



<b>Test Report Number:</b>	<b>LCZE24070038</b>	<b>Total Page(s):</b> 30
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<b>Applicant Name:</b>	Kinglumi Co., Ltd
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<b>Applicant Address:</b>	First Floor, Unit 1, Building 1, Factory Building, West Side of Songbai Highway, North Side of JiheExpressway, Tangtou Community, Shiyan Street, Bao'an District, Shenzhen City, Guangdong, China.
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<b>Product Name:</b>	LED Track light
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<b>Model / Type Reference:</b>	61187.8XX, 61187.8XX.1, 61188.8XX, 61190.8XX, 61190.8XX.1, 61191.8XX, 61189.8XX, 61192.8XX
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<b>FCC ID:</b>	2A8BD-61191
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<b>Date of Issue:</b>	2025-06-12
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<b>Testing Laboratory:</b>	LCTECH Guangdong Testing Services Co., Ltd. 2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China
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<b>Test Specification:</b>	FCC 47 CFR Part 15 Subpart C: Section 15.247
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<b>Test Result:</b>	Passed
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<b>Compiled by:</b>	<b>Reviewed by:</b>
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2025-06-12	Rex He
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A handwritten signature in black ink that reads 'Rex He'.

2025-06-12	Alan Tian
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A handwritten signature in black ink that reads 'Alan Tian'.

<i>Date</i>	<i>Name</i>	<i>Signature</i>	<i>Date</i>	<i>Name</i>	<i>Signature</i>
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<b>Remark:</b>
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N/A
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## 1 Summary of Test Results

Description of Test Item	Standard	Result
Antenna Requirement	FCC Part 15 Subpart C: 15.203/247(c)	PASS
AC Power Line Conducted Emission	FCC Part 15 Subpart C: 15.207	PASS
Conducted Peak Output Power	FCC Part 15 Subpart C: 15.247(b)	PASS
6 dB Bandwidth	FCC Part 15 Subpart C: 15.247(a)(2)(iii)	PASS
Power Spectral Density	FCC Part 15 Subpart C: 15.247(e)	PASS
Band Edge	FCC Part 15: 15.247(d)	PASS
Spurious Emission	FCC Part 15: 15.205/209	PASS
Note: N/A is an abbreviation for Not Applicable,		

**Test Standard Used:** 47 CFR Part 15 Subpart C: Section 15.247

**Test procedure used:** ANSI C63.10:2020

## 2 General test information

### 2.1 Description of EUT

Product Name	:	LED Track light
Model Number	:	61187.8XX, 61187.8XX.1, 61188.8XX, 61190.8XX, 61190.8XX.1, 61191.8XX, 61189.8XX, 61192.8XX
EUT function description	:	Please reference user manual of this device
Power supply	:	AC 120V/60Hz
FCC ID	:	2A8BD-61191
Radio Specification	:	Bluetooth V2.1+EDR
Operation frequency	:	2402MHz -2480MHz
Modulation	:	GFSK
Data rate	:	LE 1M PHY: 1Mb/s
Antenna Type	:	FPC Antenna
Antenna Gain	:	2.4dBi

Remark: The device meets the requirements stated within Parts 15.247(g)&(h) in that they were Developed under the Bluetooth protocol and operate as a true frequency hopping system. The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

According to the declaration from the applicant, this report covers the model as below: 61187.8XX, 61187.8XX.1, 61188.8XX, 61190.8XX, 61190.8XX.1, 61191.8XX, 61189.8XX, 61192.8XX. Above models have the same RF Chip, PCB layout, components, antenna and appearance, only the model power and CCT is different, therefore the test performed on the model 61191.8XX was fully tested in the report.



## 2.2 Operation channel list

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402 MHz	11	2422 MHz	21	2442 MHz	31	2462 MHz
2	2404 MHz	12	2424 MHz	22	2444 MHz	32	2464 MHz
3	2406 MHz	13	2426 MHz	23	2446 MHz	33	2466 MHz
4	2408 MHz	14	2428 MHz	24	2448 MHz	34	2468 MHz
5	2410 MHz	15	2430 MHz	25	2450 MHz	35	2470 MHz
6	2412 MHz	16	2432 MHz	26	2452 MHz	36	2472 MHz
7	2414 MHz	17	2434 MHz	27	2454 MHz	37	2474 MHz
8	2416 MHz	18	2436 MHz	28	2456 MHz	38	2476 MHz
9	2418 MHz	19	2438 MHz	29	2458 MHz	39	2478 MHz
10	2420 MHz	20	2440 MHz	30	2460 MHz	40	2480 MHz

Description of Assistant equipment	Manufacturer	Model number or Type	Other
notebook	Lenovo	Lenovo G475GX	Window 7 system
Mouse	Lenovo	M20N	0.7m long, unshielded

## 2.3 Test channel list

In section 15 31/m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2402 MHz
The middle channel	2440 MHz
The highest channel	2480 MHz

## 2.4 Testing

Date of receipt of test item : 2024-09-01  
Date (s) of performance of tests : 2024-09-01 to 2024-12-19

## 2.5 Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	15-35°C
Humidity range:	20-75%
Pressure range:	98-101kPa

## 2.6 Test laboratory

LC TECH Guangdong Testing Services Co., Ltd.

Add: 2/F., Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China

Test Sites: 1/F., Building I, Technology and Enterprise Development Center, Guangyuan Road, Xiaolan, Zhongshan, Guangdong, China

## 2.7 Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	3.74dB
Uncertainty for Radiation Emission test(30MHz-1GHz)	4.92dB
Uncertainty for Radiation Emission test (Above 1GHz)	4.23dB

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



### 3 Equipment list

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
<b>Radiated Emission (30 MHz–1000 MHz)</b> <input checked="" type="checkbox"/>						
1	EMI Test Receiver	R&S	ESCI 7	100965	2025-06-13	2026-06-12
2	Log-periodic Dipole Antenna	Schwarzbeck	VULB 9162	058	2025-06-14	2028-06-13
3	3m Semi-anechoic	Zhongshuo Electronics	9mx6mx6m	N/A	2024-12-17	2027-12-16
4	RF Cable	R&S	R01	10403	2024-12-09	2025-12-08
5	EMI Test Software	AUDIX	E3	Version No: 6.111221a	N/A	N/A
<b>Disturbance Voltage</b> <input checked="" type="checkbox"/>						
6	EMI Test Receiver	Rohde&Schwarz	ESCI	100939	2024-12-09	2025-12-08
7	Artificial Mains Network	ROHDE&SCHWARZ	ENV216	3560.6550.12	2024-12-09	2025-12-08
8	Shield Room	Rongxiang	8X5X3.5	992276296	2022-07-01	2027-06-30
9	Conducted Emission Test Software	FALA	EZ-EMC	Version No: LCTECH-03A	N/A	N/A
<b>Radiated Emission (Above 1 GHz)</b> <input checked="" type="checkbox"/>						
10	EMI Test Receiver	R&S	ESCI 7	100965	2025-06-13	2026-06-12
11	Log-periodic Dipole Antenna	Schwarzbeck	VULB 9162	058	2025-06-14	2028-06-13
12	3m Semi-anechoic	Zhongshuo Electronics	9mx6mx6m	N/A	2024-12-17	2027-12-16
13	RF Cable	R&S	R01	10403	2024-12-09	2025-12-08
14	CDNE	KeHuan	KH3663E	36630822	2025-06-13	2026-06-12
15	Doppelsteg Breitband Hornantenne Double Ridge Broadband Horn	Schwarzbeck	BBHA 9120 D	02777	2024-12-11	2025-12-10
16	Signal Analyzer	Keysight	N9020A	MY52220373	2024-12-09	2025-12-08
17	Pre-amplifier	sinancidian	COP-01G18G-45dB	N/A	2024-12-09	2025-12-08

## 4 Test Results

### 4.1 Antenna requirement

#### Standard requirement:

##### 15.203 requirement:

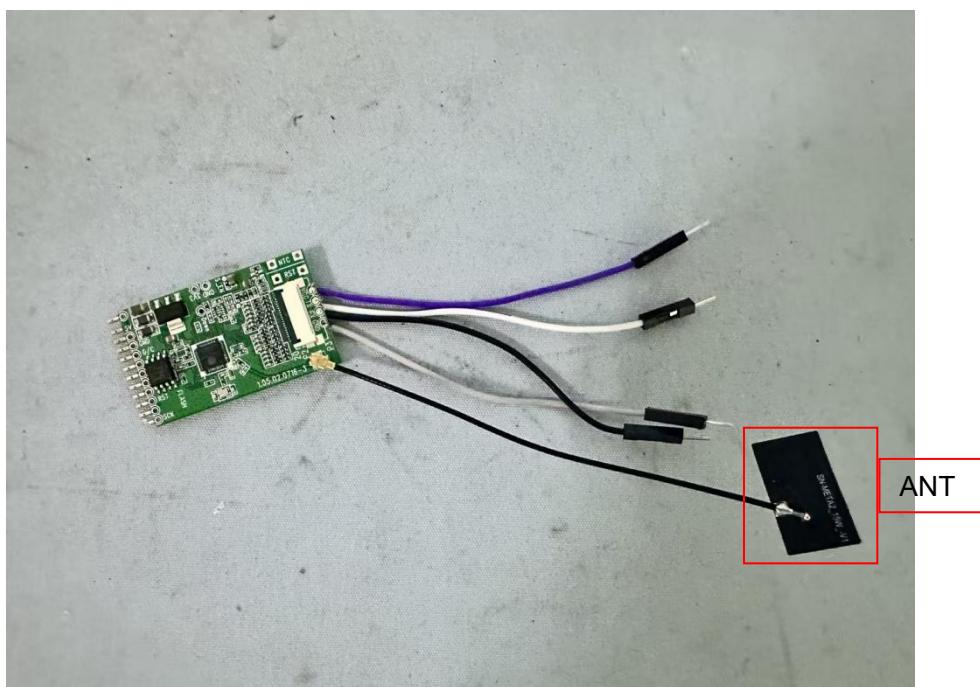
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit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

##### 15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

#### E.U.T Antenna:

The antenna is FPC antenna. It comply with the standard requirement.



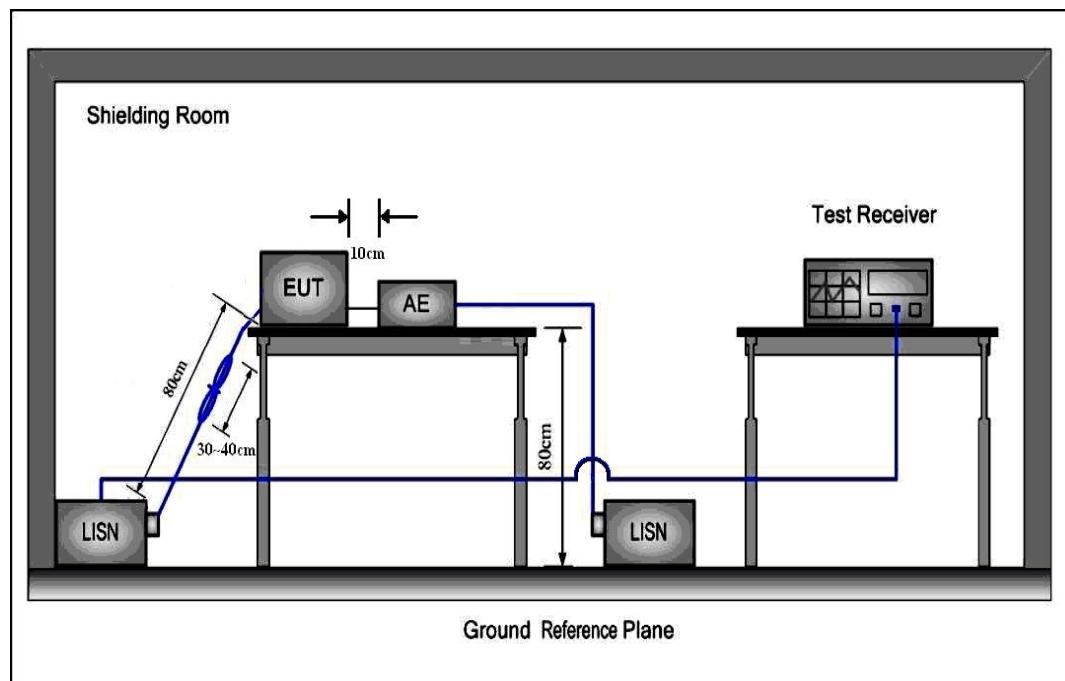
## 4.2 AC Power Line Conducted Emission

**Results:**

Date of testing	: Sep 01, 2024	Pass
Test procedure	: ANSI C63.10 Clause 6.2	
Frequency range	: 0.15- 30MHz	
Kind of test site	: shielded room	
Limits	: CFR Title 47 Part 15 Subpart C: Section 15.207	

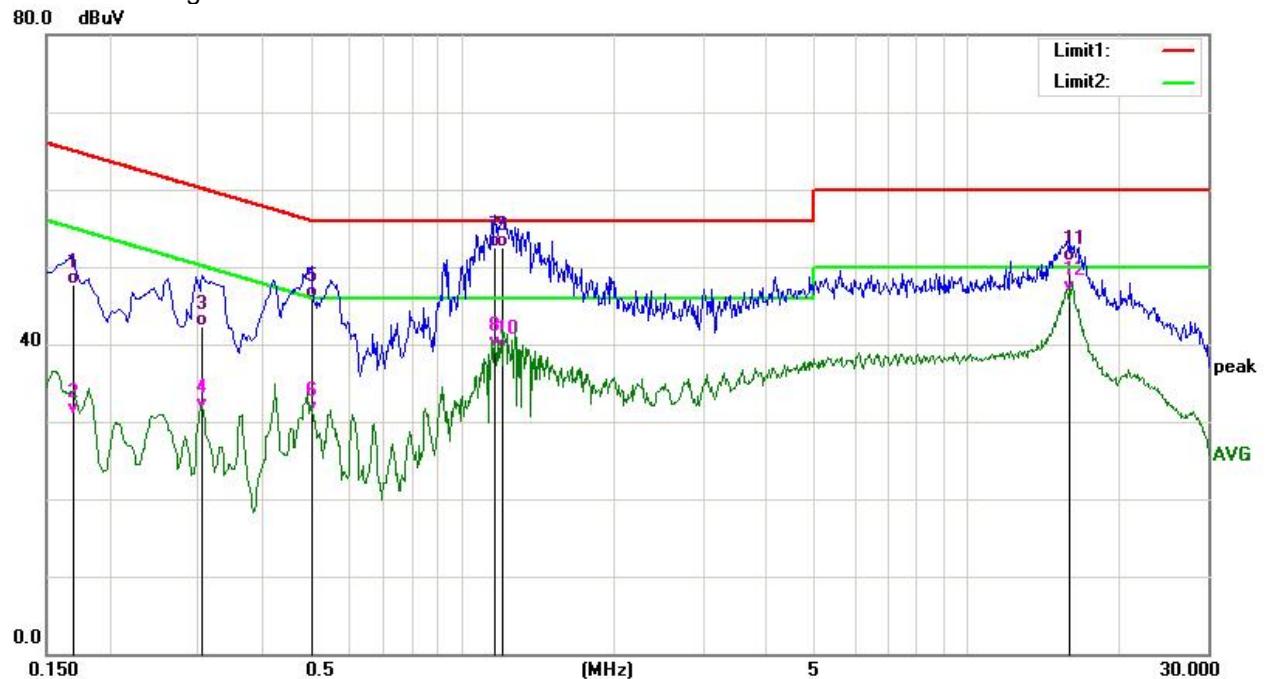
**Test setup**

Artificial Hand	: Not applied
Earthing	: Applied
Temperature	: 25°C
Humidity	: 57%
Air pressure	: 101KPA

**Test Connection Diagram**



Power Source :120Vac, 60Hz  
Terminal under Test: Live Line  
Peak and Average Scan:

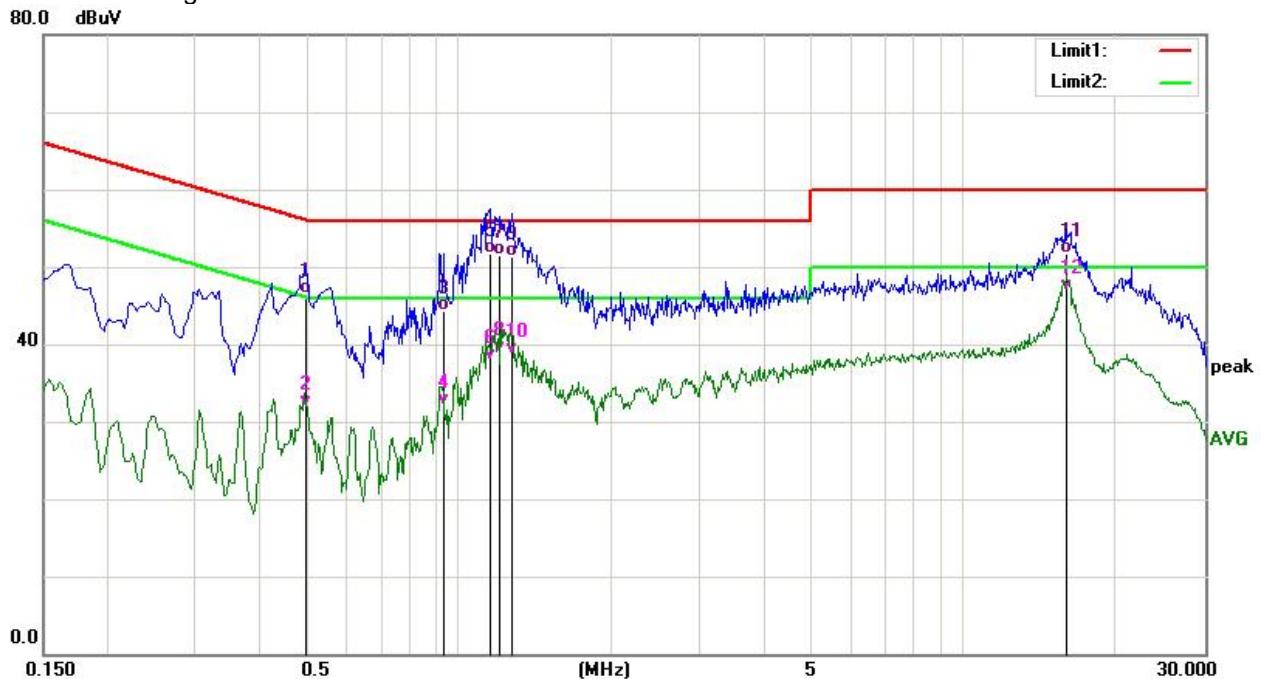


Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1700	37.98	9.75	47.73	64.96	-17.23	QP
2	0.1700	21.22	9.75	30.97	54.96	-23.99	AVG
3	0.3060	32.36	9.92	42.28	60.08	-17.80	QP
4	0.3060	21.56	9.92	31.48	50.08	-18.60	AVG
5	0.5020	35.81	10.10	45.91	56.00	-10.09	QP
6	0.5020	21.02	10.10	31.12	46.00	-14.88	AVG
7	1.1620	42.31	10.19	52.50	56.00	-3.50	QP
8	1.1620	29.41	10.19	39.60	46.00	-6.40	AVG
9	1.2020	42.32	10.18	52.50	56.00	-3.50	QP
10	1.2020	28.92	10.18	39.10	46.00	-6.90	AVG
11	15.9900	39.97	10.83	50.80	60.00	-9.20	QP
12	15.9900	35.87	10.83	46.70	50.00	-3.30	AVG



Power Source :120Vac, 60Hz  
Terminal under Test: Neutral Line  
Peak and Average Scan:

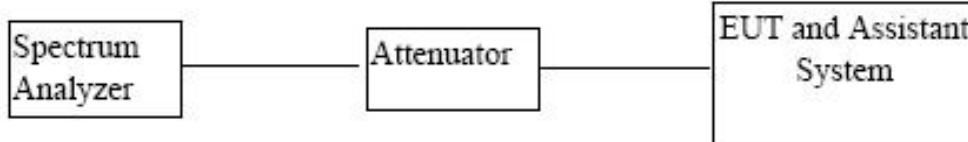


Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.4980	36.46	10.10	46.56	56.03	-9.47	QP
2	0.4980	21.81	10.10	31.91	46.03	-14.12	AVG
3	0.9300	34.18	10.21	44.39	56.00	-11.61	QP
4	0.9300	21.85	10.21	32.06	46.00	-13.94	AVG
5	1.1500	41.51	10.19	51.70	56.00	-4.30	QP
6	1.1500	27.71	10.19	37.90	46.00	-8.10	AVG
7	1.1980	41.32	10.18	51.50	56.00	-4.50	QP
8	1.1980	28.72	10.18	38.90	46.00	-7.10	AVG
9	1.2740	41.13	10.17	51.30	56.00	-4.70	QP
10	1.2740	28.53	10.17	38.70	46.00	-7.30	AVG
11	15.9100	40.96	10.83	51.79	60.00	-8.21	QP
12	15.9100	36.05	10.83	46.88	50.00	-3.12	AVG

### 4.3 Conducted Peak Output Power

#### Test Connection Diagram



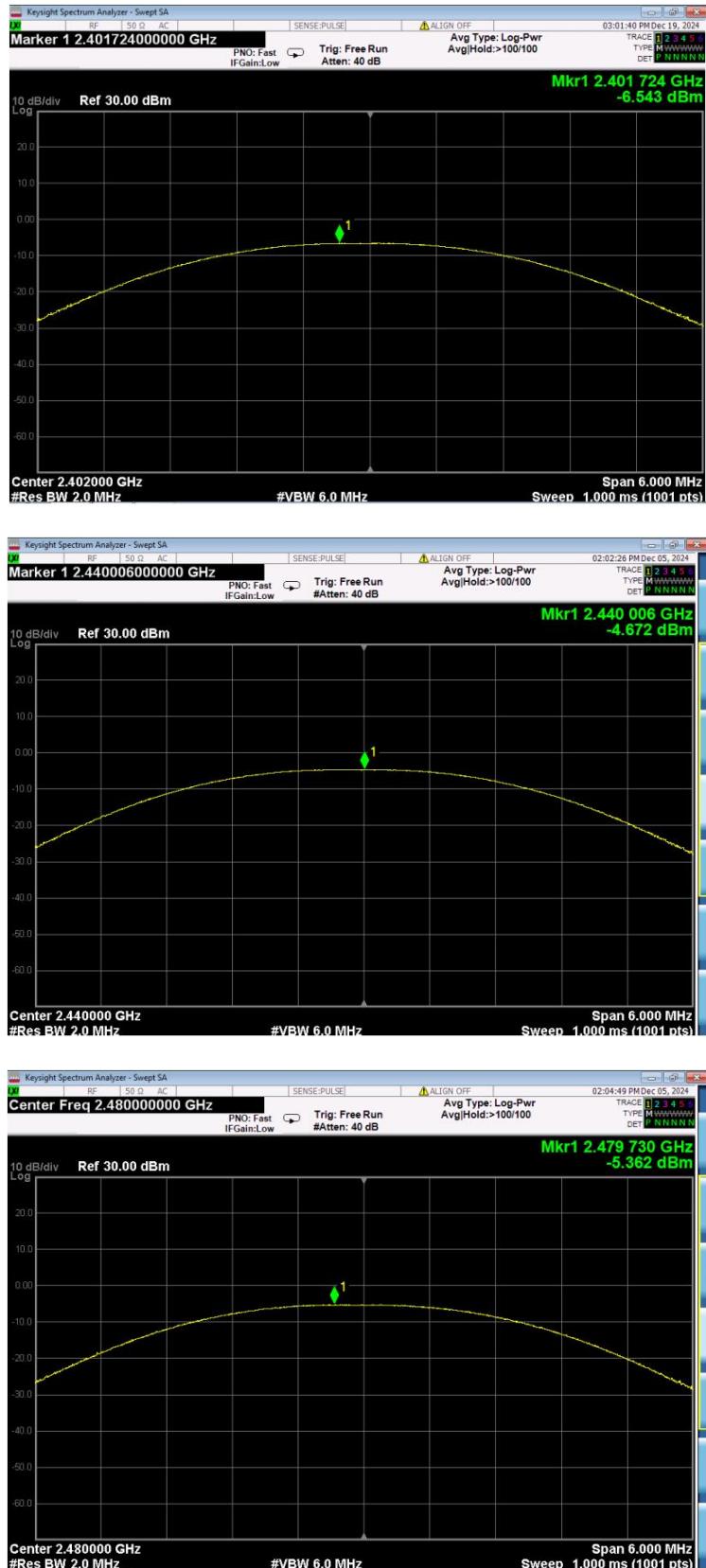
#### Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 3.2
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) Configure EUT work in test mode as stated in clause 2.3.
- (4) Measure the maximum output power of EUT by spectrum analyzer with PK detector and RBW=2MHz(above 20dB bandwidth of measured signal), VBW=3MHz

Note: The attenuator loss was inputted into spectrum analyzer as amplitude offset.

#### Test Result:

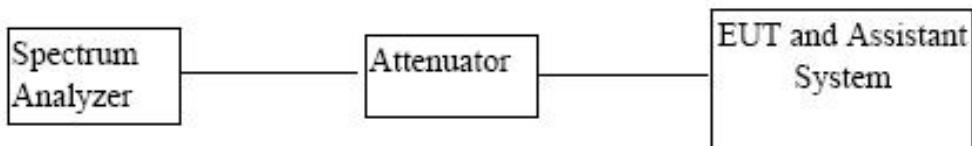
Mode	Freq (MHz)	Conducted Peak Power (dBm)	Limit (dBm)	Conclusion
BLE_1M	2402	-6.543	30	PASS
	2440	-4.672	30	PASS
	2480	-5.362	30	PASS



#### 4.4 6 dB Bandwidth

**Limit:**

Frequency range (MHz)	Standard requirement	Limit
2402-2480	FCC Part 15 Subpart C: 15.247(a)(2)(iii)	$\geq 500\text{kHz}$

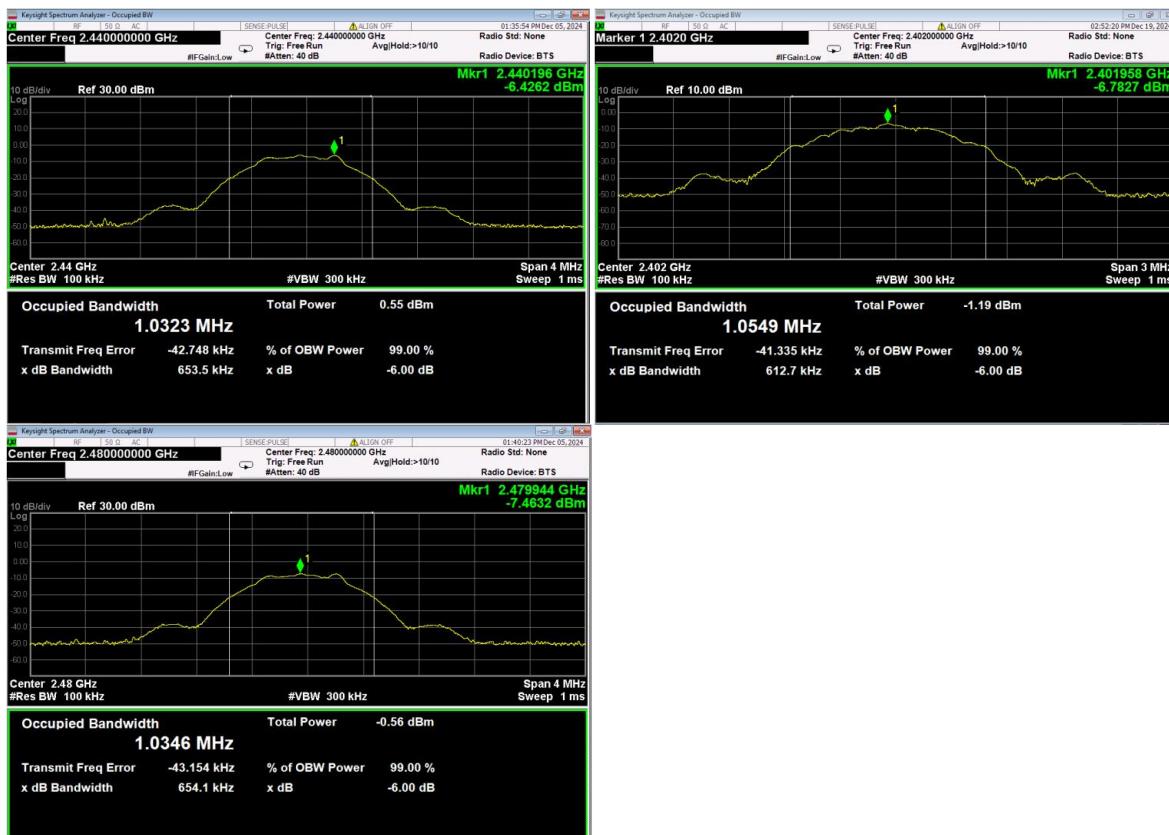
**Test setup:****Test procedure:**

Set the spectrum analyzer:

- a) Set RBW = 100 kHz
- b) Set the VBW  $\geq [3 \times \text{RBW}]$
- c) Detector = peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple
- f) Allow the trace to stabilize.
- g) 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.
- h) Span=2\*BW~5\*BW

**Test results:**

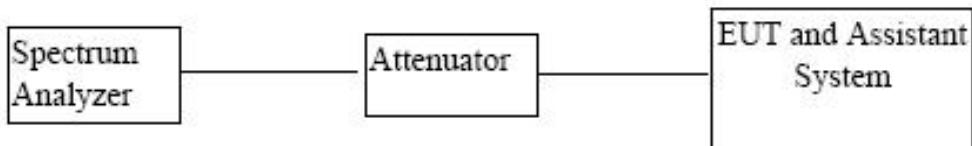
Test Mode	Antenna	Frequency [MHz]	DTS BW (MHz)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
BLE_1M	Ant1	2402	0.6127	2401.6937	2402.3064	0.5	PASS
BLE_1M	Ant1	2440	0.6535	2439.673	2440.3265	0.5	PASS
BLE_1M	Ant1	2480	0.6541	2479.6732	2480.3273	0.5	PASS



## 4.5 Power Spectral Density

**Limit:**

Frequency range (MHz)	Standard requirement	Limit
2402-2480	FCC Part 15 Subpart C: 15.247(e)	8 dbm (in any 3kHz)

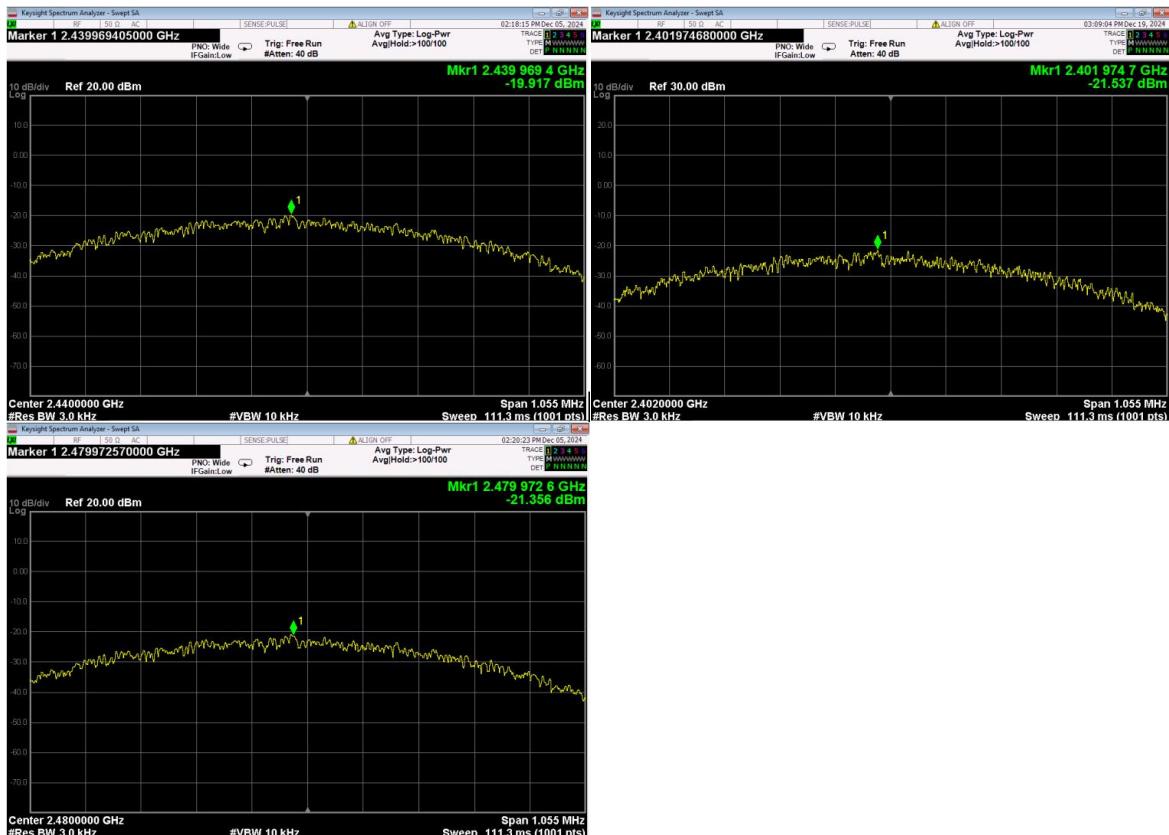
**Test setup:****Test procedure:**

Set the spectrum analyzer:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span=  $1.5 \times$  DTS bandwidth.
- c) Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

**Test results:**

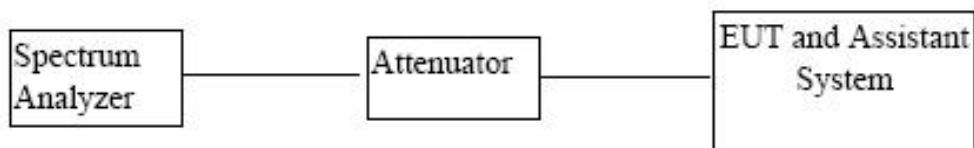
Test Mode	Antenna	Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
BLE_1M	Ant1	2402	-21.537	≤8	PASS
BLE_1M	Ant1	2440	-19.917	≤8	PASS
BLE_1M	Ant1	2480	-21.356	≤8	PASS



## 4.6 Band Edge

**Limit:**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Based on either an RF conducted or a radiated measurement. Provided the transmitter demonstrates compliance with the peak conducted power limits.

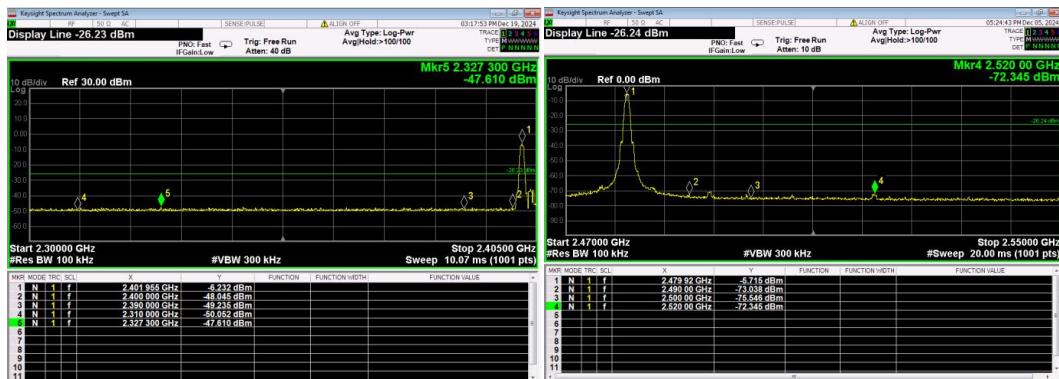
**Test setup:****Test procedure:**

Set the spectrum analyzer:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span=  $1.5 \times$  DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

**Test results:**

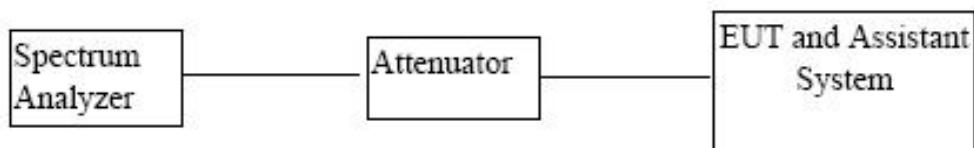
Test Mode	Antenna	Channel	Frequency (MHz)	RefLevel(dBm)	Result (dBm)	Limit (dBm)	Verdict
BLE_1M	Ant1	Low	2402	-6.23	-47.61	≤-26.23	PASS
BLE_1M	Ant1	High	2480	-5.71	-72.34	≤-26.24	PASS



## 4.7 Spurious RF conducted emissions

**Limit:**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Based on either an RF conducted or a radiated measurement. Provided the transmitter demonstrates compliance with the peak conducted power limits.

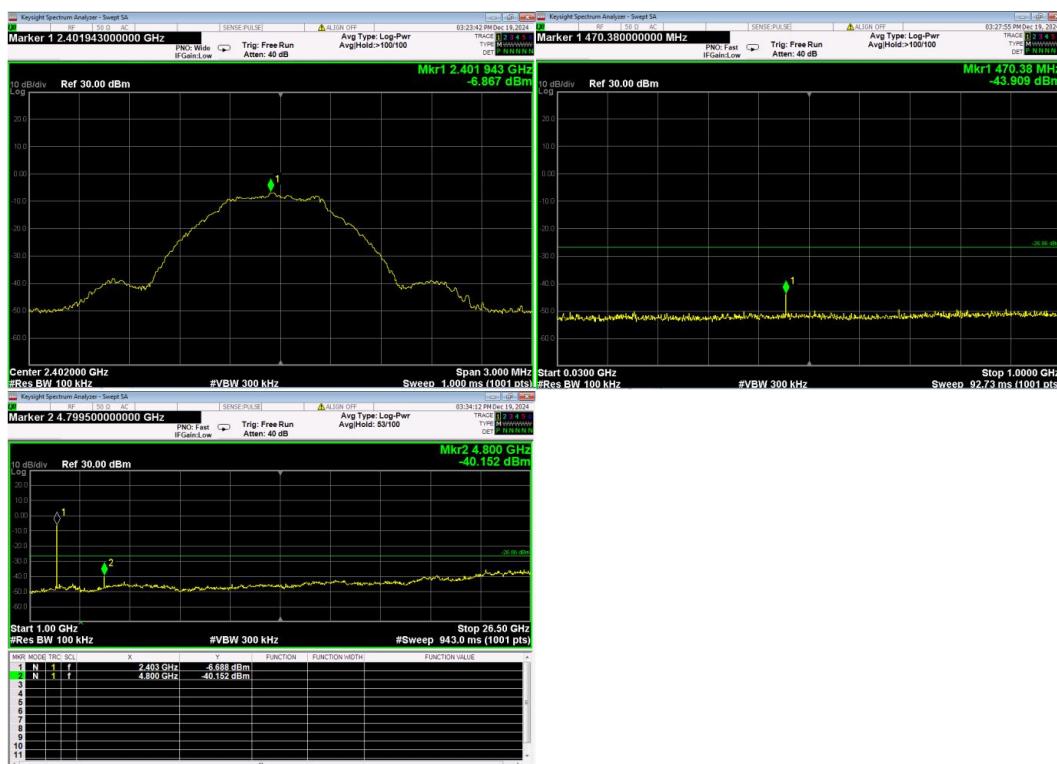
**Test setup:****Test procedure:**

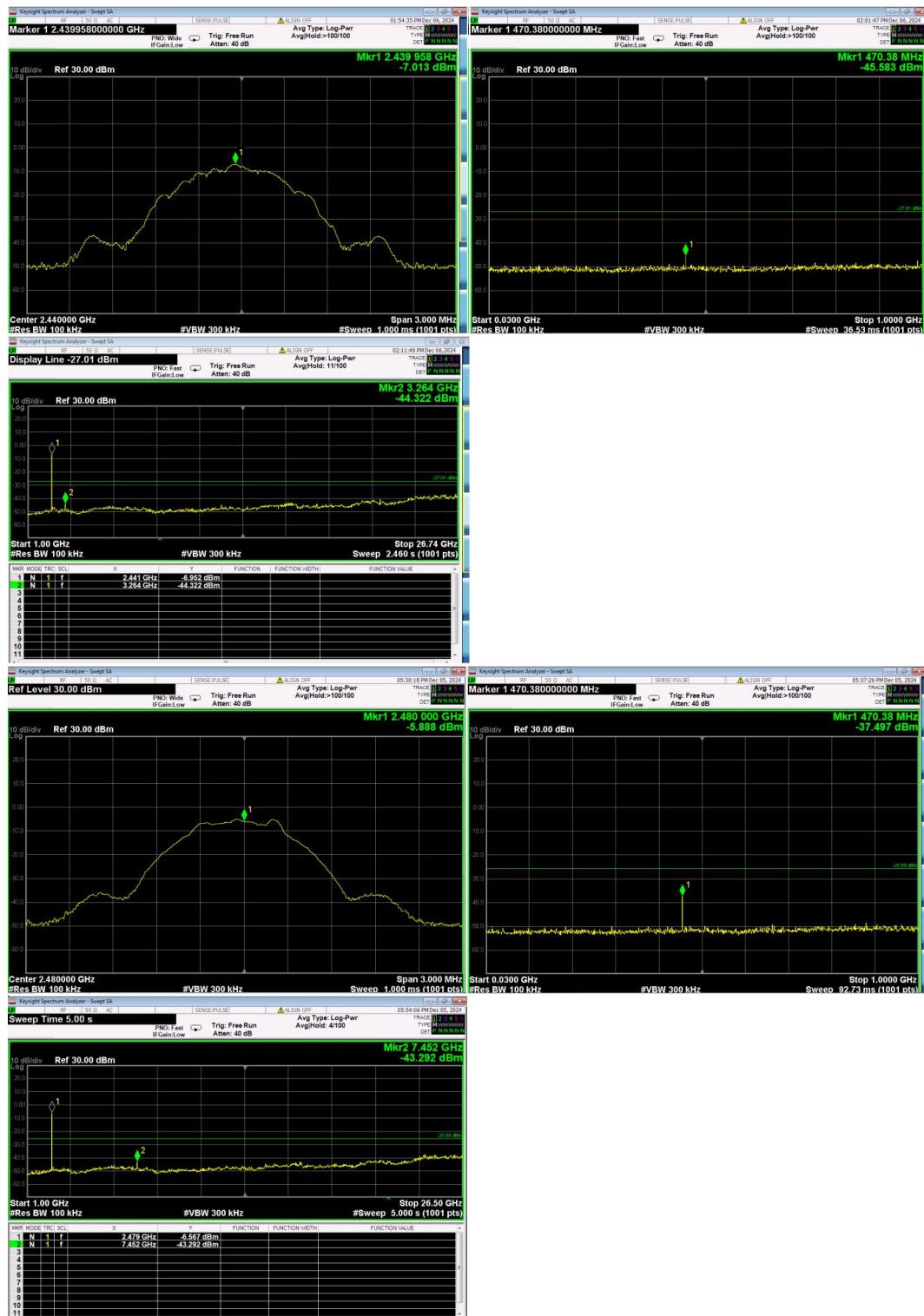
Set the spectrum analyzer:

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span=  $1.5 \times$  DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW  $\geq [3 \times \text{RBW}]$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

**Test results:**

Test Mode	Antenna	Frequency (MHz)	Freq Range (MHz)	RefLevel(dBm)	Result (dBm)	Limit (dBm)	Verdict
BLE_1M	Ant1	2402	0-Reference	-6.86	-6.86	/	PASS
BLE_1M	Ant1	2402	30-1000	-6.86	-43.91	≤-26.86	PASS
BLE_1M	Ant1	2402	1000-26500	-6.86	-40.15	≤-26.86	PASS
BLE_1M	Ant1	2440	0-Reference	-7.01	-7.01	/	PASS
BLE_1M	Ant1	2440	30-1000	-7.01	-45.59	≤-27.01	PASS
BLE_1M	Ant1	2440	1000-26500	-7.01	-44.32	≤-27.01	PASS
BLE_1M	Ant1	2480	0-Reference	-5.89	-5.89	/	PASS
BLE_1M	Ant1	2480	30-1000	-5.89	-37.49	≤-25.89	PASS
BLE_1M	Ant1	2480	1000-26500	-5.89	-43.29	≤-25.89	PASS

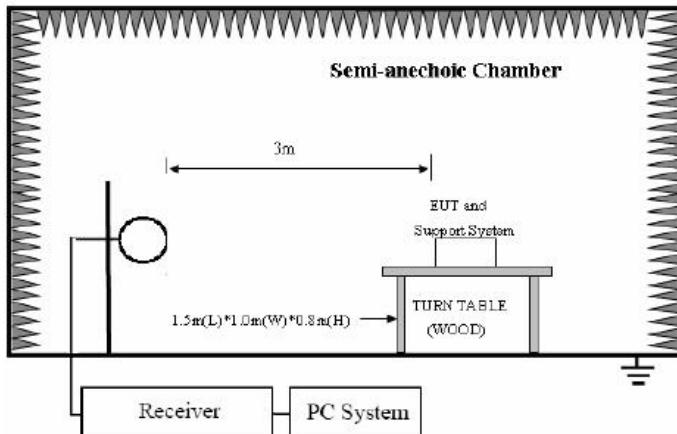




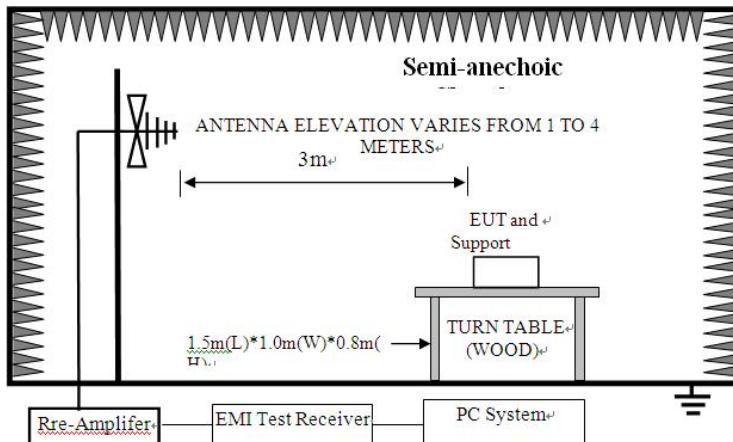
## 4.8 Spurious Radiated emission

### Test setup:

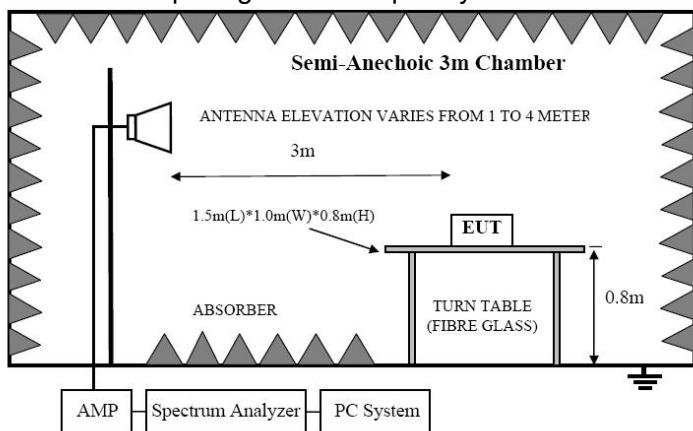
In 3m Anechoic Chamber Test Setup Diagram for 9KHz-30MHz



In 3m Anechoic Chamber Test Setup Diagram for below 1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.



## Limit

## FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41			

## FCC 15.209 Limit.

Frequency (MHz)	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		uV/m	dB(uV)/m
0.009 ~ 0.490	300	2400/F(KHz) 67.6	20log(F)
0.490 ~ 1.705	30	24000/F(KHz) 87.6	20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit3m(dBuV/m)} = \text{Limit30m(dBuV/m)} + 40\log(30m/3m)$$

**Limit for this EUT**

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

**Test Procedure**

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.3 and 8.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used
9KHz-30MHz	Active Loop antenna
30MHz-1GHz	Trilog Broadband Antenna
1GHz-18GHz	Double Ridged Horn Antenna(1GHz-18GHz)
18GHz-40GHz	Horn Antenna(18GHz-40GHz)

According ANSI C63.10:2009 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. For measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

- (4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9KHz to 25GHz:
  - (a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's fixed 1m above ground.)
  - (b) Change work frequency or channel of device if practicable.
  - (c) Change modulation type of device if practicable.
  - (d) Change power supply range from 85% to 115% of the rated supply voltage
  - (e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions. Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18GHz to 25GHz, so below final test was performed with frequency range from 9KHz to 18GHz.



(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2009 on Radiated Emission test.

(6) The emissions from 9KHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz, for emissions from 9KHz-90KHz, 110KHz-490KHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.

(7) The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW

Frequency Band	RBW
9KHz-150KHz	200Hz
150KHz-30MHz	9KHz
30MHz-1GHz	120KHz

(8) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure(according ANSI C63.10:2009 clause 4.2.3.2.3 procedure for average measure). Both PK and AV level test, PK detector is used.

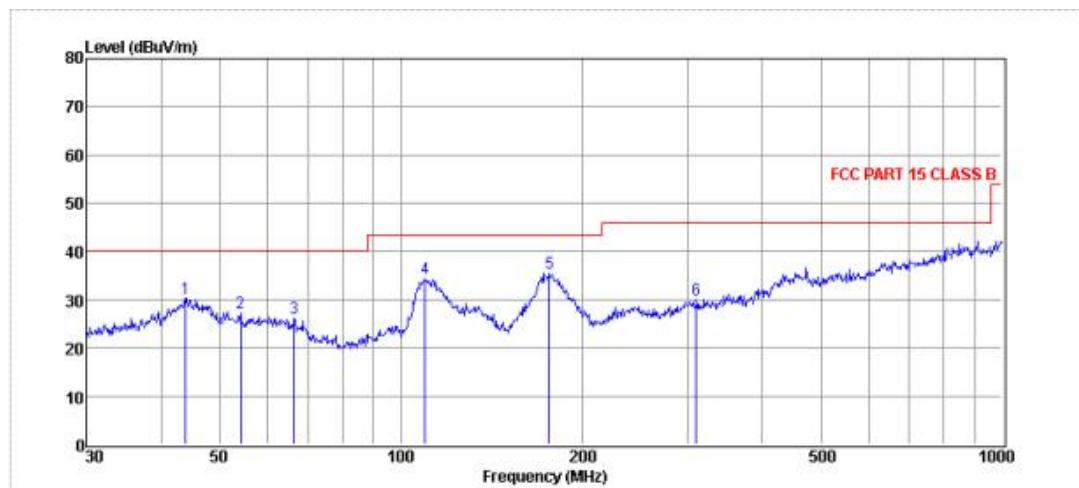
#### Test result

**PASS. (See below detailed test result)**

**Test result:**

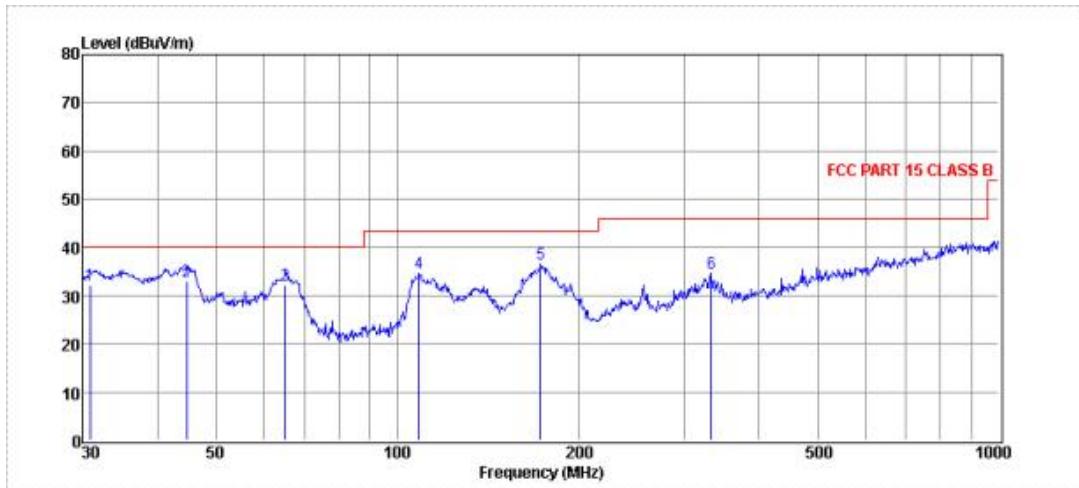
Pre-scan all test modes, found worst case at 2402MHz, and so only show the test result of 2402MHz,  
Below 1G:

Horizontal:



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	43.81	12.91	16.78	0.00	0.68	30.37	40.00	-9.63	Peak	HORIZONTAL
2	54.07	13.43	12.99	0.00	0.71	27.13	40.00	-12.87	Peak	HORIZONTAL
3	66.50	14.57	10.93	0.00	0.68	26.18	40.00	-13.82	Peak	HORIZONTAL
4	109.80	20.71	12.43	0.00	1.13	34.27	43.50	-9.23	Peak	HORIZONTAL
5	176.89	24.20	9.90	0.00	1.39	35.49	43.50	-8.01	Peak	HORIZONTAL
6	310.00	13.74	14.00	0.00	2.17	29.91	46.00	-16.09	Peak	HORIZONTAL

Vertical:



Item (Mark)	Freq (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	30.85	21.06	10.71	0.00	0.48	32.25	40.00	-7.75	QP	VERTICAL
2	44.59	15.65	16.63	0.00	0.67	32.95	40.00	-7.05	QP	VERTICAL
3	65.11	20.02	11.46	0.00	0.69	32.17	40.00	-7.83	QP	VERTICAL
4	108.65	24.44	9.03	0.00	1.05	34.52	43.50	-8.98	Peak	VERTICAL
5	173.21	26.34	8.86	0.00	1.42	36.62	43.50	-6.88	Peak	VERTICAL
6	332.52	17.91	14.45	0.00	2.37	34.73	46.00	-11.27	Peak	VERTICAL



Lowest channel:

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	38.02	31.24	4.63	37.68	36.21	74.00	-37.79	Vertical
7236.00	32.78	36.25	6.52	37.80	37.75	74.00	-36.25	Vertical
9648.00	31.69	37.97	7.98	37.93	39.71	74.00	-34.29	Vertical
4824.00	37.04	31.24	4.63	37.68	35.23	74.00	-38.77	Horizontal
7236.00	32.71	36.25	6.52	37.80	37.68	74.00	-36.32	Horizontal
9648.00	31.34	37.97	7.98	37.93	39.36	74.00	-34.64	Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	27.28	31.24	4.63	37.68	25.47	54.00	-28.53	Vertical
7236.00	21.70	36.25	6.52	37.80	26.67	54.00	-27.33	Vertical
9648.00	22.07	37.97	7.98	37.93	30.09	54.00	-23.91	Vertical
4824.00	26.70	31.24	4.63	37.68	24.89	54.00	-29.11	Horizontal
7236.00	21.33	36.25	6.52	37.80	26.30	54.00	-27.70	Horizontal
9648.00	21.13	37.97	7.98	37.93	29.15	54.00	-24.85	Horizontal

Middle channel:

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	37.47	31.31	4.69	37.62	35.85	74.00	-38.15	Vertical
7311.00	33.10	36.39	6.61	37.78	38.32	74.00	-35.68	Vertical
9748.00	32.88	38.10	8.02	37.95	41.05	74.00	-32.95	Vertical
4874.00	38.24	31.31	4.69	37.62	36.62	74.00	-37.38	Horizontal
7311.00	31.89	36.39	6.61	37.78	37.11	74.00	-36.89	Horizontal
9748.00	32.84	38.10	8.02	37.95	41.01	74.00	-32.99	Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	28.47	31.31	4.69	37.62	26.85	54.00	-27.15	Vertical
7311.00	21.46	36.39	6.61	37.78	26.68	54.00	-27.32	Vertical
9748.00	22.17	38.10	8.02	37.95	30.34	54.00	-23.66	Vertical
4874.00	28.45	31.31	4.69	37.62	26.83	54.00	-27.17	Horizontal
7311.00	21.01	36.39	6.61	37.78	26.23	54.00	-27.77	Horizontal
9748.00	22.58	38.10	8.02	37.95	30.75	54.00	-23.25	Horizontal



Highest channel:

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	41.64	31.37	4.75	37.58	40.18	74.00	-33.82	Vertical
7386.00	32.92	36.57	6.71	37.74	38.46	74.00	-35.54	Vertical
9848.00	35.56	38.20	8.07	37.58	44.25	74.00	-29.75	Vertical
4924.00	41.45	31.37	4.75	37.58	39.99	74.00	-34.01	Horizontal
7386.00	32.08	36.57	6.71	37.74	37.62	74.00	-36.38	Horizontal
9848.00	31.85	38.20	8.07	37.58	40.54	74.00	-33.46	Horizontal

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	32.81	31.37	4.75	37.58	31.35	54.00	-22.65	Vertical
7386.00	22.90	36.57	6.71	37.74	28.44	54.00	-25.56	Vertical
9848.00	24.13	38.20	8.07	37.58	32.82	54.00	-21.18	Vertical
4924.00	31.98	31.37	4.75	37.58	30.52	54.00	-23.48	Horizontal
7386.00	21.52	36.57	6.71	37.74	27.06	54.00	-26.94	Horizontal
9848.00	21.16	38.20	8.07	37.58	29.85	54.00	-24.15	Horizontal

**Unwanted Emissions in Non-restricted Frequency Bands**

Lowest channel:

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	39.85	27.14	2.81	38.64	31.16	74.00	-42.84	Horizontal
2390.00	48.26	27.37	2.91	38.84	39.70	74.00	-34.30	Horizontal
2310.00	38.40	27.14	2.81	38.64	29.71	74.00	-44.29	Vertical
2390.00	49.57	27.37	2.91	38.84	41.01	74.00	-32.99	Vertical

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310.00	30.13	27.14	2.81	38.64	21.44	54.00	-32.56	Horizontal
2390.00	37.23	27.37	2.91	38.84	28.67	54.00	-25.33	Horizontal
2310.00	28.80	27.14	2.81	38.64	20.11	54.00	-33.89	Vertical
2390.00	39.21	27.37	2.91	38.84	30.65	54.00	-23.35	Vertical



Highest channel:

**Peak value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	48.73	27.82	2.99	39.05	40.49	74.00	-33.51	Horizontal
2500.00	41.14	27.70	3.01	39.10	32.75	74.00	-41.25	Horizontal
2483.50	48.62	27.82	2.99	39.05	40.38	74.00	-33.62	Vertical
2500.00	42.34	27.70	3.01	39.10	33.95	74.00	-40.05	Vertical

**Average value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.50	37.22	27.82	2.99	39.05	28.98	54.00	-25.02	Horizontal
2500.00	33.67	27.70	3.01	39.10	25.28	54.00	-28.72	Horizontal
2483.50	38.01	27.82	2.99	39.05	29.77	54.00	-24.23	Vertical
2500.00	32.48	27.70	3.01	39.10	24.09	54.00	-29.91	Vertical

-----End of test report-----