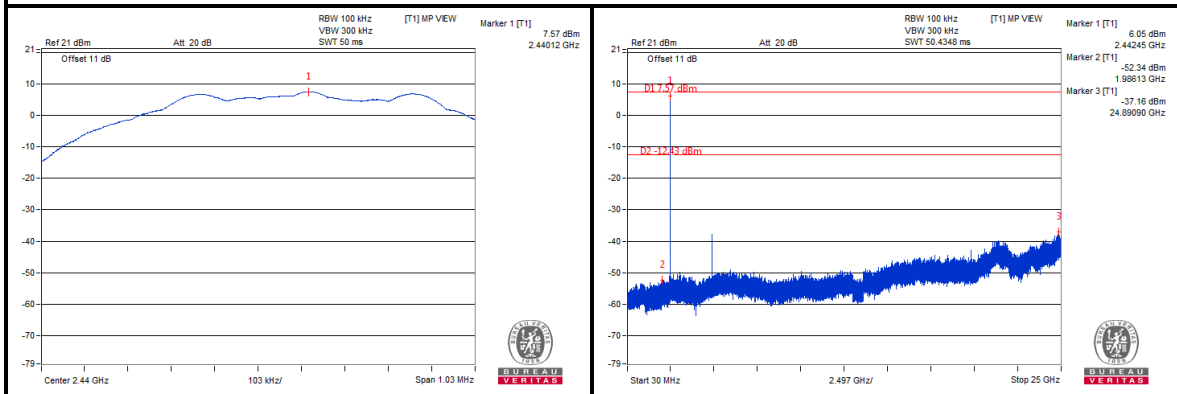
Test Report No.: RF191023W004

BT_LE LE (1M)

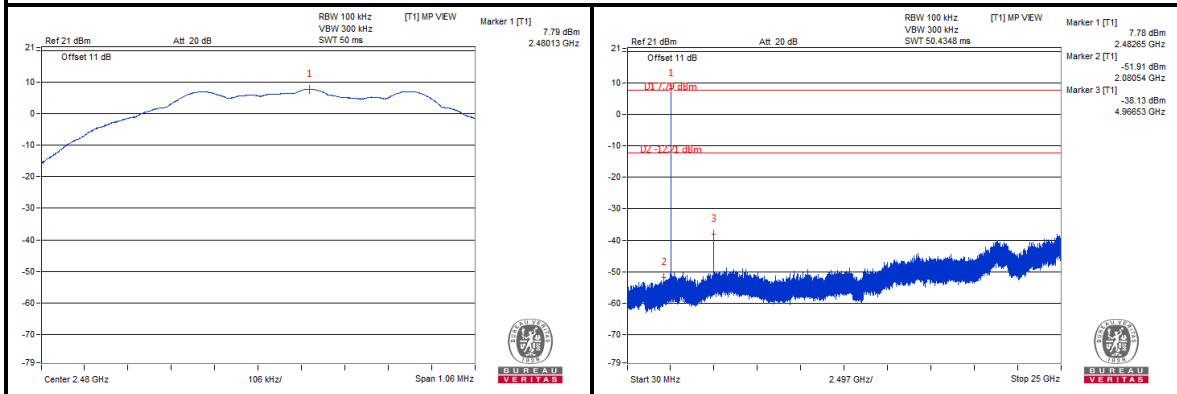
CH 0



CH 19



CH 39

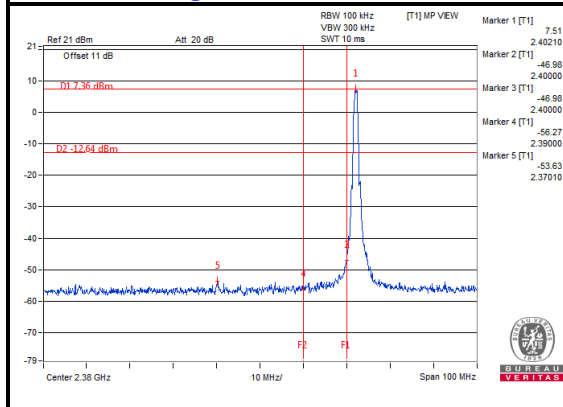




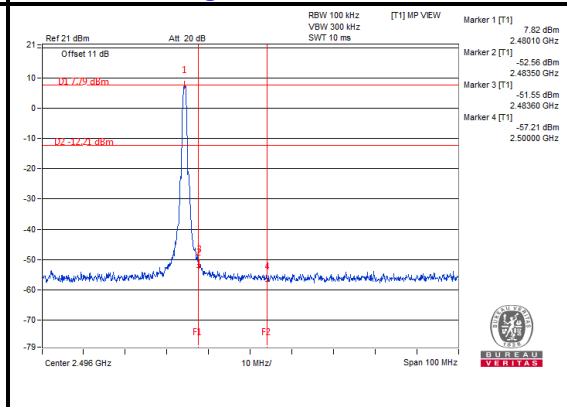
BUREAU
VERITAS

Test Report No.: RF191023W004

CH 0 Band Edge



CH 39 Band Edge



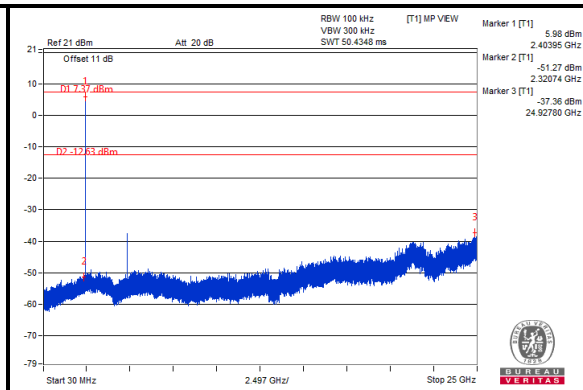
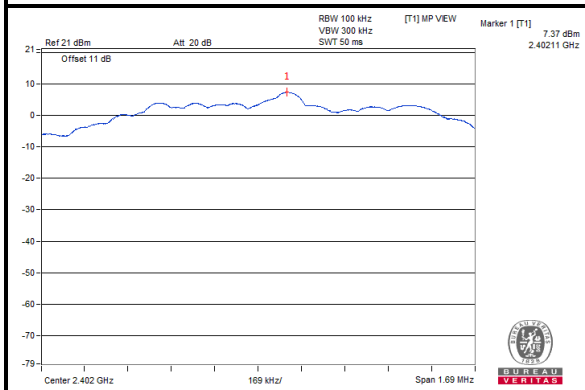


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VERITAS

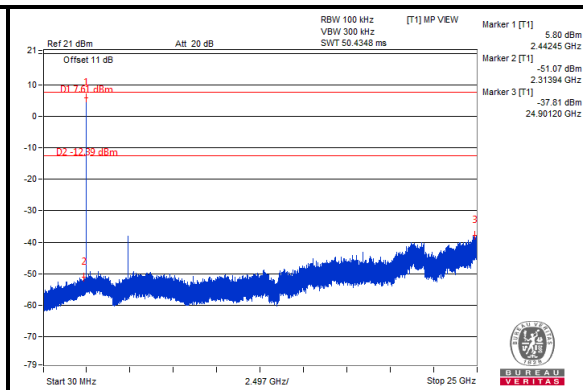
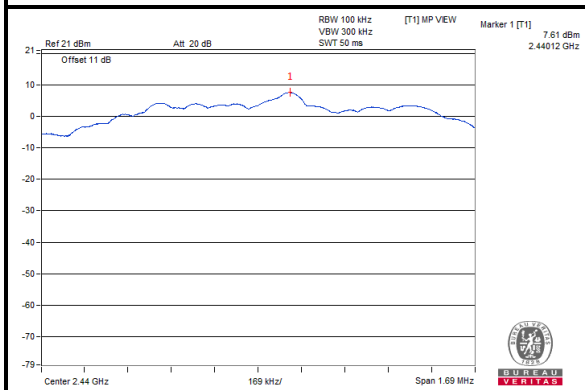
Test Report No.: RF191023W004

BT_LE (2M)

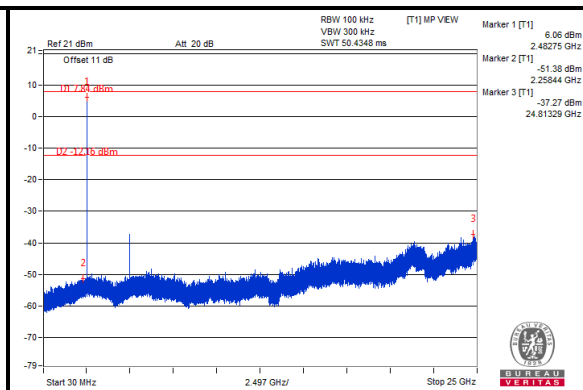
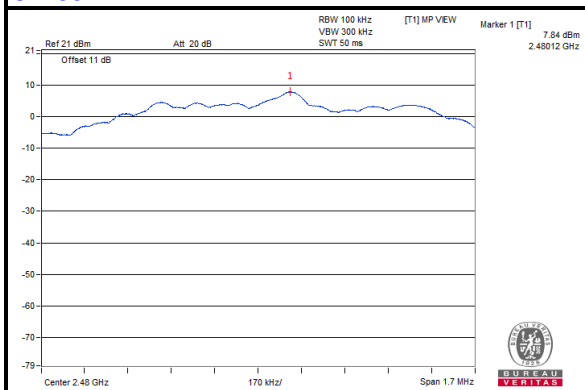
CH 0



CH 19



CH 39

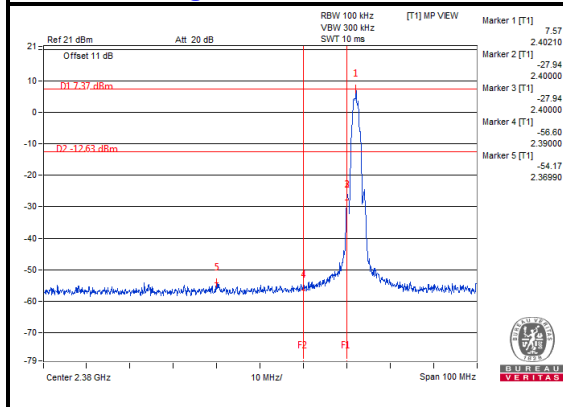




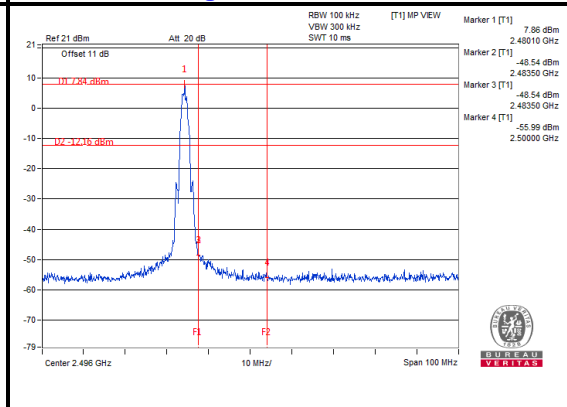
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Test Report No.: RF191023W004

CH 0 Band Edge



CH 39 Band Edge





Test Report No.: RF191023W004

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF191023W004

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.

---END---