

BUREAU
VERITAS

Test Report No.: RF190610W004



FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	Lenovo(Shanghai) Electronics Technology Co., Ltd.
Address:	Section 304-305, Building No. 4, # 222, Meiyue Road, China (Shanghai) Pilot Free Trade Zone

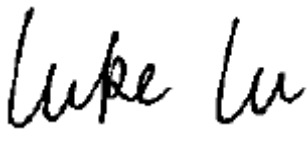
Manufacturer or Supplier:	Lenovo PC HK Limited
Address:	23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong
Product:	ThinkReality A6 Controller
Brand Name:	ThinkReality
Model Name:	ThinkReality A6 Controller
FCC ID:	O57TRA6CON
Date of tests:	Jun. 11, 2019 ~ Jun. 26, 2019

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: Jul. 01, 2019	 Date: Jul. 01, 2019

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BV 7Layers Communications Technology
(Shenzhen) Co. Ltd

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

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



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	8
2.2.1 CONFIGURATION OF SYSTEM UNDER TEST	9
2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	9
2.3 DUTY CYCLE OF TEST SIGNAL	11
2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS	12
2.5 DESCRIPTION OF SUPPORT UNITS	12
3 TEST TYPES AND RESULTS.....	13
3.1 CONDUCTED EMISSION MEASUREMENT	13
3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	13
3.1.2 TEST INSTRUMENTS.....	13
3.1.3 TEST PROCEDURES	14
3.1.4 DEVIATION FROM TEST STANDARD	14
3.1.5 TEST SETUP	15
3.1.6 EUT OPERATING CONDITIONS	15
3.1.7 TEST RESULTS	16
3.2 RADIATED EMISSION MEASUREMENT	18
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	18
3.2.2 TEST INSTRUMENTS.....	19
3.2.3 TEST PROCEDURES	20
3.2.4 DEVIATION FROM TEST STANDARD	20
3.2.5 TEST SETUP	21
3.2.6 EUT OPERATING CONDITIONS	22
3.2.7 TEST RESULTS	23
3.3 6 DB BANDWIDTH MEASUREMENT	33
3.3.1 LIMITS OF 6DB BANDWIDTH MEASUREMENT	33
3.3.2 TEST INSTRUMENTS.....	33
3.3.3 TEST PROCEDURE.....	33
3.3.4 DEVIATION FROM TEST STANDARD	34



3.3.5	TEST SETUP	34
3.3.6	EUT OPERATING CONDITIONS	34
3.3.7	TEST RESULTS	35
3.4	CONDUCTED OUTPUT POWER.....	37
3.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	37
3.4.2	TEST SETUP	37
3.4.3	TEST INSTRUMENTS.....	37
3.4.4	TEST PROCEDURES	37
3.4.5	DEVIATION FROM TEST STANDARD	37
3.4.6	EUT OPERATING CONDITIONS	37
3.4.7	TEST RESULTS	38
3.4.7.1	MAXIMUM PEAK OUTPUT POWER	38
3.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE).....	39
3.5	POWER SPECTRAL DENSITY MEASUREMENT	40
3.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	40
3.5.2	TEST SETUP	40
3.5.3	TEST INSTRUMENTS.....	40
3.5.4	TEST PROCEDURE.....	40
3.5.5	DEVIATION FROM TEST STANDARD	40
3.5.6	EUT OPERATING CONDITION	40
3.5.7	TEST RESULTS	41
3.6	OUT OF BAND EMISSION MEASUREMENT	43
3.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	43
3.6.2	TEST SETUP	43
3.6.3	TEST INSTRUMENTS.....	43
3.6.4	TEST PROCEDURE.....	43
3.6.5	DEVIATION FROM TEST STANDARD	44
3.6.6	EUT OPERATING CONDITION	44
3.6.7	TEST RESULTS	44
4	PHOTOGRAPHS OF THE TEST CONFIGURATION	49
5	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	50



Test Report No.: RF190610W004

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF190610W004	Original release	Jul. 01, 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	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -23.65dB at 10.476000MHz.
15.205 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -13.97dB at 2483.5MHz.
15.247(d)	Out of band Emission Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used

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
All Radiated emissions	±4.48dB
Conducted emissions	±2 dB
Occupied Channel Bandwidth	±21.7KHz
Conducted Output power	±1.03 dB
Power Spectral Density	±0.95 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	ThinkReality A6 Controller
BRAND NAME	ThinkReality
MODEL NAME	ThinkReality A6 Controller
NOMINAL VOLTAGE	5.0Vdc (host equipment) 4.35Vdc (Li-ion, battery)
MODULATION TECHNOLOGY	GFSK
MODULATION TYPE	BT-LE(GFSK) for GFSK
TRANSMISSION RATE	BT_LE: 1 Mbps; 2 Mbps
OPERATING FREQUENCY	2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	BT-LE: 0.809mW (Maximum)
ANTENNA TYPE	PCB Antenna with 0.42dBi gain
HW VERSION	LSC01-MB-V3.2
SW VERSION	2.4.7
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: non-shielded, detachable, 1.0m

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	1TX /1RX



3. The EUT was powered by the following adapter and battery:

ADAPTER 1	
BRAND:	Lenovo
MODEL:	SC-31
INPUT:	AC100 - 240V, 0.8A
OUTPUT:	DC5V, 3A/ DC9V, 3A
MANUFACTURER	SALOM

BATTERY	
BRAND:	Lenovo
MODEL:	L17D1P36
OUTPUT:	DC4.35V, 550mAh
MANUFACTURER	Celxpert

4. The EUT matched the following USB cable:

TYPE C USB CABLE	
BRAND:	Lenovo
MODEL:	LGBUC004-CS-H
SIGNAL LINE:	1.0 METER

5. 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

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 TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	39	GFSK	GFSK	1/2

**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 TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0,19, 39	GFSK	GFSK	1/2

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 TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 39	GFSK	GFSK	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 TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	GFSK	GFSK	1/2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	22deg. C, 54%RH	DC 5V/9V from adaptor	Tony Xiong
RE≥1G	22deg. C, 54%RH	DC 5V/9V from adaptor	Tony Xiong
PLC	24deg. C, 55%RH	DC 5V/9V from adaptor	Rain
APCM	25deg. C, 60%RH	4.35Vdc from battery	Rain

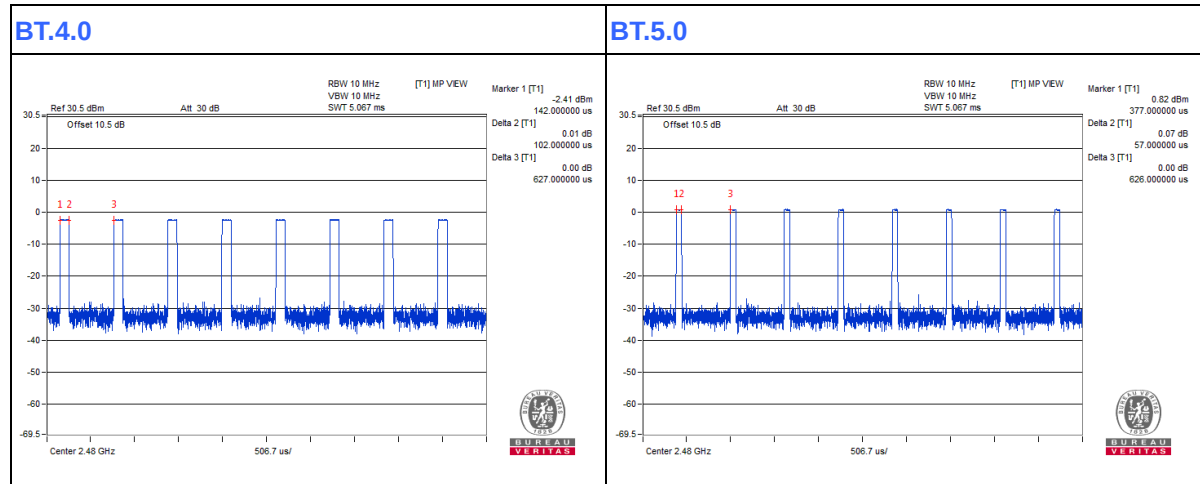


2.3 Duty Cycle of Test Signal

BT-LE

BT.4.0: Duty cycle = $102/627 = 0.162 < 98\%$, Duty factor = $10 * \log(1/0.162) = 7.904$

BT.5.0: Duty cycle = $57/626 = 0.091 < 98\%$, Duty factor = $10 * \log(1/0.091) = 10.409$





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 v04

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	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



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.

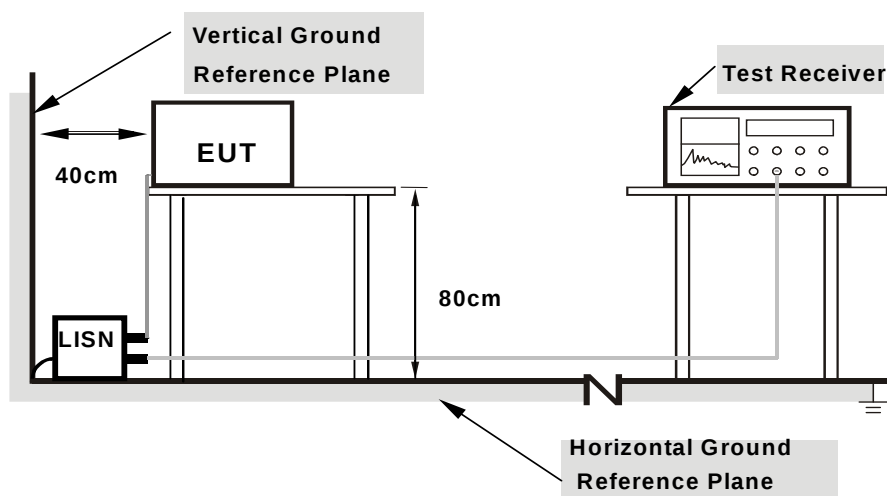
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

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
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	25deg. C, 52RH
Tested By	Tony Xiong		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154000	---	18.17	55.78	-37.61	L	ON	9.6
0.154000	32.99	---	65.78	-32.79	L	ON	9.6
0.572000	---	22.07	46.00	-23.93	L	ON	9.7
0.572000	29.21	---	56.00	-26.79	L	ON	9.7
1.700000	---	18.72	46.00	-27.28	L	ON	9.7
1.700000	24.45	---	56.00	-31.55	L	ON	9.7
9.088000	---	23.21	50.00	-26.79	L	ON	9.8
9.088000	27.68	---	60.00	-32.32	L	ON	9.8
10.688000	---	24.89	50.00	-25.11	L	ON	9.9
10.688000	28.84	---	60.00	-31.16	L	ON	9.9
24.624000	---	22.75	50.00	-27.25	L	ON	10.0
24.624000	26.64	---	60.00	-33.36	L	ON	10.0

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.

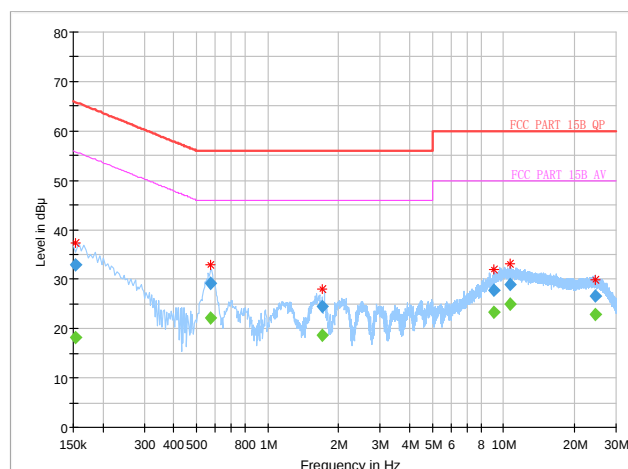
3. The emission levels of other frequencies were very low against the limit.

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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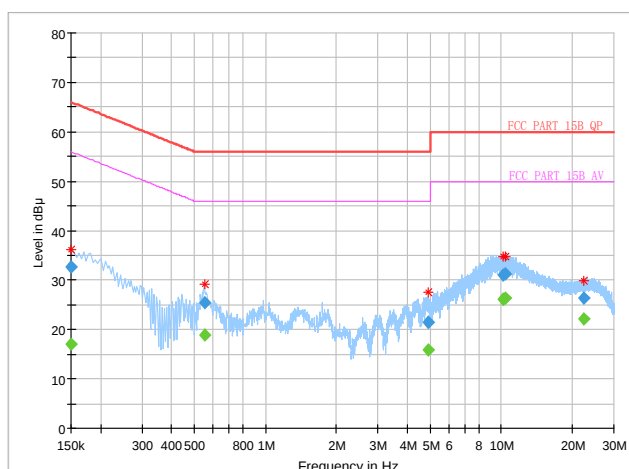
Test Report No.: RF190610W004

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25deg. C, 52RH
Tested By	Tony Xiong		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	17.09	56.00	-38.91	N	ON	9.8
0.150000	32.77	---	66.00	-33.23	N	ON	9.8
0.556000	---	18.97	46.00	-27.03	N	ON	10.1
0.556000	25.34	---	56.00	-30.66	N	ON	10.1
4.896000	---	15.95	46.00	-30.05	N	ON	9.8
4.896000	21.56	---	56.00	-34.44	N	ON	9.8
10.232000	---	26.20	50.00	-23.80	N	ON	9.9
10.232000	30.96	---	60.00	-29.04	N	ON	9.9
10.476000	---	26.35	50.00	-23.65	N	ON	9.9
10.476000	31.22	---	60.00	-28.78	N	ON	9.9
22.332000	---	22.11	50.00	-27.89	N	ON	10.1
22.332000	26.44	---	60.00	-33.56	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
Loop antenna	Daze	ZN30900A	0708	Oct. 23,18	Oct. 22, 19
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	Jul. 09,18	Jul. 08,19
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jul. 09,18	Jul. 08,19
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 09,18	Jul. 08,19
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Jul. 09,18	Jul. 08,19

- 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 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.

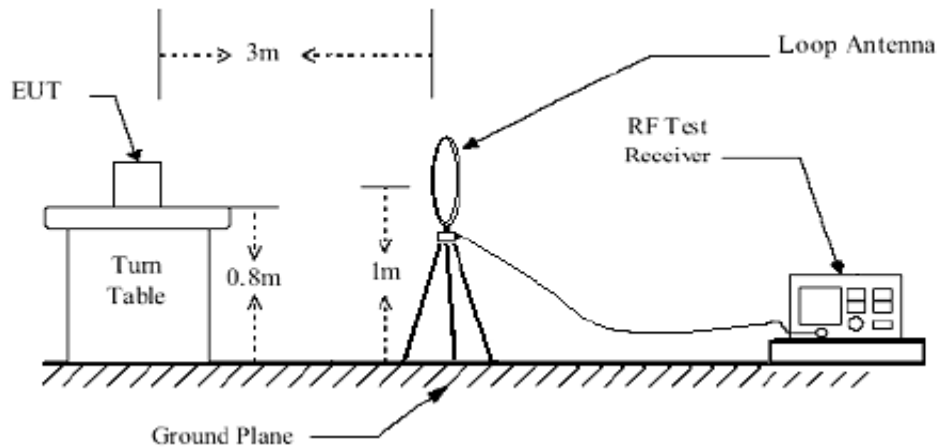
3.2.4 DEVIATION FROM TEST STANDARD

No deviation

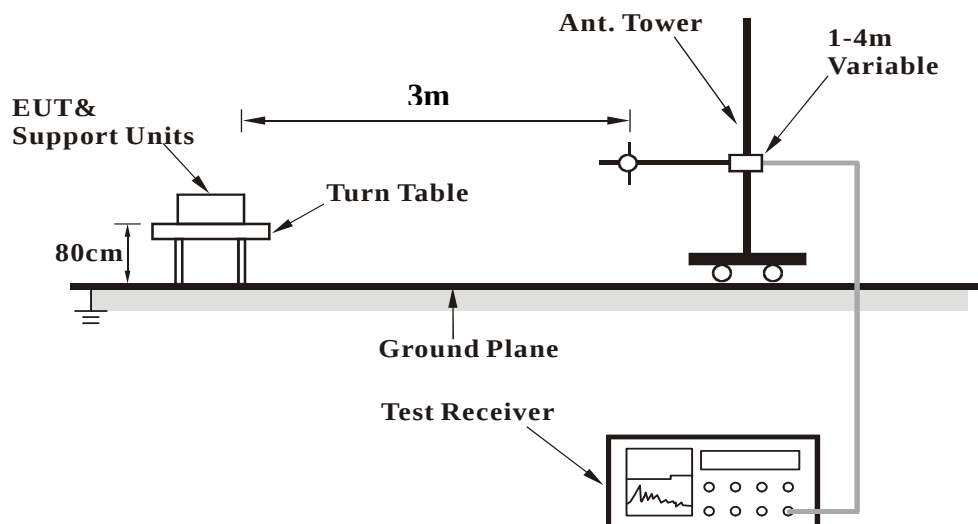


3.2.5 TEST SETUP

< Frequency Range below 30MHz >

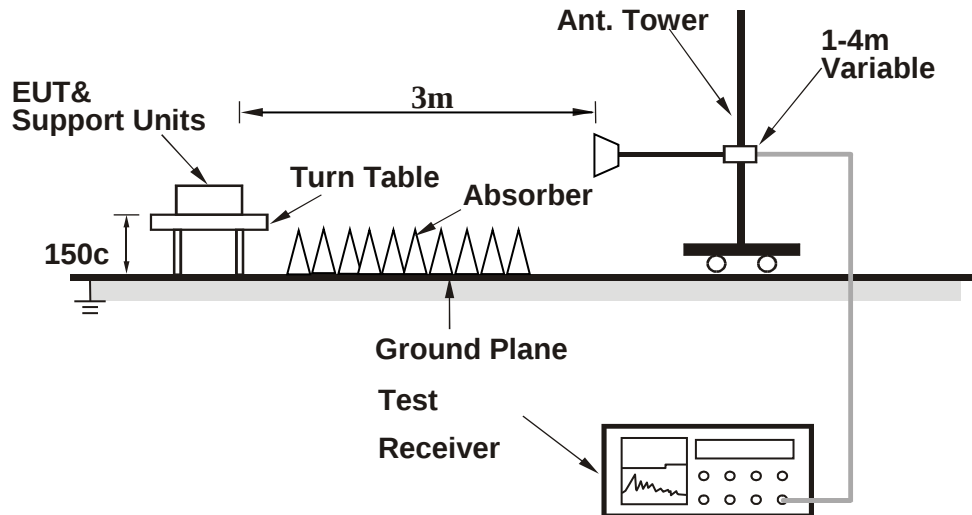


< Frequency Range 30MHz~1GHz >





<Frequency Range above 1GHz>



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:

9 KHz – 30 KHz data: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

30 MHz – 1GHz data:

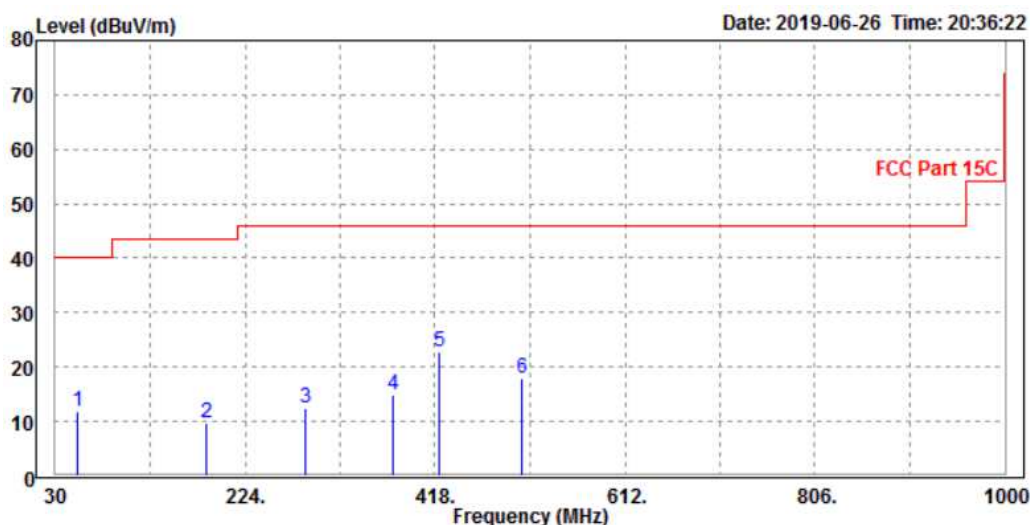
BT-LE (1MHz) (GFSK)

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
52.31	12.01	41.26	40	-27.99	7.05	1.02	37.32	100	0	Peak
185.2	9.79	34.26	43.5	-33.71	10.43	1.72	36.62	100	0	Peak
286.08	12.34	33.11	46	-33.66	13.79	2.16	36.72	100	0	Peak
375.32	14.97	32.83	46	-31.03	16.43	2.52	36.81	100	0	Peak
422.85	22.94	39.61	46	-23.06	17.5	2.7	36.87	100	0	Peak
507.24	17.81	33.22	46	-28.19	18.62	3	37.03	100	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





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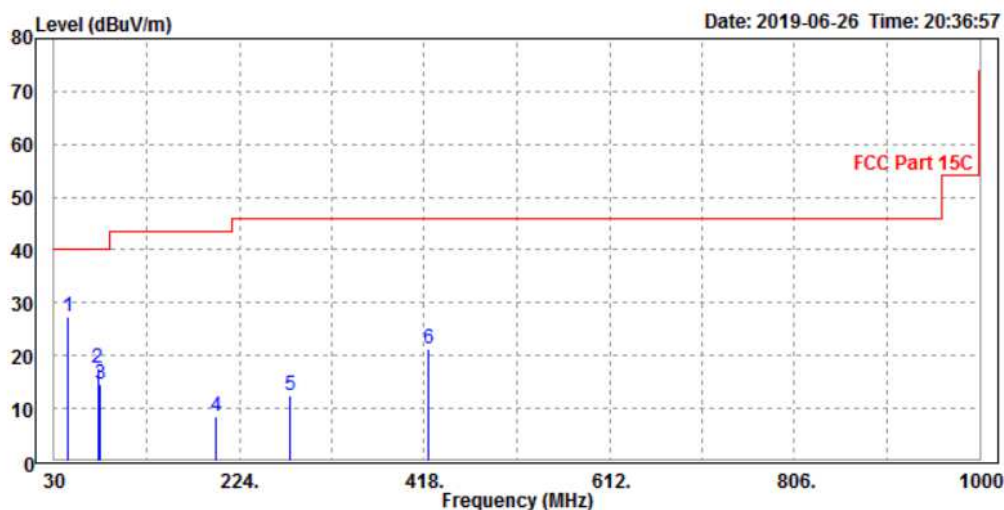
Test Report No.: RF190610W004

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
43.58	27.3	54.41	40	-12.7	9.33	1	37.44	100	0	Peak
75.59	17.59	45.74	40	-22.41	7.99	1.2	37.34	100	0	Peak
77.53	14.6	42.61	40	-25.4	8.13	1.2	37.34	100	0	Peak
198.78	8.63	32.63	43.5	-34.87	10.78	1.78	36.56	100	0	Peak
276.38	12.47	33.31	46	-33.53	13.73	2.13	36.7	100	0	Peak
422.85	21.15	37.7	46	-24.85	17.62	2.7	36.87	100	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





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Test Report No.: RF190610W004

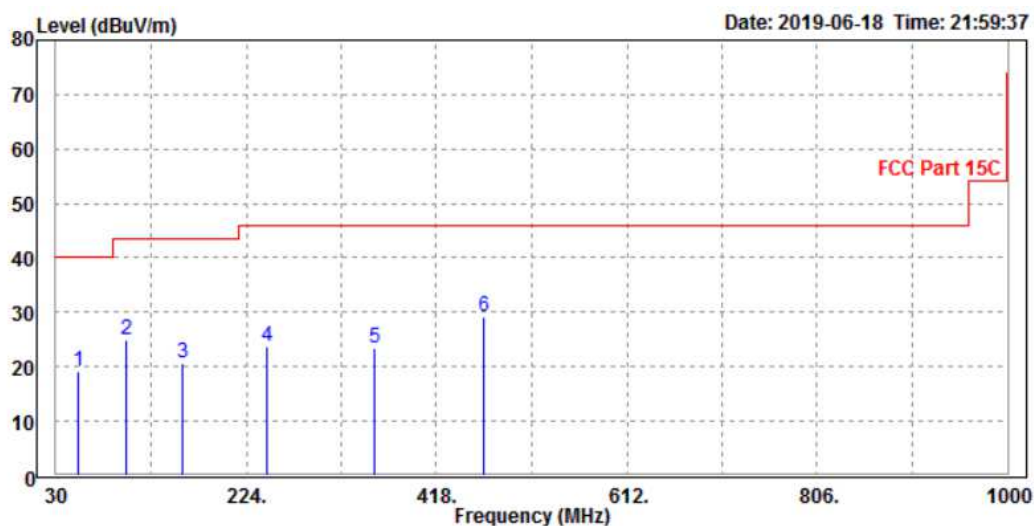
BT-LE (2MHz) (GFSK)

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
52.36	19.31	48.56	40	-20.69	7.05	1.02	37.32	100	0	Peak
101.25	25.04	51.25	43.5	-18.46	9.62	1.32	37.15	100	0	Peak
158.96	20.69	45.36	43.5	-22.81	10.42	1.65	36.74	100	0	Peak
245.68	23.86	45.67	46	-22.14	12.81	2.02	36.64	100	0	Peak
355.12	23.31	41.85	46	-22.69	15.81	2.44	36.79	100	0	Peak
465.89	29.21	45.23	46	-16.79	18.06	2.86	36.94	100	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





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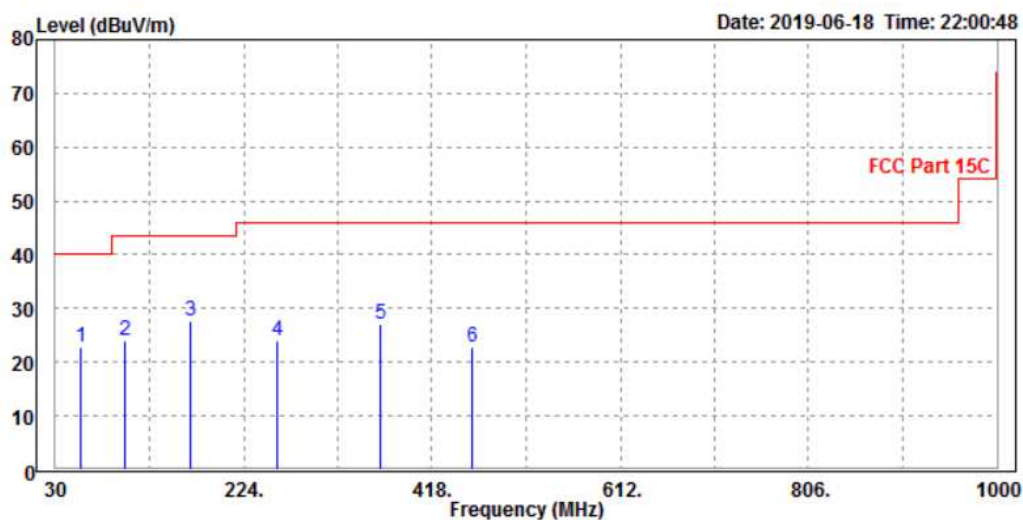
Test Report No.: RF190610W004

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
56.48	22.88	52.15	40	-17.12	7.01	1.05	37.33	100	360	Peak
101.24	24.13	50.24	43.5	-19.37	9.73	1.32	37.16	100	360	Peak
168.54	27.75	52.36	43.5	-15.75	10.4	1.68	36.69	100	360	Peak
258.45	23.98	45.21	46	-22.02	13.37	2.07	36.67	100	360	Peak
365.21	27.15	45.25	46	-18.85	16.22	2.48	36.8	100	360	Peak
458.65	22.68	38.65	46	-23.32	18.12	2.84	36.93	100	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





BUREAU VERITAS Test Report No.: RF190610W004

ABOVE 1GHz TEST DATA:

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

BT-LE (1MHz) (GFSK)

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	47.25	50.71	74	-26.75	33.1	4.88	41.44	130	255	Peak
2390	35.55	39.01	54	-18.45	33.1	4.88	41.44	130	255	Average
2402	97.6	101.03			33.12	4.89	41.44	130	255	Peak
2402	75.93	79.36			33.12	4.89	41.44	130	255	Average
2483.5	47.18	50.39	74	-26.82	33.27	4.98	41.46	130	255	Peak
2483.5	35.99	39.2	54	-18.01	33.27	4.98	41.46	130	255	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	49.17	53.52	74	-24.83	32.21	4.88	41.44	100	53	Peak
2390	35.29	39.64	54	-18.71	32.21	4.88	41.44	100	53	Average
2402	91.39	95.69			32.25	4.89	41.44	100	53	Peak
2402	69.79	74.09			32.25	4.89	41.44	100	53	Average
2483.5	45.45	49.47	74	-28.55	32.46	4.98	41.46	100	53	Peak
2483.5	34.96	38.98	54	-19.04	32.46	4.98	41.46	100	53	Average

REMARKS:

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



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Test Report No.: RF190610W004

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	46.76	50.22	74	-27.24	33.1	4.88	41.44	185	256	Peak
2390	35.51	38.97	54	-18.49	33.1	4.88	41.44	185	256	Average
2440	97.98	101.3			33.19	4.94	41.45	185	256	Peak
2440	76.38	79.7			33.19	4.94	41.45	185	256	Average
2483.5	46.73	49.94	74	-27.27	33.27	4.98	41.46	185	256	Peak
2483.5	35.76	38.97	54	-18.24	33.27	4.98	41.46	185	256	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	47.13	51.48	74	-26.87	32.21	4.88	41.44	140	50	Peak
2390	35.23	39.58	54	-18.77	32.21	4.88	41.44	140	50	Average
2440	92.85	97.02			32.34	4.94	41.45	140	50	Peak
2440	71.04	75.21			32.34	4.94	41.45	140	50	Average
2483.5	45.31	49.33	74	-28.69	32.46	4.98	41.46	140	50	Peak
2483.5	34.89	38.91	54	-19.11	32.46	4.98	41.46	140	50	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.: RF190610W004

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	40.75	44.21	74	-33.25	33.1	4.88	41.44	130	255	Peak
2390	29.6	33.06	54	-24.4	33.1	4.88	41.44	130	255	Average
2480	98.3	101.52			33.26	4.98	41.46	130	255	Peak
2480	76.66	79.88			33.26	4.98	41.46	130	255	Average
2483.5	59.04	62.25	74	-14.96	33.27	4.98	41.46	130	255	Peak
2483.5	31.87	35.08	54	-22.13	33.27	4.98	41.46	130	255	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	40.45	44.8	74	-33.55	32.21	4.88	41.44	100	0	Peak
2390	29.38	33.73	54	-24.62	32.21	4.88	41.44	100	0	Average
2480	93.19	97.22			32.45	4.98	41.46	100	0	Peak
2480	71.47	75.5			32.45	4.98	41.46	100	0	Average
2483.5	53.99	58.01	74	-20.01	32.46	4.98	41.46	100	0	Peak
2483.5	29.94	33.96	54	-24.06	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.: RF190610W004

BT-LE (2MHz) (GFSK)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	49.75	53.21	74	-24.25	33.1	4.88	41.44	100	120	Peak
2390	38.69	42.15	54	-15.31	33.1	4.88	41.44	100	120	Average
2402	90.23	93.66			33.12	4.89	41.44	100	120	Peak
2402	76.02	79.45			33.12	4.89	41.44	100	120	Average
2483.5	49.42	52.63	74	-24.58	33.27	4.98	41.46	100	120	Peak
2483.5	40.03	43.24	54	-13.97	33.27	4.98	41.46	100	120	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	48.91	53.26	74	-25.09	32.21	4.88	41.44	100	232	Peak
2390	38.23	42.58	54	-15.77	32.21	4.88	41.44	100	232	Average
2402	96.42	100.72			32.25	4.89	41.44	100	232	Peak
2402	81.12	85.42			32.25	4.89	41.44	100	232	Average
2483.5	48.39	52.41	74	-25.61	32.46	4.98	41.46	100	232	Peak
2483.5	38.29	42.31	54	-15.71	32.46	4.98	41.46	100	232	Average

REMARKS:

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



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Test Report No.: RF190610W004

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	49.78	53.24	74	-24.22	33.1	4.88	41.44	100	236	Peak
2390	39.12	42.58	54	-14.88	33.1	4.88	41.44	100	236	Average
2440	97.93	101.25			33.19	4.94	41.45	100	236	Peak
2440	83.13	86.45			33.19	4.94	41.45	100	236	Average
2483.5	49.94	53.15	74	-24.06	33.27	4.98	41.46	100	236	Peak
2483.5	39.58	42.79	54	-14.42	33.27	4.98	41.46	100	236	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	48.01	52.36	74	-25.99	32.21	4.88	41.44	100	125	Peak
2390	38.3	42.65	54	-15.7	32.21	4.88	41.44	100	125	Average
2440	90.04	94.21			32.34	4.94	41.45	100	125	Peak
2440	73.47	77.64			32.34	4.94	41.45	100	125	Average
2483.5	48.67	52.69	74	-25.33	32.46	4.98	41.46	100	125	Peak
2483.5	38.33	42.35	54	-15.67	32.46	4.98	41.46	100	125	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.: RF190610W004

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	49.22	52.68	74	-24.78	33.1	4.88	41.44	100	242	Peak
2390	38.06	41.52	54	-15.94	33.1	4.88	41.44	100	242	Average
2480	97.02	100.24			33.26	4.98	41.46	100	242	Peak
2480	84.3	87.52			33.26	4.98	41.46	100	242	Average
2483.5	48.95	52.16	74	-25.05	33.27	4.98	41.46	100	242	Peak
2483.5	39.18	42.39	54	-14.82	33.27	4.98	41.46	100	242	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	48.29	52.64	74	-25.71	32.21	4.88	41.44	100	132	Peak
2390	38.24	42.59	54	-15.76	32.21	4.88	41.44	100	132	Average
2480	88.53	92.56			32.45	4.98	41.46	100	132	Peak
2480	71.66	75.69			32.45	4.98	41.46	100	132	Average
2483.5	48.44	52.46	74	-25.56	32.46	4.98	41.46	100	132	Peak
2483.5	38.49	42.51	54	-15.51	32.46	4.98	41.46	100	132	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
CBT32 BLUETOOTH TESTER 4HU	Rohde&Schwarz	CBT32	101176	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

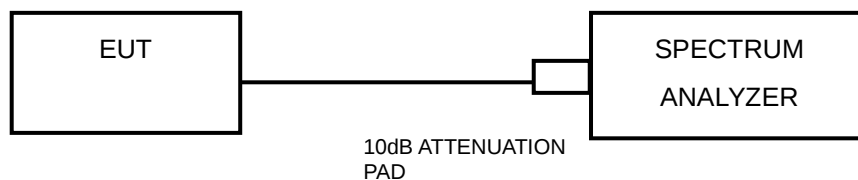
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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

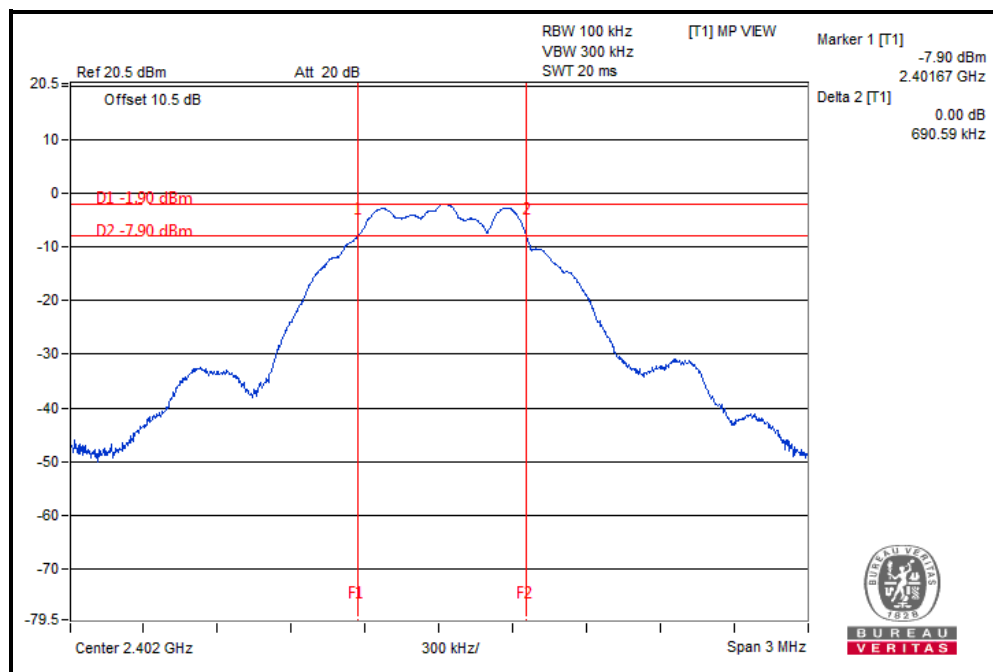
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



3.3.7 TEST RESULTS

BT-LE (1MHz) (GFSK)

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



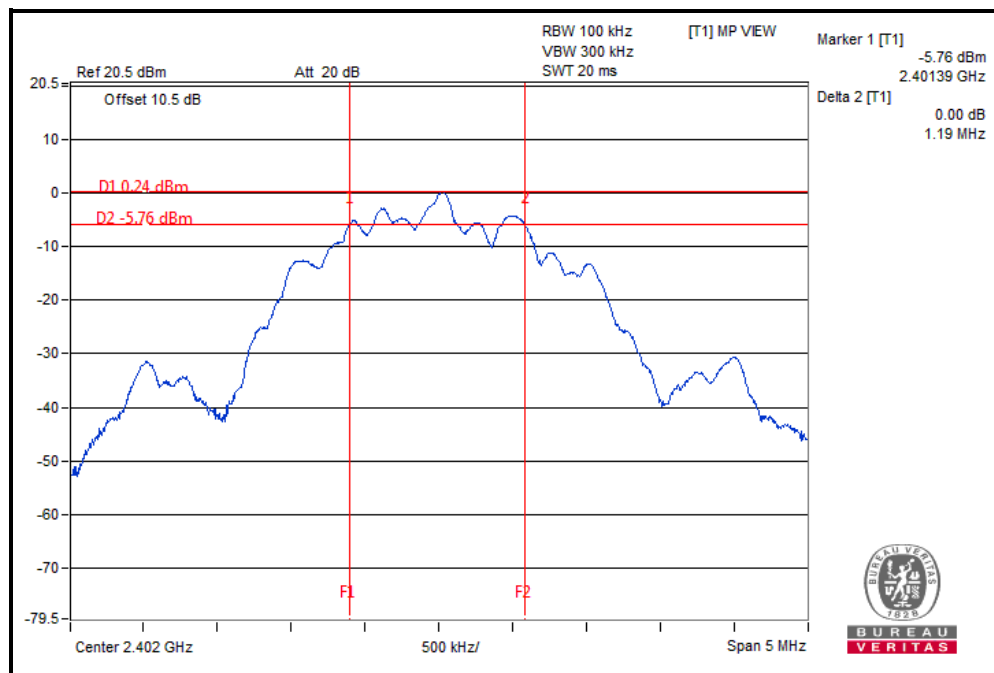


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VERITAS

Test Report No.: RF190610W004

BT-LE (2MHz) (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.19	0.5	PASS
19	2440	1.19	0.5	PASS
39	2480	1.19	0.5	PASS



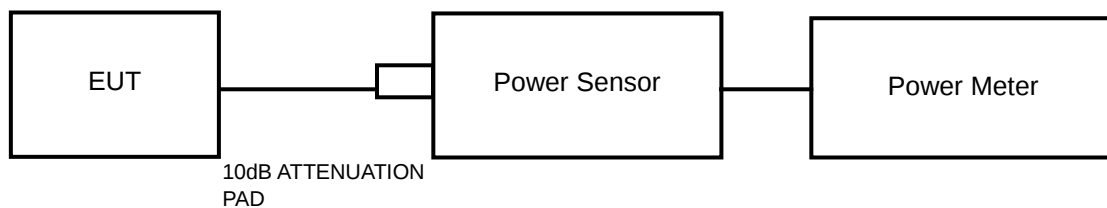


3.4 CONDUCTED OUTPUT POWER

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 (1MHz) (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	-0.92	0.809	1	PASS
19	2440	-1.15	0.767	1	PASS
39	2480	-1.47	0.713	1	PASS

BT-LE (2MHz) (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	-2.17	0.607	1	PASS
19	2440	-2.56	0.555	1	PASS
39	2480	-3.02	0.499	1	PASS



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.

BT-LE (1MHz) (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	-1.02	N/A
19	2440	-1.25	N/A
39	2480	-1.56	N/A

BT-LE (2MHz) (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	-2.31	N/A
19	2440	-2.69	N/A
39	2480	-3.17	N/A

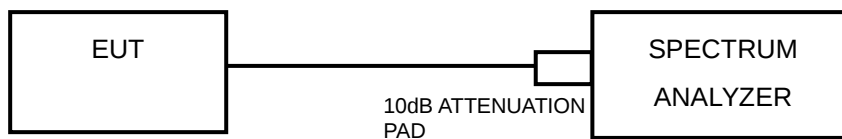


3.5 POWER SPECTRAL DENSITY MEASUREMENT

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

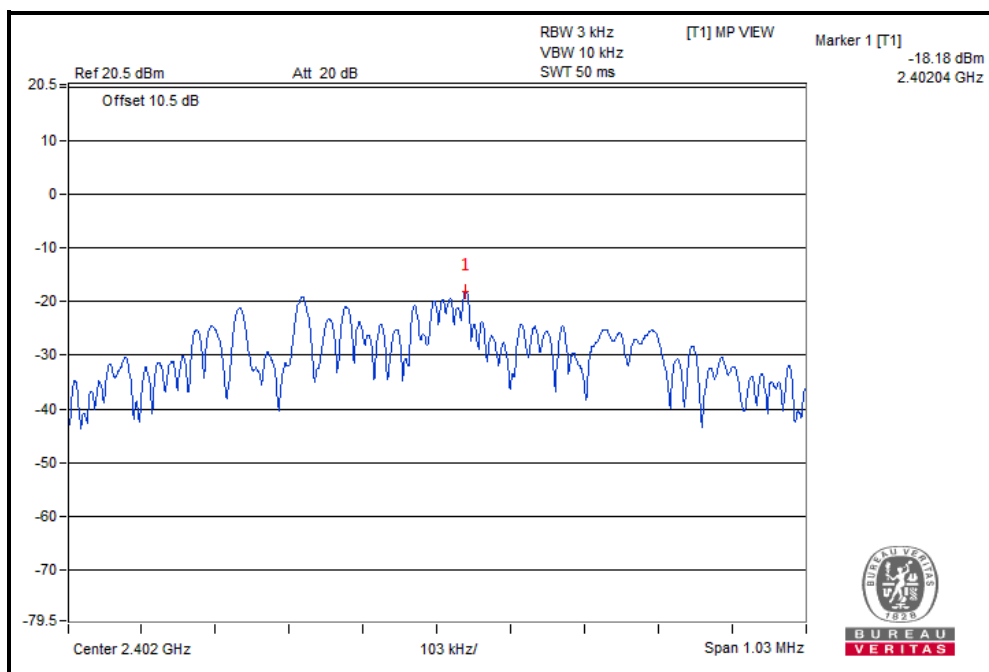
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



3.5.7 TEST RESULTS

BT-LE (1MHz) (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-18.18	8	PASS
19	2440	-18.70	8	PASS
39	2480	-18.97	8	PASS



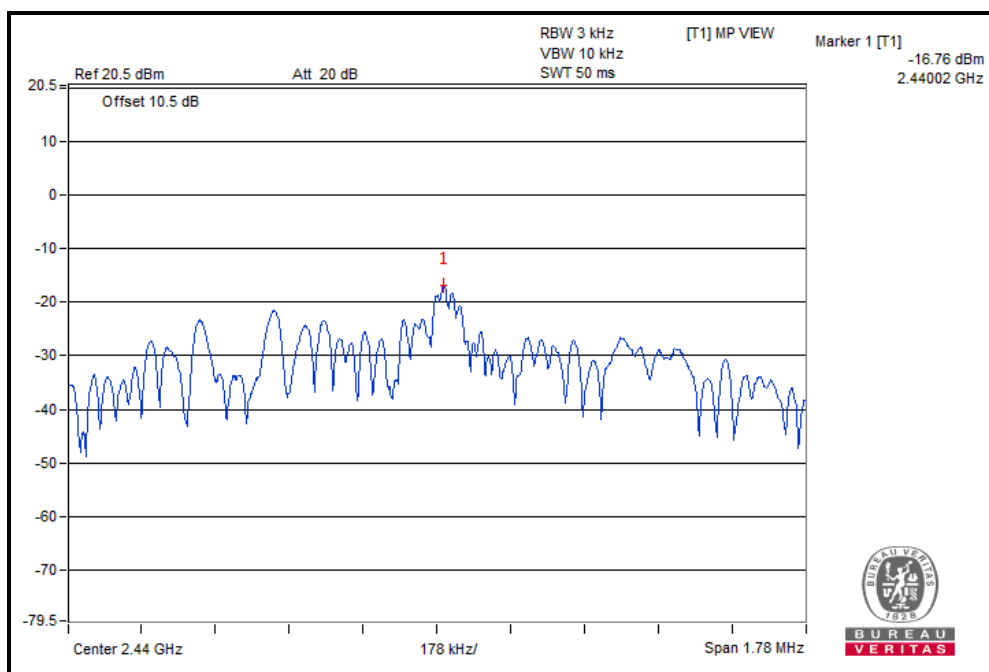


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Test Report No.: RF190610W004

BT-LE (2MHz) (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-17.03	8	PASS
19	2440	-16.76	8	PASS
39	2480	-16.78	8	PASS



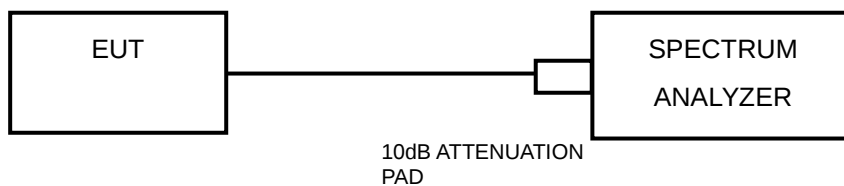


3.6 OUT OF BAND EMISSION MEASUREMENT

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.

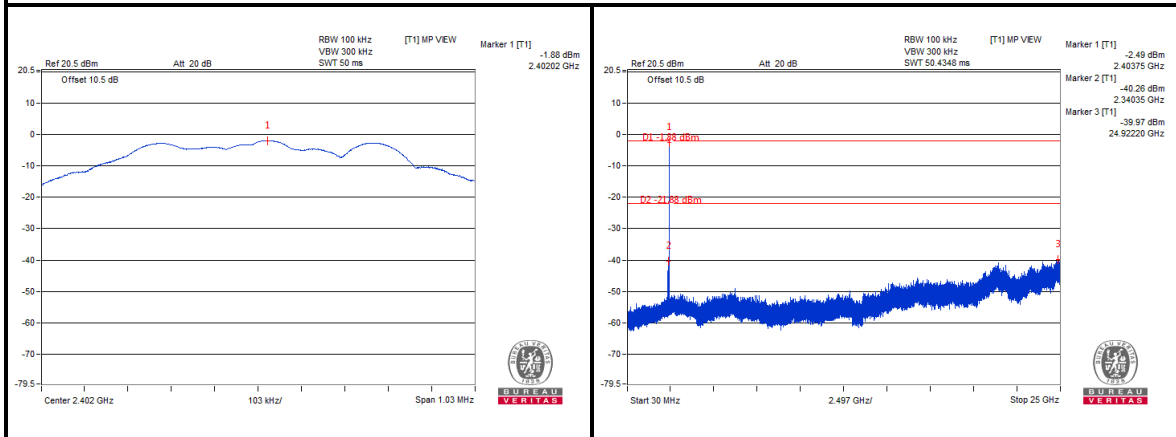


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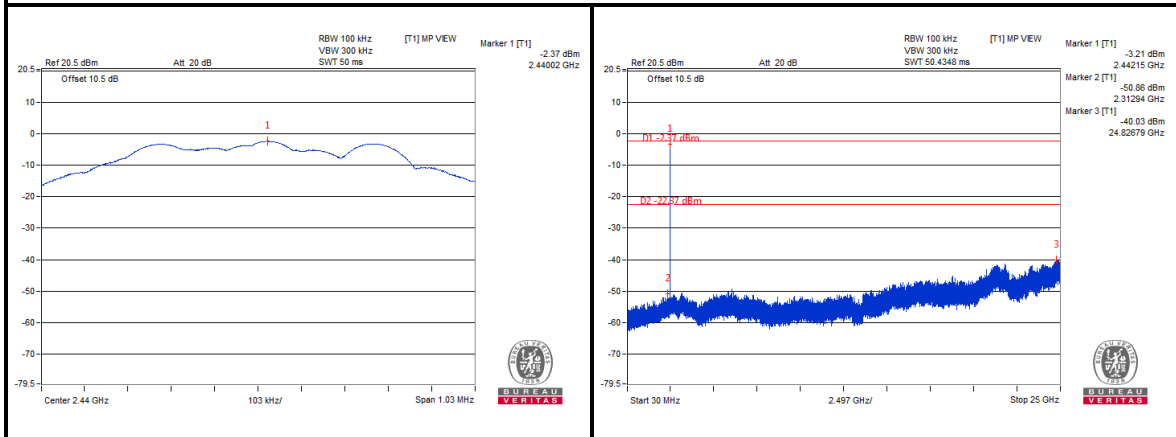
Test Report No.: RF190610W004

BT-LE (1MHz) (GFSK)

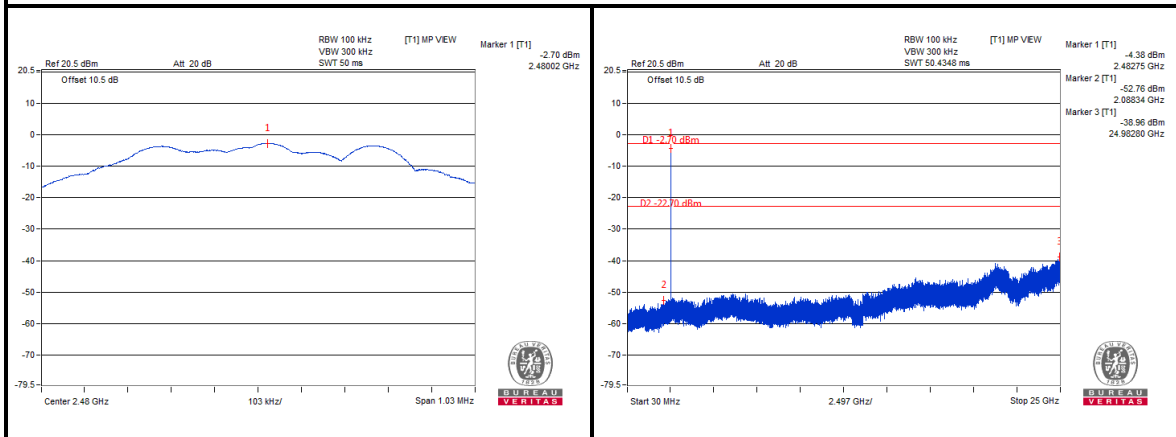
CH 0



CH 19



CH 39

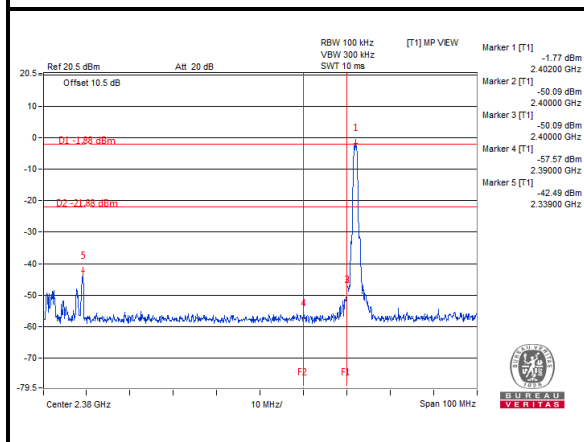




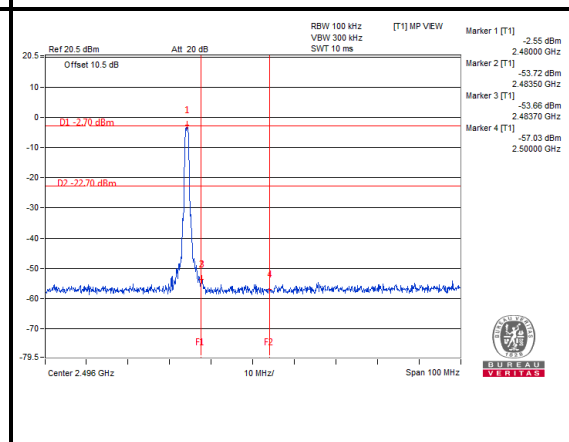
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Test Report No.: RF190610W004

CH 0 Band Edge



CH 39 Band Edge



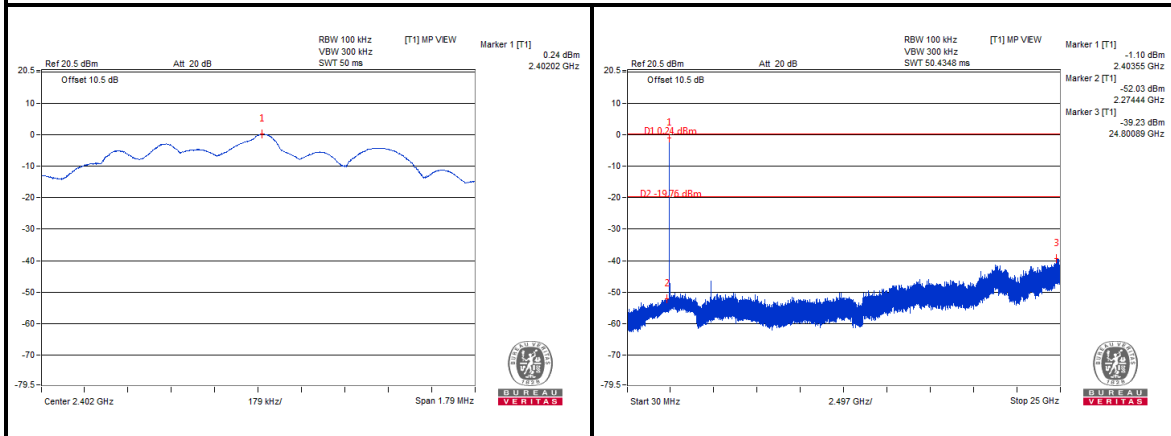


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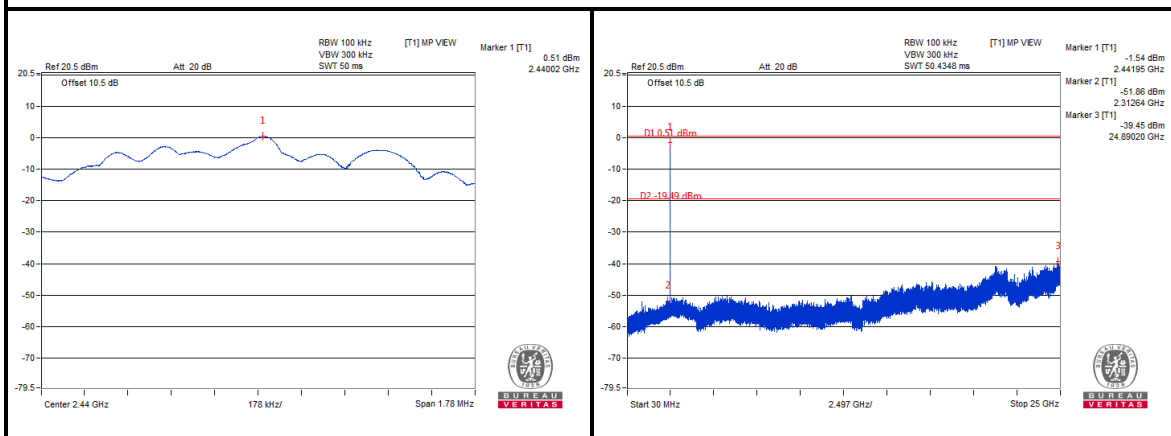
Test Report No.: RF190610W004

BT-LE (2MHz) (GFSK)

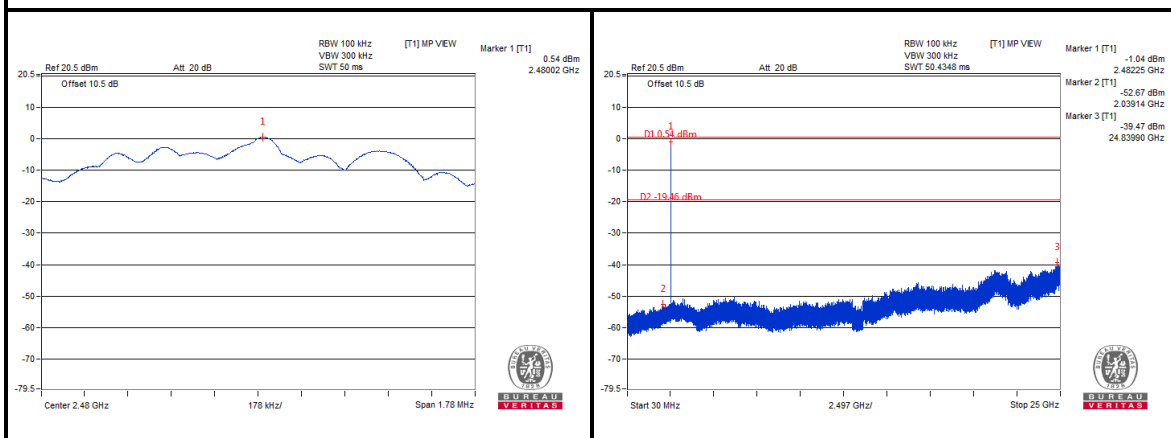
CH 0



CH 19



CH 39

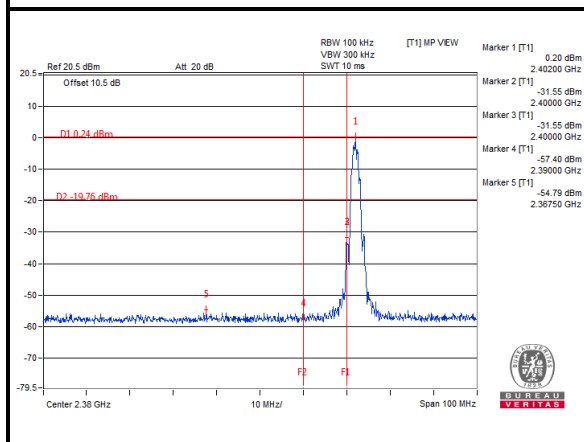




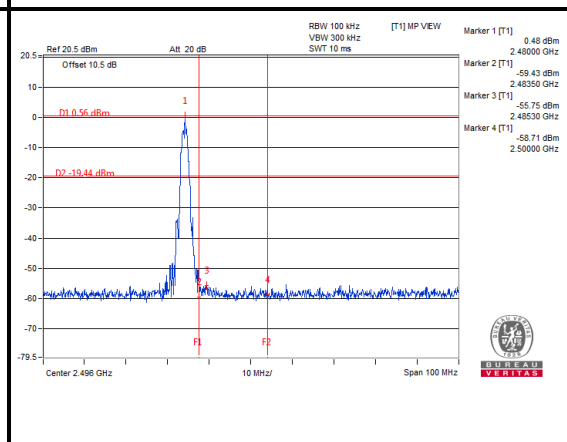
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Test Report No.: RF190610W004

CH 0 Band Edge



CH 39 Band Edge





Test Report No.: RF190610W004

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF190610W004

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---