



Certificate # 2861.01

**GRGTEST**

Page 1 of 50

# Test Report

Verified code: 740232

Report No.: E202112291004-10

Customer: Autel Intelligent Tech. Corp., Ltd.

Address: 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen, 518055  
China

Sample Name: Professional Key Tool

Sample Model: MaxiIM KM100

Receive Sample Date: Jan.06,2022

Test Date: Jan.10,2022 ~ Apr.08,2022

Reference Document: CFR 47, FCC Part 15 Subpart C  
RADIO FREQUENCY DEVICES:Subpart C—Intentional Radiators

Test Result: Pass

Prepared by: Yang Zhaoyun

Reviewed by: Jiang Tao

Approved by: Xiao Liang

GUANGZHOU GRG METROLOGY & TEST CO., LTD

Issued Date: 2022-04-18

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**REPORT ISSUED HISTORY**

Report Version	Report No.	Description	Compile Date
1.0	E202112291004-10	Original Issue	2022/04/15

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## 1. TEST RESULT SUMMARY

<b>Technical Requirements</b>		
FCC 47 CFR Part 15 Subpart C 15.247		
ANSI C63.10-2013		
KDB 558074 D01 15.247 measurement guidance v05r02		
Limit / Severity	Item	Result
§15.203	Antenna Requirement	Pass
§15.207(a)	Conducted Emission	Pass
§15.247(d)	Radiated Spurious Emission	Pass
§15.247(b)(3)	Maximum Peak Output Power	Pass
§15.247(e)	Power Spectral Density	Pass
§15.247(a)(2)	6dB bandwidth	Pass
§15.247(d)	Conducted band edges and Spurious Emission	Pass
§15.205	Restricted bands of operation	Pass

The EUT has one antenna. The antenna is FPC antenna.

The max gain of antenna is 1.0dBi. which accordance 15.203. is considered sufficient to comply with the provisions of this section.

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## 2. GENERAL DESCRIPTION OF EUT

### 2.1 APPLICANT

Name: Autel Intelligent Tech. Corp., Ltd.  
Address: 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen, 518055 China

### 2.2 MANUFACTURER

Name: Autel Intelligent Tech. Corp., Ltd.  
Address: 7th-8th, 10th Floor, Bldg. B1, Zhiyuan, Xueyuan Rd. Xili, Nanshan, Shenzhen, 518055 China

### 2.3 FACTORY

Name: Autel Intelligent Technology Corp., Ltd. Guangming Branch  
Address: 7F&6F, East Wing, Building 2, and 6F of Electronical Building, Yanxiang Industrial Zone, Gaoxin Rd, Dongzhou Community of Guangming New District, Shenzhen

### 2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment:	Professional Key Tool
Model No.:	MaxiIM KM100
Adding Model:	/
Models discrepancy:	/
Trade Name:	AUTEL
FCC ID:	WQ8IMKM100
Power Supply:	5Vdc power supplied by adapter 3.85Vdc power supplied by Rechargeable Li-ion battery
Adapter Specification:	Model: GME10C-050200FUu Input: 100-240V~50-60Hz 0.28A Output: 5.0V --- 2A 10W Model:IBQ088GA
Battery Specification:	Rated voltage:3.85Vdc Limited charge voltage: 4.4Vdc Rated capacity: 4950mAh, 19.06Wh
Frequency Range:	2402 ~ 2480MHz
Transmit Power:	GFSK for 1Mbps: 6.60dBm
Modulation type:	GFSK for 1Mbps
Channel space:	2MHz
Antenna Specification:	FPC antenna 1dBi gain (Max.)
Temperature Range:	0°C~55°C
Hardware Version:	SM2031_MAIN_V5
Software Version:	V1.20.24
Sample No:	E202112291004-0001 E202112291004-0002
Note:	/

## 2.5 CHANNELLIST

Channel	Frequency (MHz)						
00	2402	10	2422	20	2442	30	2462
01	2404	11	2424	21	2444	31	2464
02	2406	12	2426	22	2446	32	2466
03	2408	13	2428	23	2448	33	2468
04	2410	14	2430	24	2450	34	2470
05	2412	15	2432	25	2452	35	2472
06	2414	16	2434	26	2454	36	2474
07	2416	17	2436	27	2456	37	2476
08	2418	18	2438	28	2458	38	2478
09	2420	19	2440	29	2460	39	2480

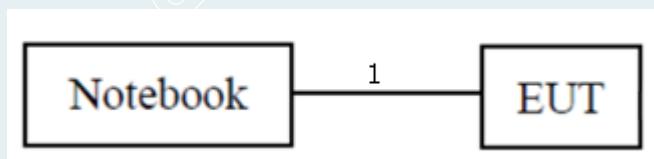
## 2.6 TEST OPERATION MODE

Mode No.	Description of the modes
1	Bluetooth(BLE-1M) fixed frequency transmitting

## 2.7 LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
Notebook	LENOVO	TianYi 310-14ISK	MP18DLC6	/
Cable				
1	/	/	/	Unshielded 1.0m (USB Cable)

## 2.8 CONFIGURATION OF SYSTEM UNDER TEST



### Test software:

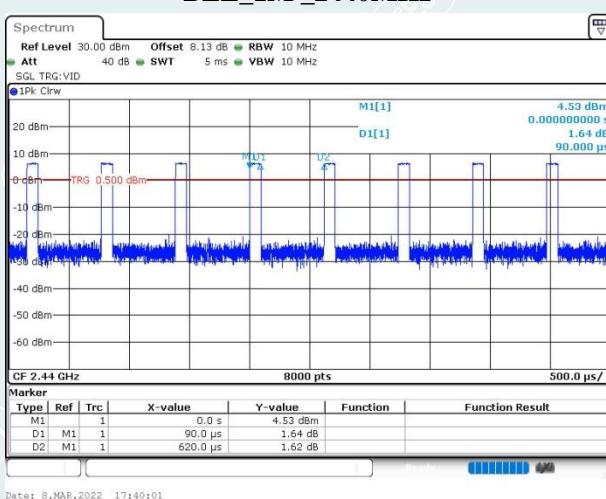
Software version	Test level
BlueTool	Default

## 2.9 DUTY CYCLE

EUT Name	Professional Key Tool	Model	MaxiIM KM100
Environmental Conditions	23.5°C/48% RH	Test Voltage	DC 3.85V
Tested By	Lu Wei	Tested Date	2022-3-8

TestMode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	DC [%]	T [s]
BLE_1M	Ant1	2440	0.09	0.62	14.52	0.000090

**BLE\_1M\_2440MHz**



### 3. LABORATORY AND ACCREDITATIONS

#### 3.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Address : No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District  
Shenzhen, 518110, People's Republic of China

P.C. : 518000

Tel : 0755-61180008

Fax : 0755-61180008

#### 3.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

**USA** A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

**Canada** ISED (Company Number: 24897, CAB identifier:CN0069)

**USA** FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,  
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### 3.3 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		Frequency	Uncertainty	
Radiated Emission	Horizontal	9kHz~30MHz	4.46dB	
		30MHz~1000MHz	4.30dB	
		1GHz~18GHz	5.60dB	
		18GHz~26.5GHz	3.65dB	
	Vertical	9kHz~30MHz	4.46dB	
		30MHz~1000MHz	4.30dB	
		1GHz~18GHz	5.60dB	
		18GHz~26.5GHz	3.65dB	
Conduction Emission		9 kHz~150kHz	2.80dB	
		150kHz~10MHz	2.80dB	
		10MHz~30MHz	2.20dB	

Measurement	Uncertainty
RF frequency	$6.0 \times 10^{-6}$
RF power conducted	0.78 dB
Occupied channel bandwidth	0.4 dB
Unwanted emission, conducted	0.68 dB
Humidity	6 %
Temperature	2 °C

This uncertainty represents an expanded uncertainty factor of  $k=2$ .

----- The following blanks -----

#### 4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
<b>Conducted Emissions</b>				
EMI TEST RECEIVER	R&S	ESCI	100783	2022-09-13
LISN(EUT)	R&S	ENV216	101543	2022-09-14
Test S/W	EZ	CCS-3A1-CE		
<b>Radiated Spurious Emission&amp;Restricted bands of operation</b>				
Test S/W	EZ	CCS-2ANT	/	/
Test Receiver	R&S	ESCI	100088	2022-10-31
Preamplifier	EMEC	EM330	/	2023-03-05
Loop Antenna	TESEQ	HLA6121	52599	2022-04-21
Bi-log Antenna	TESEQ	CBL6143A	32399	2022-11-25
Spectrum Analyzer	Agilent	N9020B	MY59050667	2022-12-10
Horn Antenna	Schwarzbeck	BBHA9120D(1201)	02143	2022-10-22
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170-497	2022-10-16
Amplifier	Tonscend	TAP01018048	AP20E8060075	2022-05-09
Amplifier	Tonscend	TAP184050	AP20E806071	2022-05-17
Test S/W	Tonscend	JS36-RSE/2.5.1.5		
<b>6dB Bandwidth</b>				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
<b>Maximum Peak Output Power</b>				
Pulse power sensor	Agilent	MA2411B	1126150	2023-03-01
Power meter	Anritsu	ML2495A	1204003	2023-02-28
<b>Conducted band edges and Spurious Emission</b>				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10
<b>Power Spectral Density</b>				
Spectrum Analyzer	R&S	FSV30	104381	2022-12-10

Note: The calibration interval of the above test instruments is 12 months.

## 5. CONDUCTED EMISSION MEASUREMENT

### 5.1 LIMITS

Frequency range	Limits (dB $\mu$ V)	
	Quasi-peak	Average
150kHz~0.5MHz	66~56	56~46
0.5MHz~5MHz	56	46
5MHz~30MHz	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 150 kHz to 0.5MHz.

### 5.2 TEST PROCEDURES

#### Procedure of Preliminary Test

Test procedures follow ANSI C63.10:2013.

For measurement of the disturbance voltage the equipment under test (EUT) is connected to the power supply mains and any other extended network via one or more artificial network(s). An EUT, whether intended to be grounded or not, and which is to be used on a table is configured as follows:

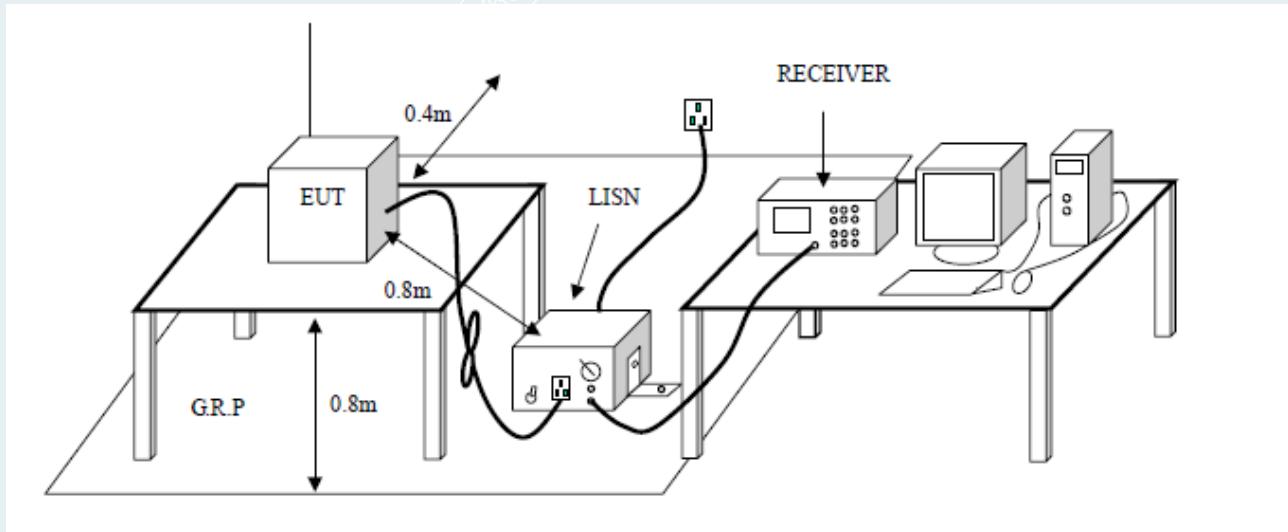
- Either the bottom or the rear of the EUT shall be at a controlled distance of 40 cm from a reference ground plane. This ground plane is normally the wall or floor of a shielded room. It may also be a grounded metal plane of at least 2 m by 2 m. This is physically accomplished as follows:
  - 1) place the EUT on a table of non-conducting material which is at least 80 cm high. Place the EUT so that it is 40 cm from the wall of the shielded room, or
  - 2) place the EUT on a table of non-conducting material which is 40 cm high so that the bottom of the EUT is 40 cm above the ground plane;
- All other conductive surfaces of the EUT shall be at least 80 cm from the reference ground plane;
- The EUT are placed on the floor that one side of the housings is 40 cm from the vertical reference ground plane and other metallic parts;
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 cm to 40 cm long, hanging approximately in the middle between the ground plane and the table.
- I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

The test mode(s) described in Item 2.6 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.6 producing the highest emission level. The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

#### Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

### 5.3 TEST SETUP



### 5.4 DATA SAMPLE

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

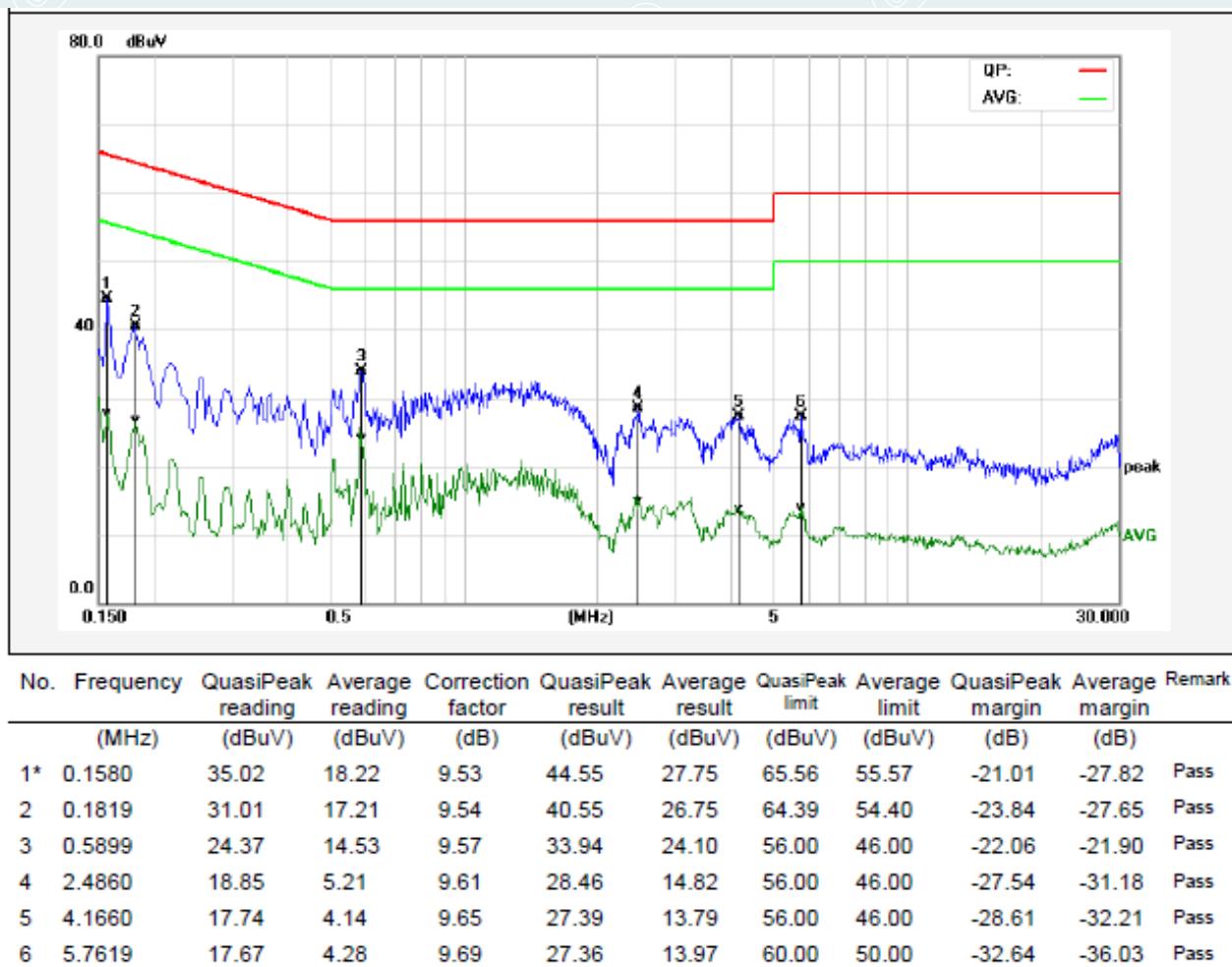
Factor = Insertion loss of LISN + Cable Loss  
 Result = Quasi-peak Reading/ Average Reading + Factor  
 Limit = Limit stated in standard  
 Margin = Result (dBuV) – Limit (dBuV)

----- The following blanks -----

## 5.5 TEST RESULTS

<b>EUT Name</b>	Professional Key Tool	<b>Model</b>	MaxiIM KM100
<b>Environmental Conditions</b>	22.0°C/53%RH	<b>Test Mode</b>	BLE 1M 2402MHz
<b>Tested By</b>	Tang Shenghui	<b>Line</b>	L
<b>Tested Date</b>	2022/4/8	<b>Test Voltage</b>	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)

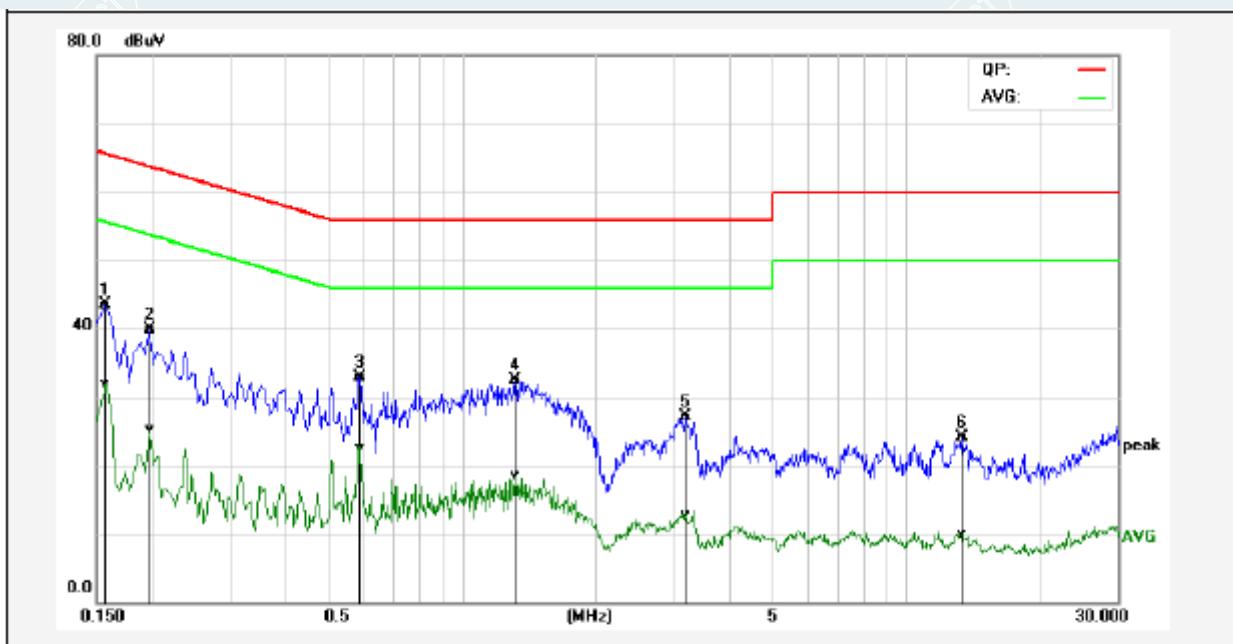


**REMARKS:** L = Live Line

Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))

<b>EUT Name</b>	Professional Key Tool	<b>Model</b>	MaxiIM KM100
<b>Environmental Conditions</b>	22.0°C/53%RH	<b>Test Mode</b>	BLE 1M 2402MHz
<b>Tested By</b>	Tang Shenghui	<b>Line</b>	N
<b>Tested Date</b>	2022/4/8	<b>Test Voltage</b>	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	0.1580	33.96	22.31	9.51	43.47	31.82	65.56	55.57	-22.09	-23.75	Pass
2	0.1980	30.39	15.69	9.57	39.96	25.26	63.69	53.69	-23.73	-28.43	Pass
3	0.5899	23.32	12.91	9.68	33.00	22.59	56.00	46.00	-23.00	-23.41	Pass
4	1.3180	22.81	8.85	9.62	32.43	18.47	56.00	46.00	-23.57	-27.53	Pass
5	3.1940	17.44	3.03	9.60	27.04	12.63	56.00	46.00	-28.96	-33.37	Pass
6	13.3660	14.18	0.05	9.86	24.04	9.91	60.00	50.00	-35.96	-40.09	Pass

**REMARKS:** N = Neutral Line.

Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))

## 6. RADIATED SPURIOUS EMISSIONS

### 6.1 LIMITS

In any 100kHz 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 20dB below that in the 100kHz 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak( $\mu$ V/m)	Measurement distance(m)	Quasi-peak(dB $\mu$ V/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

#### NOTE:

- (1) The emission limits for the ranges 9-90kHz and 110-490kHz are based on measurements employing a linear average detector.
- (2) The lower limit shall apply at the transition frequencies.
- (3) Above 18GHz test distance is 1m, so the Peak Limit=74+20\*log(3/1)=83.54 (dB $\mu$ V/m).  
The Avg Limit=54+20\*log(3/1)=63.54 (dB $\mu$ V/m).

### 6.2 TEST PROCEDURES

#### 1) Sequence of testing 9kHz to 30MHz

##### Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3meter.
- The EUT was set into operation.

##### Pre measurement:

- The turntable rotates from 0 ° to 360 °.
- The antenna height is 1.0meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

##### Final measurement:

- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0 ° to 360 °) and by rotating the elevation axes (0 ° to 360 °).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QP detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

## 2) Sequence of testing 30MHz to 1GHz

### Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

### Pre measurement:

--- The turntable rotates from 0 ° to 360 °.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 4 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

### Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

## 3) Sequence of testing 1GHz to 18GHz

### Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

### Pre measurement:

--- The turntable rotates from 0 ° to 360 °.

--- The antenna is polarized vertical and horizontal.

- The antenna height scan range is 1 meter to 4 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

**Final measurement:**

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable rotates from 0 ° to 360 ° and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

**4) Sequence of testing above 18GHz****Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

**Pre measurement:**

- The antenna is moved spherical over the EUT in different polarisations of the antenna.

**Final measurement:**

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

**NOTE:**

- (a).The frequency from 9kHz to 150kHz, Set RBW=300Hz(for Peak&AVG), RBW=300Hz(for Peak&AVG). the frequency from 150kHz to 30MHz, Set RBW=9kHz, RBW=9kHz, (for QP Detector).
- (b).The frequency from 30MHz to 1GHz, Set RBW=120kHz, RBW=300kHz, (for QP Detector).
- (c).The frequency above 1GHz, for Peak detector: Set RBW=1MHz, RBW=3MHz.
- (d).The frequency above 1GHz, for Avg detector: Set RBW=1MHz, if the EUT is configured to transmit with duty cycle  $\geq 98\%$ ,set  $VBW \leq RBW/100$  (i.e.,10kHz) but not less than 10 Hz. if the EUT duty cycle is  $< 98\%$ ,set  $VBW \geq 1/T$ , Where T is defined in section 2.9.

### 6.3 TEST SETUP

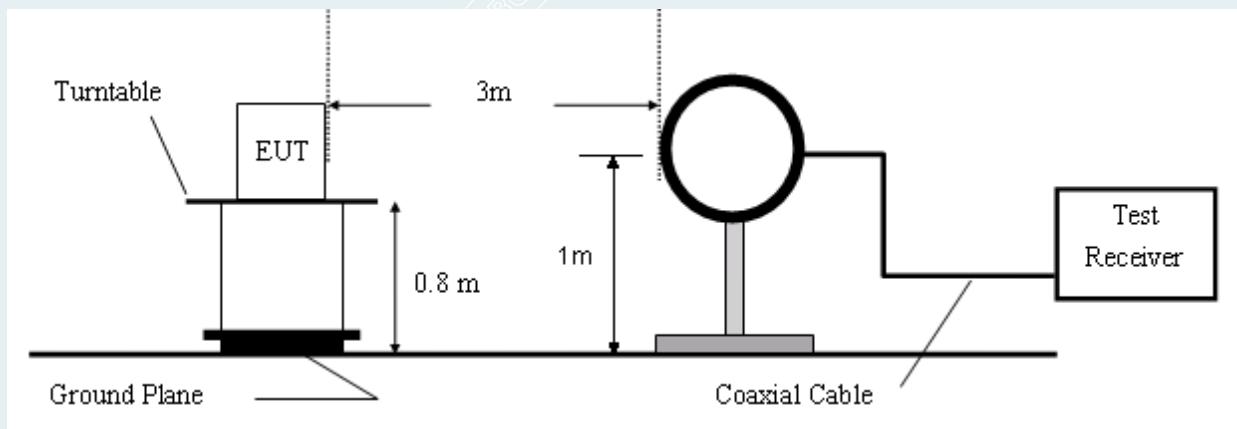


Figure 1. 9kHz to 30MHz radiated emissions test configuration

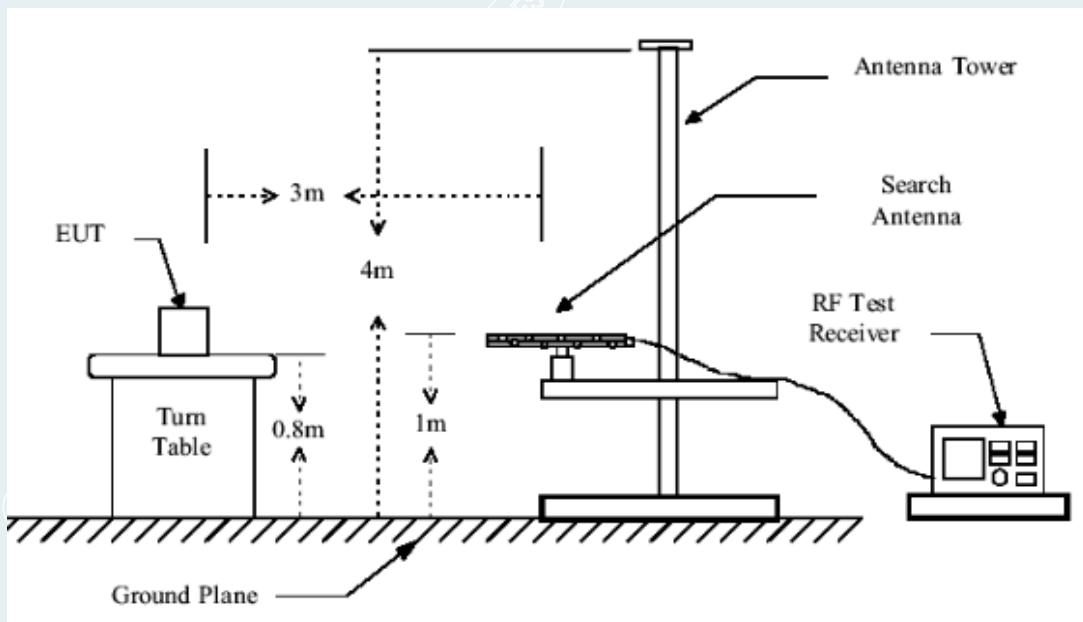


Figure 2. 30MHz to 1GHz radiated emissions test configuration

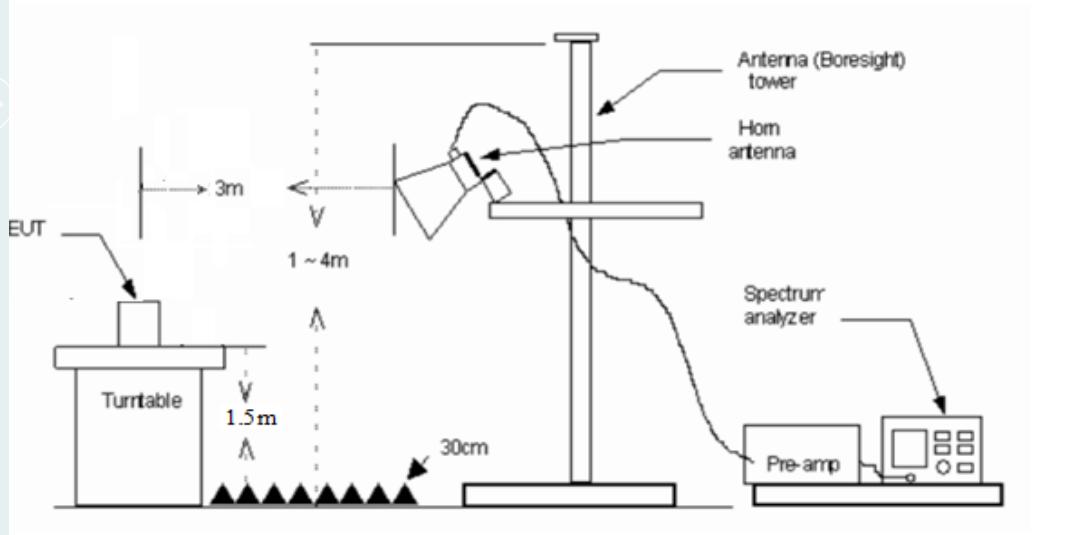


Figure 3. 1GHz to 18GHz radiated emissions test configuration

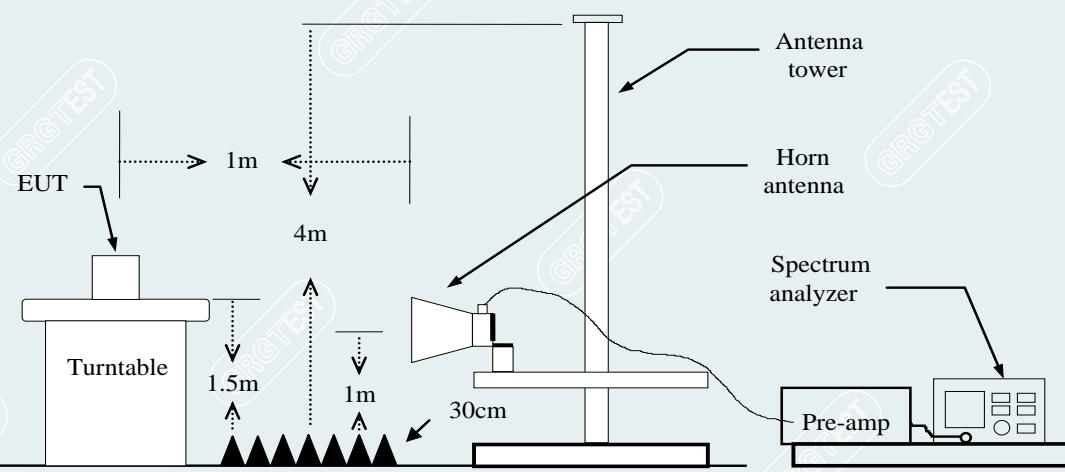


Figure 4. 18GHz to 26.5GHz radiated emissions test configuration

#### 6.4 DATA SAMPLE

##### 30MHz to 1GHz

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	37.06	-15.48	21.58	40.00	-18.42	QP	Vertical

##### 1GHz to 18GHz

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	65.45	-11.12	54.33	74.00	-19.67	Peak	Vertical
xxx	xxx	63.00	-11.12	51.88	54.00	-2.12	AVG	Vertical

##### Above 18GHz

No.	Frequency	Reading	Factor	Level	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)		
xxx	xxx	68.86	57.66	-11.20	83.54	25.88	peak	Vertical
xxx	xxx	68.89	-11.20	57.69	63.54	5.85	AVG	Vertical

Frequency (MHz)

= Emission frequency in MHz

Ant.Pol. (H/V)

= Antenna polarization

Reading (dBuV)

= Uncorrected Analyzer / Receiver reading

Correction Factor (dB/m)

= Antenna factor + Cable loss – Amplifier gain

Result (dBuV/m)

= Reading (dBuV) + Correction Factor (dB/m)

Limit (dBuV/m)

= Limit stated in standard

Margin (dB)

= Remark Result (dBuV/m) – Limit (dBuV/m)

Peak

= Peak Reading

QP

= Quasi-peak Reading

AVG

= Average Reading

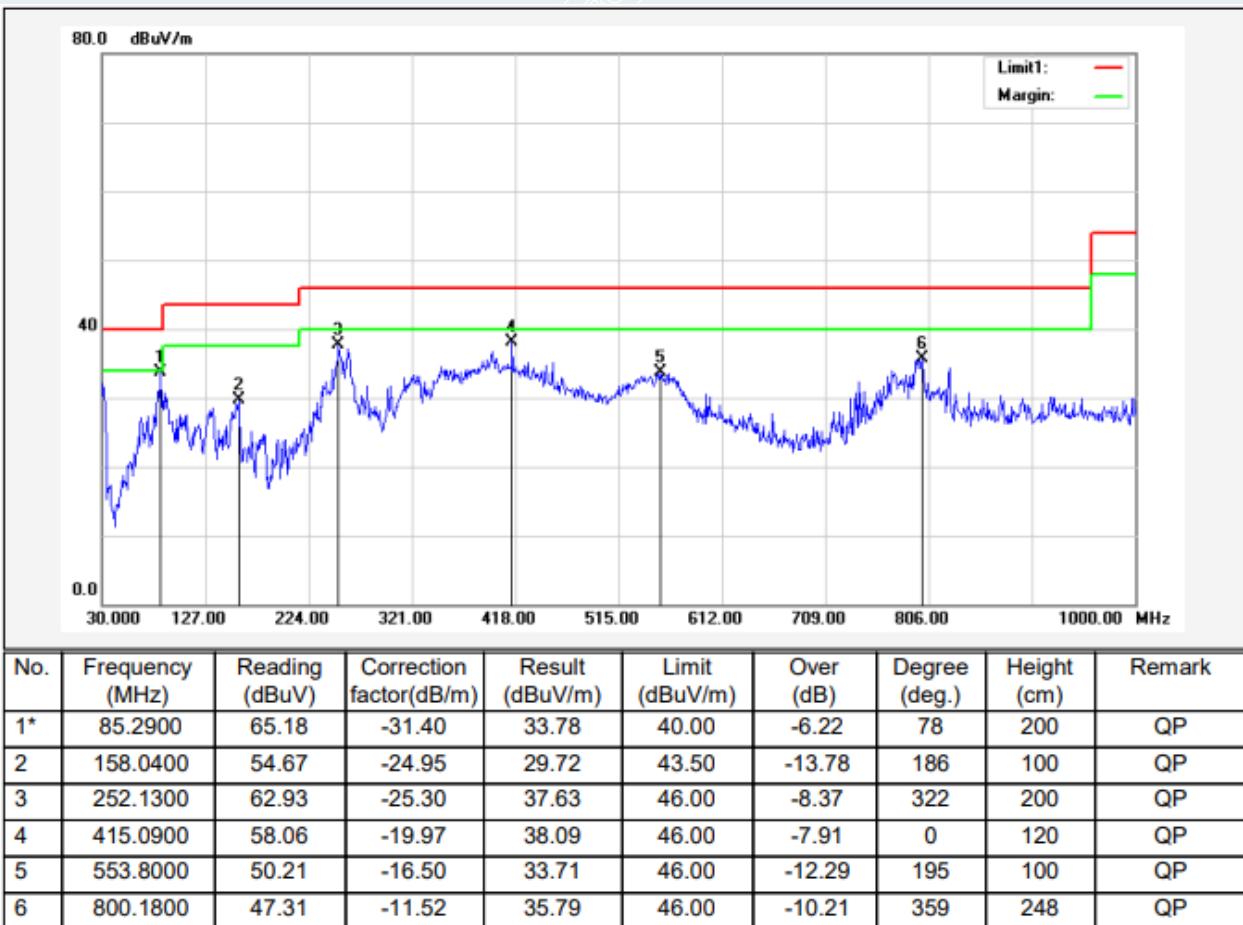
## 6.5 TEST RESULTS

### Below 1GHz

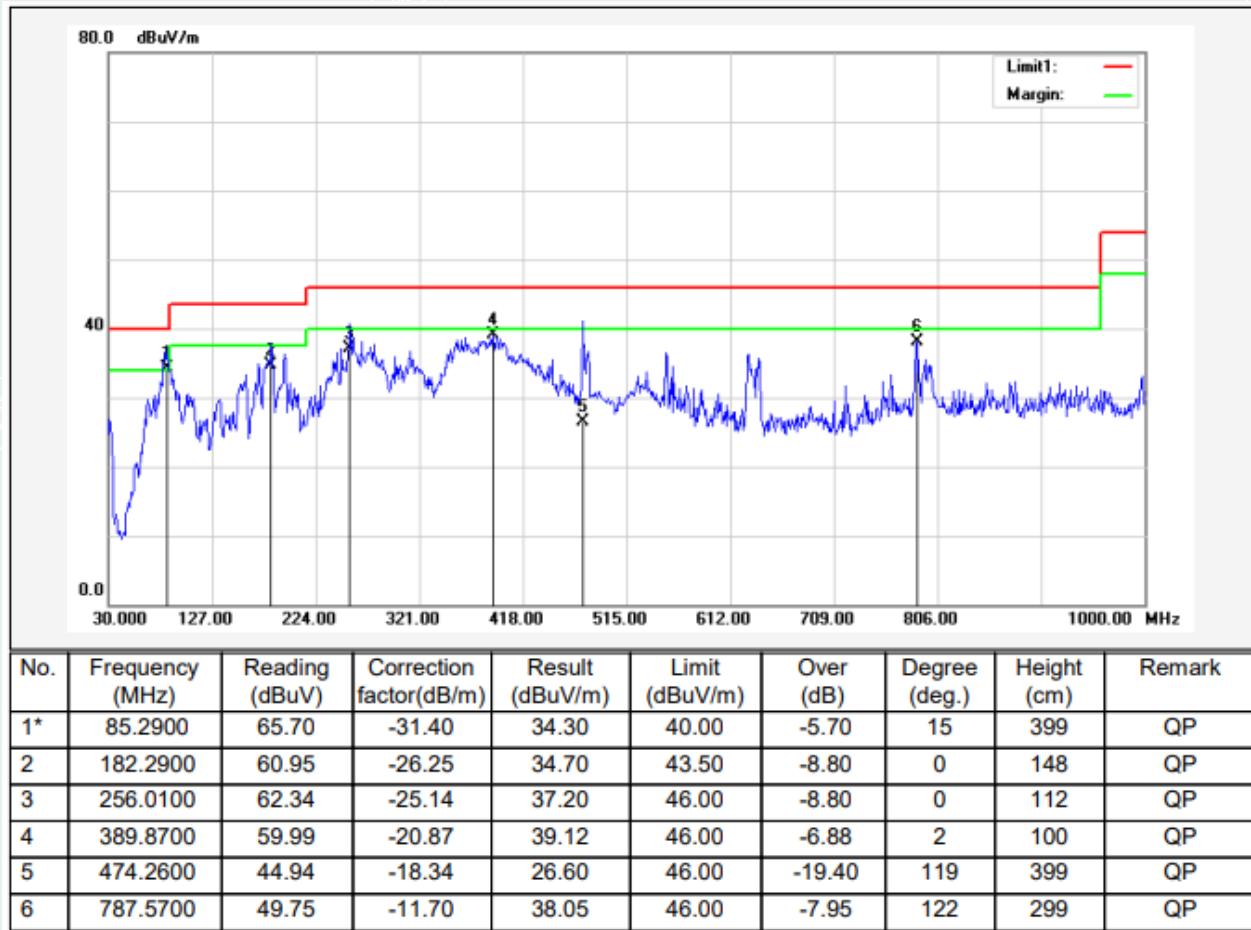
All models were pretested and only the worst modes and channels were recorded in this report(1Mbps-2402MHz).

Pre-scanned in three orthogonal panels,X,Y,Z.The worst cases mode (Z plane) were recorded in this report.

<b>EUT Name</b>	Professional Key Tool	<b>Model</b>	MaxiIM KM100
<b>Environmental Conditions</b>	23.7°C/45%RH	<b>Test Voltage</b>	DC 3.85V
<b>Test Mode</b>	TX/1Mbps (2402MHz)	<b>Polarity</b>	Vertical
<b>Tested By</b>	Tang Shenghu	<b>Tested Date</b>	2022/03/26



<b>EUT Name</b>	Professional Key Tool	<b>Model</b>	MaxiIM KM100
<b>Environmental Conditions</b>	23.7°C/45%RH	<b>Test Voltage</b>	DC 3.85V
<b>Test Mode</b>	TX/1Mbps (2402MHz)	<b>Polarity</b>	Horizontal
<b>Tested By</b>	Tang Shenghu	<b>Tested Date</b>	2022/03/26



#### Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))
- 3 Data of measurement within this frequency range in the table above the reading of PK detector are more 6dB than QP limit, therefore it's unnecessary to performed QP scan.
- 4 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

**Above 1GHz:**

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Pre-scanned in three orthogonal panels,X,Y,Z.The worst cases mode (Z plane) were recorded in this report.

Mode: TX/1Mbps

Lowest Frequenc (2402MHz)

Environment: 25°C/60%RH

Tested By:Zhang Zishan

Date: 2022-03-25

Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1057.0071	61.30	36.51	-24.79	74.00	37.49	200	66	Horizontal
2	1117.2647	63.41	38.55	-24.86	74.00	35.45	200	238	Horizontal
3	2781.7227	58.60	41.05	-17.55	74.00	32.95	100	153	Horizontal
4	3202.5253	57.57	40.77	-16.80	74.00	33.23	100	250	Horizontal
5	4803.9755	63.45	50.82	-12.63	74.00	23.18	200	136	Horizontal
6	14735.2169	42.07	50.33	8.26	74.00	23.67	200	327	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4803.8314	-12.63	43.27	30.64	54.00	23.36	119	126.7	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1893.3617	57.95	35.80	-22.15	74.00	38.20	200	144	Vertical
2	4803.9755	61.73	48.81	-12.92	74.00	25.19	200	74	Vertical
3	7206.1508	49.01	45.49	-3.52	74.00	28.51	100	70	Vertical
4	8475.6845	48.57	46.25	-2.32	74.00	27.75	200	307	Vertical
5	10159.6450	46.68	48.63	1.95	74.00	25.37	100	320	Vertical
6	14755.8445	41.39	49.26	7.87	74.00	24.74	100	137	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4803.7833	-12.92	43.39	30.47	54.00	23.53	139	91.3	Vertical

Mode: TX/1Mbps  
 Middle Frequenc (2440MHz)  
 Environment: 25°C/60%RH  
 Tested By: Zhang Zishan

Date: 2022-03-25  
 Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1248.5311	57.99	35.96	-22.03	74.00	38.04	200	61	Horizontal
2	1908.6136	57.72	37.12	-20.60	74.00	36.88	200	53	Horizontal
3	3613.2017	55.85	39.26	-16.59	74.00	34.74	100	343	Horizontal
4	4880.8601	63.63	51.53	-12.10	74.00	22.47	200	130	Horizontal
5	7275.5344	50.13	44.46	-5.67	74.00	29.54	100	250	Horizontal
6	7686.2108	49.95	45.51	-4.44	74.00	28.49	200	238	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4879.8351	-12.10	41.99	29.89	54.00	24.11	139	127	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1097.0121	58.10	36.33	-21.77	74.00	37.67	200	355	Vertical
2	1938.3673	64.54	43.00	-21.54	74.00	31.00	200	193	Vertical
3	3628.2035	55.48	39.71	-15.77	74.00	34.29	200	151	Vertical
4	4880.8601	63.04	50.99	-12.05	74.00	23.01	200	104	Vertical
5	7204.2755	48.90	45.44	-3.46	74.00	28.56	100	219	Vertical
6	9467.6835	47.54	48.29	0.75	74.00	25.71	100	279	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4879.7375	-12.05	42.23	30.18	54.00	23.82	139	93.5	Vertical

Mode: TX/1Mbps  
 Highest Frequency (2480MHz)  
 Environment: 25°C/60%RH  
 Tested By: Zhang Zishan

Date: 2022-03-25  
 Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2910.9889	56.39	38.90	-17.49	74.00	35.10	100	16	Horizontal
2	3633.8292	54.68	38.44	-16.24	74.00	35.56	200	35	Horizontal
3	4959.6200	64.21	52.94	-11.27	74.00	21.06	200	188	Horizontal
4	7740.5926	48.73	44.73	-4.00	74.00	29.27	100	356	Horizontal
5	12160.5201	42.89	47.79	4.90	74.00	26.21	100	268	Horizontal
6	14662.0828	41.59	50.17	8.58	74.00	23.83	100	196	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4959.8184	-11.27	41.43	30.16	54.00	23.84	138	128.1	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1066.0083	58.93	36.38	-22.55	74.00	37.62	200	40	Vertical
2	1471.5589	57.53	34.92	-22.61	74.00	39.08	100	360	Vertical
3	3041.2552	56.12	39.81	-16.31	74.00	34.19	100	220	Vertical
4	4959.6200	62.42	51.47	-10.95	74.00	22.53	200	100	Vertical
5	7836.2295	48.15	44.81	-3.34	74.00	29.19	100	228	Vertical
6	12145.5182	43.27	48.02	4.75	74.00	25.98	100	15	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB $\mu$ V/m]	AV Value [dB $\mu$ V/m]	AV Limit [dB $\mu$ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4959.8184	-10.95	41.31	30.36	54.00	23.64	170	93.9	Vertical

**Remark:**

- 1 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 3 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 4 Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

**Above 18GHz:**

Pre-scanned in three orthogonal panels,X,Y,Z.The worst cases mode (Z plane) were recorded in this report.

Mode: TX/1Mbps

Lowest Frequenc (2402MHz)

Environment: 25°C/60%RH

Tested By: Lu Qiang

Date: 2022-03-26

Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18339.1500	56.54	44.99	-11.55	83.54	38.55	150	52	Horizontal
2	19039.9750	57.14	46.05	-11.09	83.54	37.49	150	0	Horizontal
3	21301.8250	55.26	45.07	-10.19	83.54	38.47	150	0	Horizontal
4	23090.6500	54.35	45.46	-8.89	83.54	38.08	150	318	Horizontal
5	24880.7500	53.73	45.72	-8.01	83.54	37.82	150	196	Horizontal
6	26249.2500	53.46	45.65	-7.81	83.54	37.89	150	84	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18397.3750	57.49	45.96	-11.53	83.54	37.58	150	188	Vertical
2	18920.1250	56.80	45.63	-11.17	83.54	37.91	150	213	Vertical
3	20904.4500	55.74	45.43	-10.31	83.54	38.11	150	326	Vertical
4	22159.9000	54.99	45.22	-9.77	83.54	38.32	150	98	Vertical
5	24384.3500	53.79	45.63	-8.16	83.54	37.91	150	213	Vertical
6	25787.2750	55.19	47.08	-8.11	83.54	36.46	150	117	Vertical

Mode: TX/1Mbps  
 Lowest Frequenc (2440MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2022-03-26  
 Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18367.2000	57.34	45.80	-11.54	83.54	37.74	150	234	Horizontal
2	20414.4250	55.49	44.95	-10.54	83.54	38.59	150	277	Horizontal
3	21314.5750	55.11	44.93	-10.18	83.54	38.61	150	150	Horizontal
4	22812.7000	54.36	45.30	-9.06	83.54	38.24	150	11	Horizontal
5	24453.2000	53.96	45.81	-8.15	83.54	37.73	150	23	Horizontal
6	26233.5250	53.83	45.99	-7.84	83.54	37.55	150	23	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18302.6000	57.19	45.63	-11.56	83.54	37.91	150	63	Vertical
2	18843.6250	57.69	46.44	-11.25	83.54	37.10	150	349	Vertical
3	19963.9250	55.43	44.57	-10.86	83.54	38.97	150	138	Vertical
4	22763.4000	54.27	45.16	-9.11	83.54	38.38	150	180	Vertical
5	24402.2000	53.95	45.79	-8.16	83.54	37.75	150	234	Vertical
6	25554.8000	54.14	46.28	-7.86	83.54	37.26	150	138	Vertical

Mode: TX/1Mbps  
 Lowest Frequenc (2480MHz)  
 Environment: 25°C/60%RH  
 Tested By: Lu Qiang

Date: 2022-03-26  
 Voltage: DC 3.85V

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18910.7750	57.13	45.95	-11.18	83.54	37.59	150	202	Horizontal
2	19747.6000	56.67	45.80	-10.87	83.54	37.74	150	202	Horizontal
3	21596.7750	54.79	44.87	-9.92	83.54	38.67	150	265	Horizontal
4	22867.9500	54.25	45.23	-9.02	83.54	38.31	150	128	Horizontal
5	24142.5250	53.93	45.71	-8.22	83.54	37.83	150	106	Horizontal
6	25239.0250	53.21	45.55	-7.66	83.54	37.99	150	84	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB $\mu$ V/m]	Level [dB $\mu$ V/m]	Factor [dB]	Limit [dB $\mu$ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18354.8750	56.80	45.26	-11.54	83.54	38.28	150	116	Vertical
2	19462.8500	55.67	44.73	-10.94	83.54	38.81	150	190	Vertical
3	21508.8000	55.23	45.23	-10.00	83.54	38.31	150	9	Vertical
4	23360.9500	53.80	45.03	-8.77	83.54	38.51	150	62	Vertical
5	25221.1750	53.57	45.93	-7.64	83.54	37.61	150	20	Vertical
6	26168.9250	53.86	45.87	-7.99	83.54	37.67	150	105	Vertical

## 7. 6dB BANDWIDTH

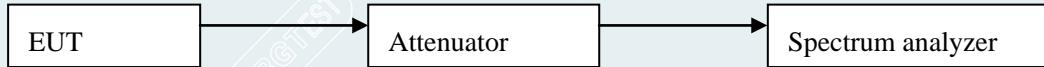
### 7.1 LIMITS

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

### 7.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set resolution bandwidth (RBW) = 100kHz. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize, record 6dB bandwidth value.
- 3) Repeat above procedures until all frequencies measured were complete.

### 7.3 TEST SETUP



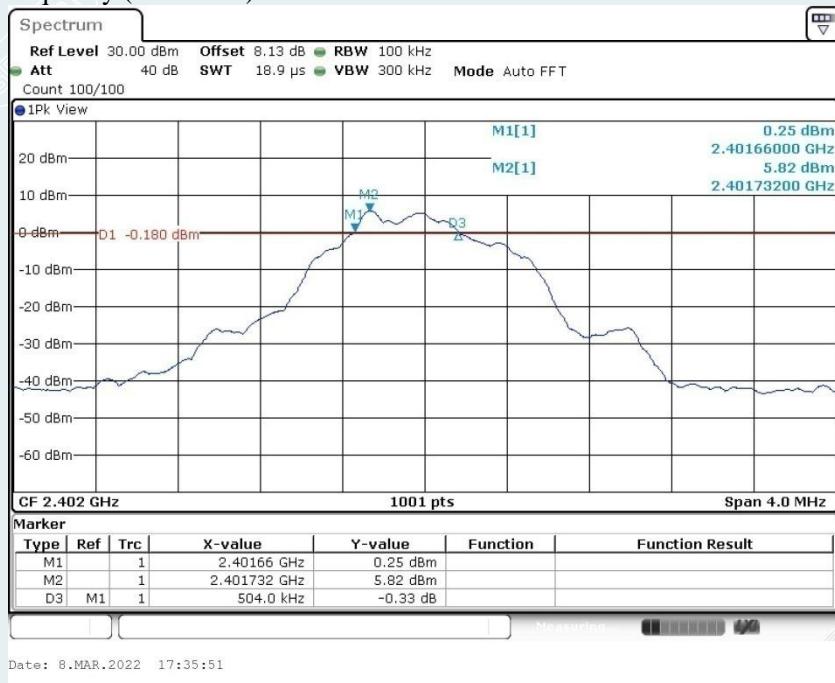
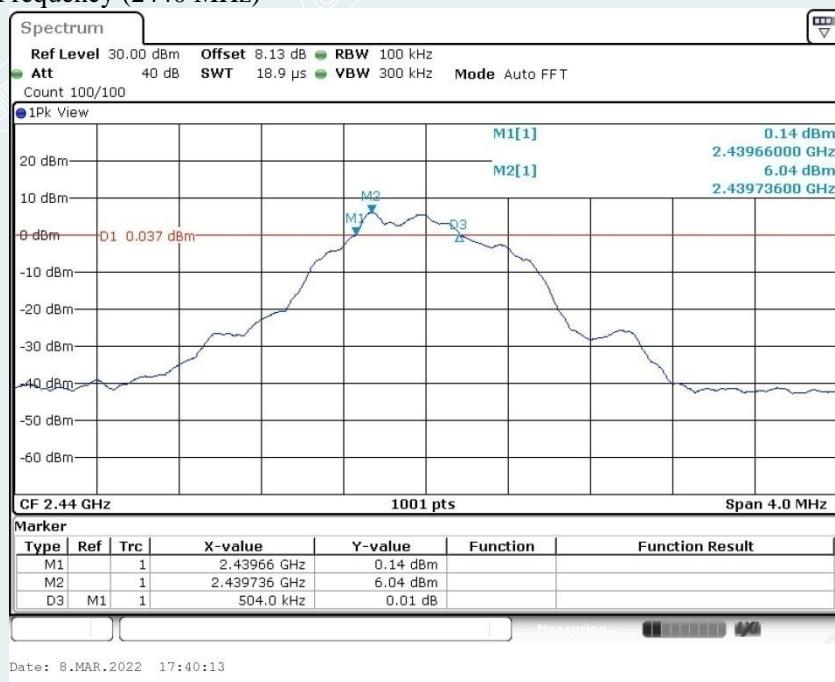
### 7.4 TEST RESULTS

Environment: 23.5°C/48%RH  
Tested By:Lu Wei

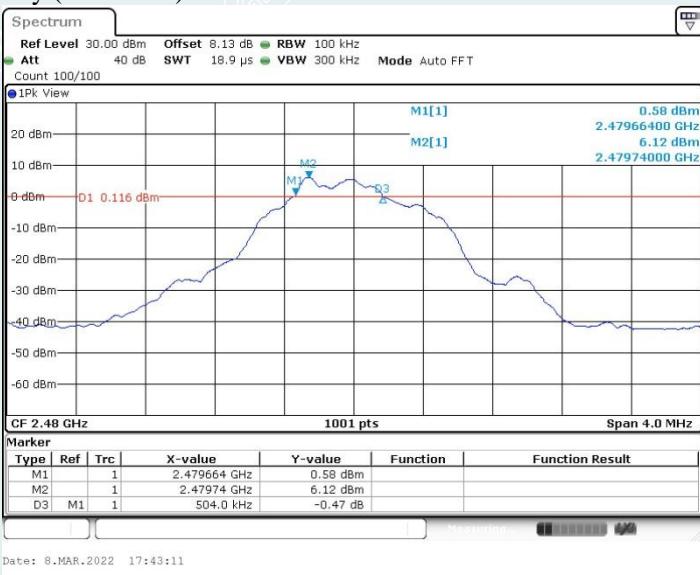
Voltage:DC3.85V  
Date: 2022-03-08

For 1Mbps

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	504	$\geq 500$	PASS
Middle	2440	504		PASS
Highest	2480	504		PASS

**For 1Mbps****Lowest Frequency (2402MHz)****Middle Frequency (2440 MHz)**

## Highest Frequency (2480MHz)



----- The following blanks -----

## 8. MAXIMUM PEAK OUTPUT POWER

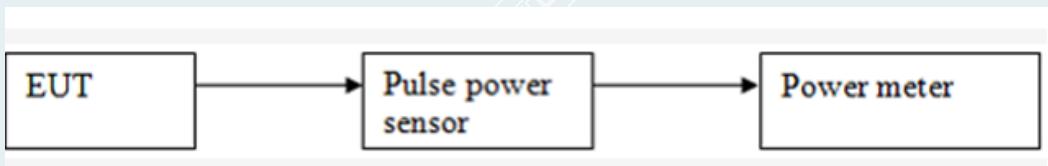
### 8.1 LIMITS

The maximum Peak output power measurement is 1W

### 8.2 TEST PROCEDURES

- 1) RF output of EUT was connected to the broadband peak RF power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- 2) Set to the maximum power setting and enable the EUT transmit continuously.
- 3) Measure the conducted output power and record the results in the test report.

### 8.3 TEST SETUP



### 8.4 TEST RESULTS

Environment: 23.5°C/48%RH

Tested By:Lu Wei

Voltage:DC 3.85V

Date: 2022-03-08

For 1Mbps

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/Average	Result
Lowest	2402	6.13	1W (30dBm)	Peak	Pass
Middle	2440	6.56			Pass
Highest	2480	6.60			Pass

## 9. POWER SPECTRAL DENSITY

### 9.1 LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

### 9.2 TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 3) Set the analyzer span to 1.5 times the DTS bandwidth. Set the RBW to  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ . Set the VBW  $\geq [3 \times \text{RBW}]$ . Detector = peak. Sweep time = auto couple. Trace mode = max hold. Allow trace to fully stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
- 4) Repeat above procedures until all frequencies measured were complete.

### 9.3 TEST SETUP



### 9.4 TEST RESULTS

Environment: 23.5°C/48%RH

Tested By:Lu Wei

Voltage:DC 3.85V

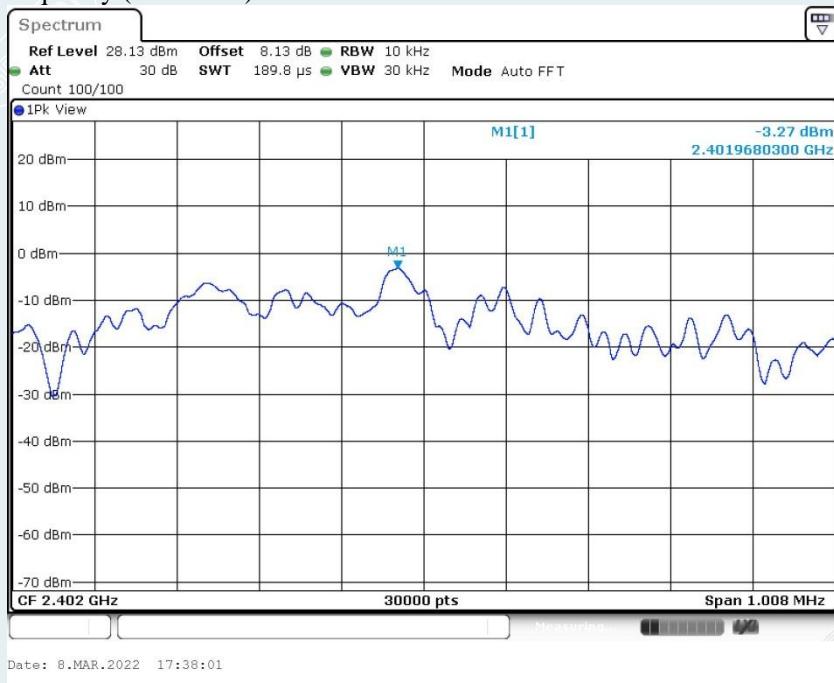
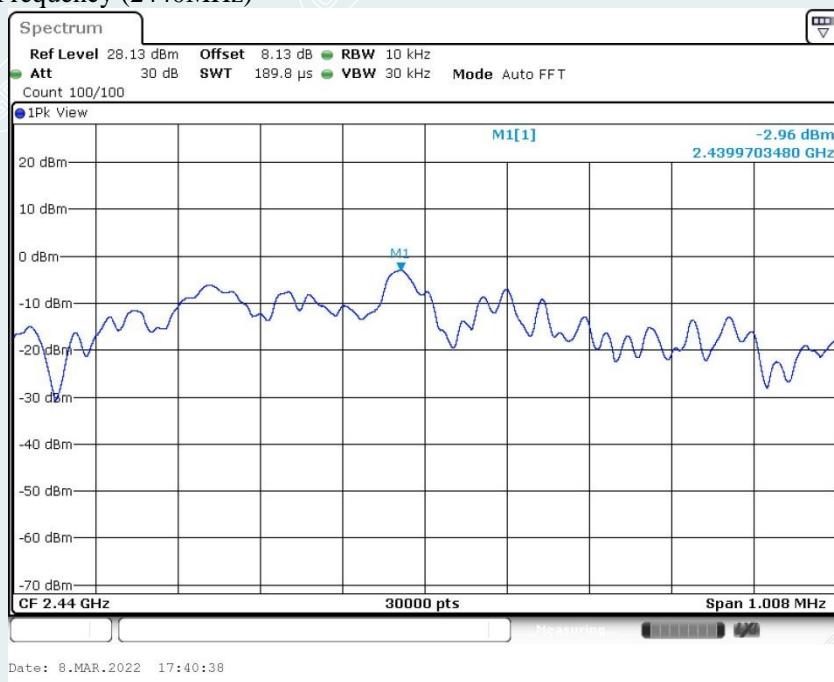
Date: 2022-03-08

#### For 1Mbps

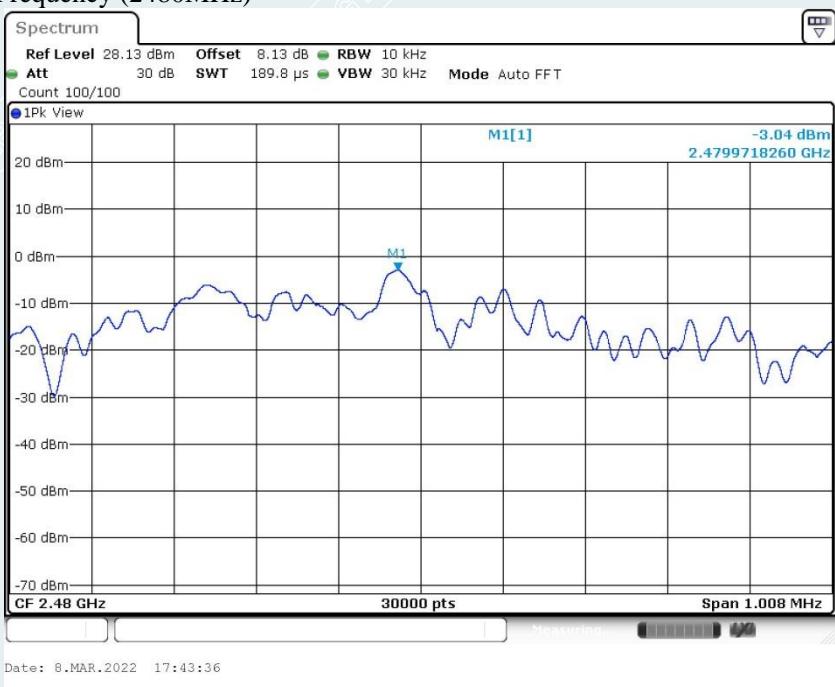
Channel	Frequency (MHz)	PSD (dBm/10kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-3.27	-8.50	8.00	PASS
Middle	2440	-2.96	-8.19		PASS
Highest	2480	-3.04	-8.27		PASS

Remark:

The value measured with RBW=10kHz is to be added with  $10\log(3\text{kHz}/10\text{kHz})$  which is -5.23dB. For example, if the measured value is +10dBm using RBW=10kHz (that is +10dBm/10kHz), then the converted value will be +4.77dBm/3kHz.

**For 1Mbps****Lowest Frequency (2402MHz)****Middle Frequency (2440MHz)**

## Highest Frequency (2480MHz)



## 10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

### 10.1 LIMITS

In any 100kHz 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 20dB below that in the 100kHz 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB.

### 10.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 DTS Measurement Guidance v05r02.

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 10.3 TEST SETUP



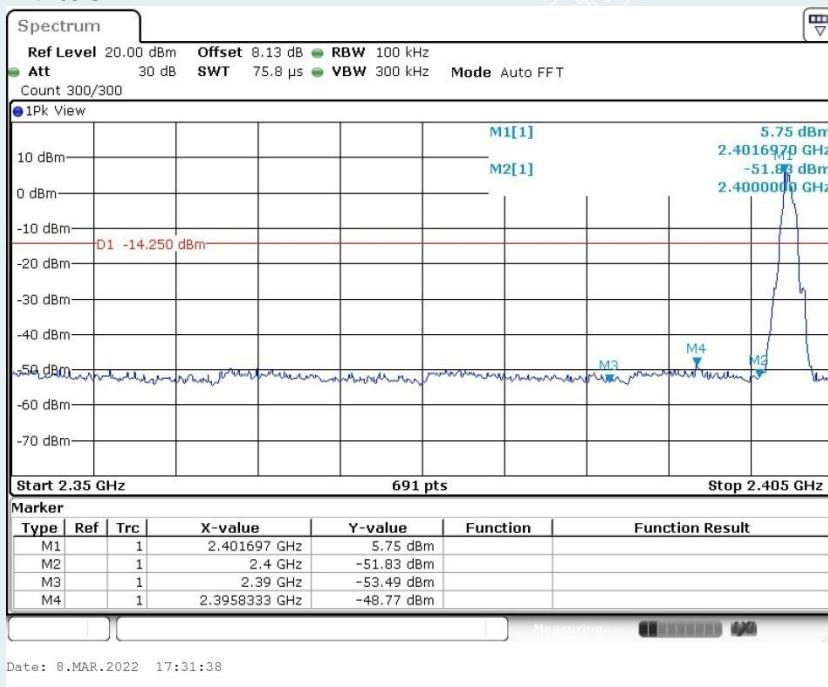
## 10.4 TEST RESULTS

Environment: 23.5°C/48%RH  
Tested By: Lu Wei

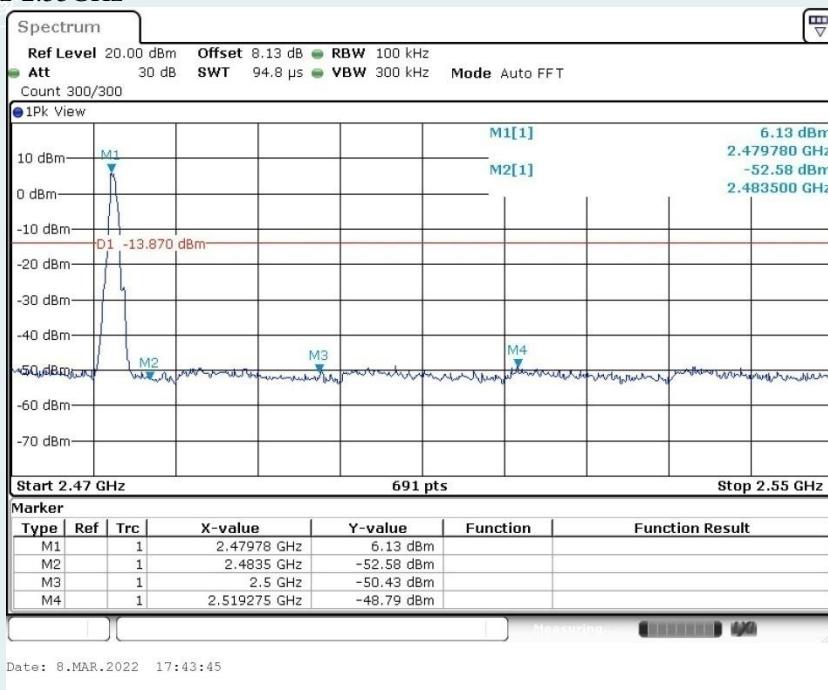
Voltage: DC 3.85V  
Date: 2022-03-08

### For 1Mbps

Lowest Frequency (2402MHz)  
2.35GHz-2.405GHz

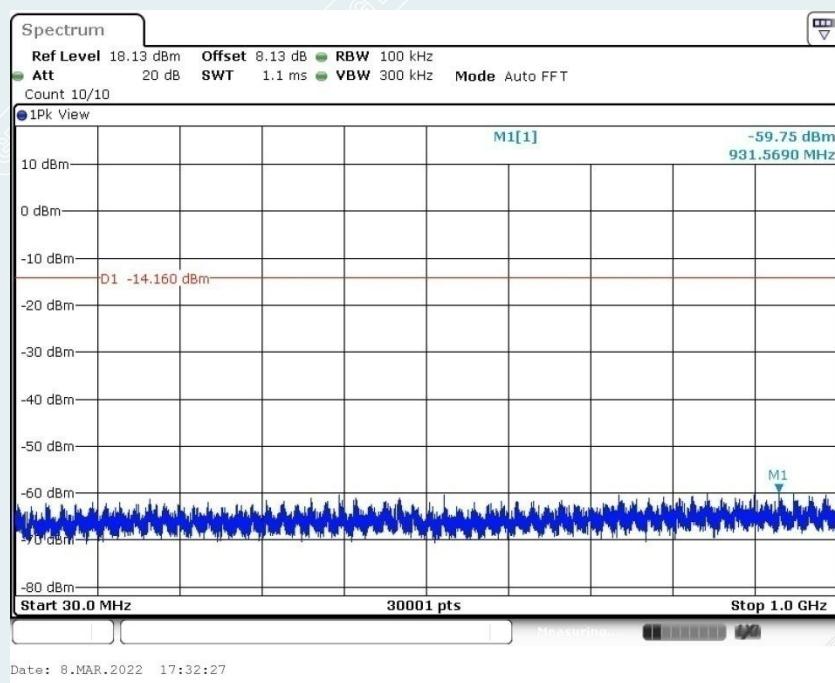


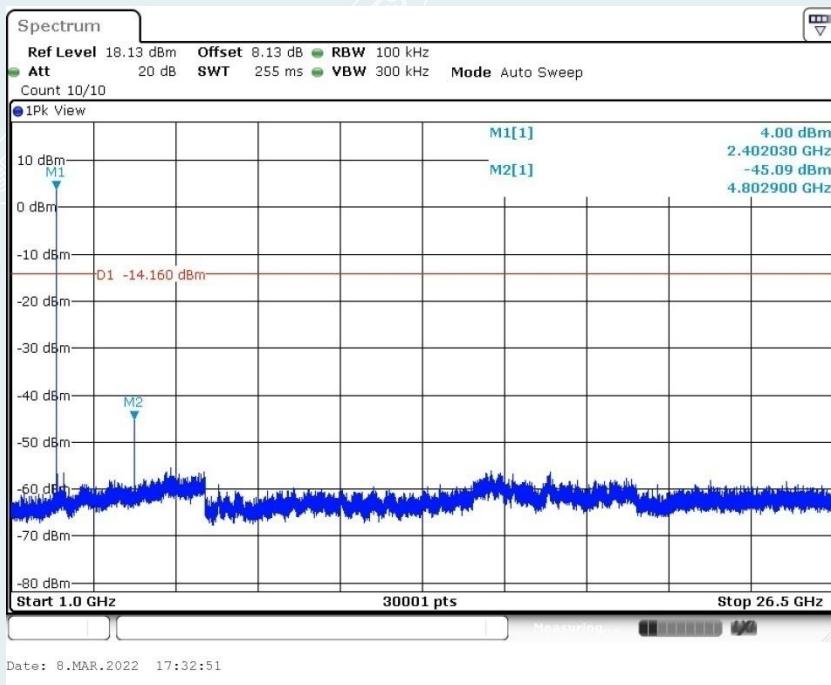
Highest Frequency (2480MHz)  
2.47GHz-2.55GHz



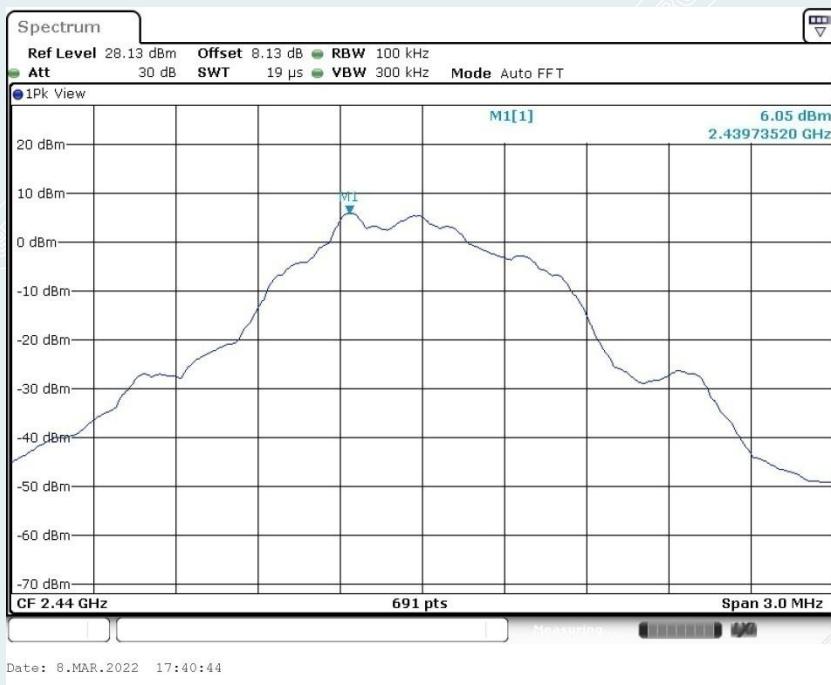
**SPURIOUS EMISSIONS:****For 1Mbps**

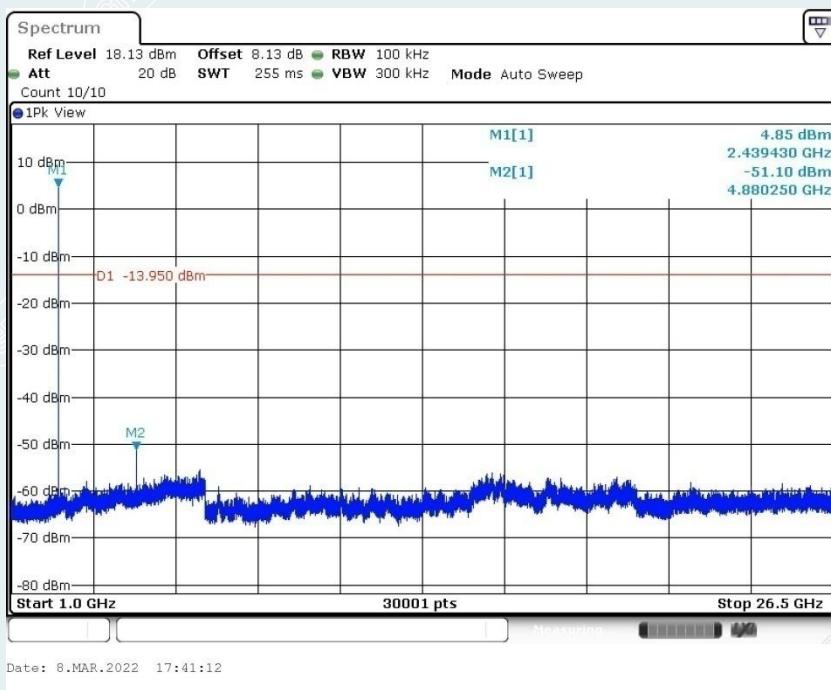
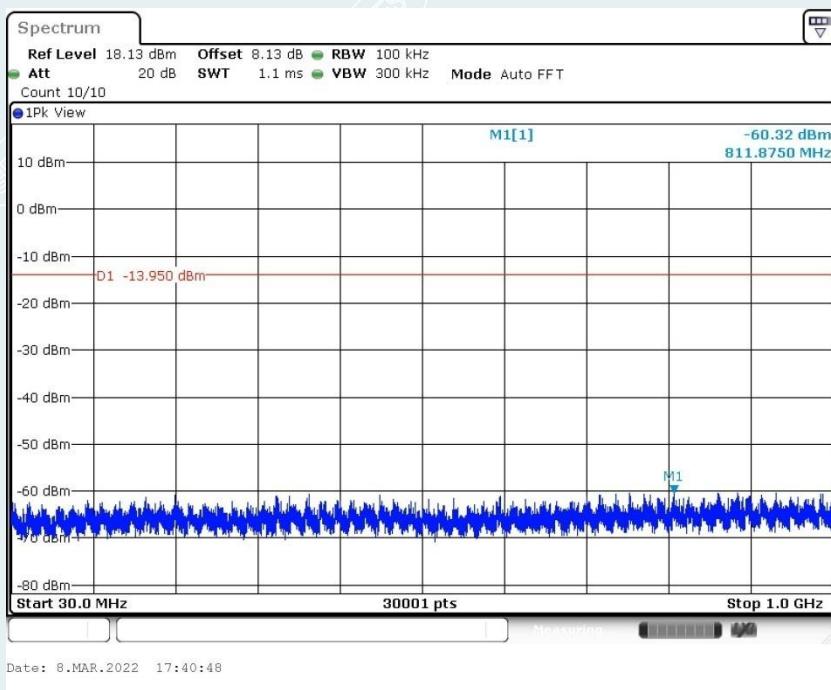
Lowest Frequency (2402MHz)



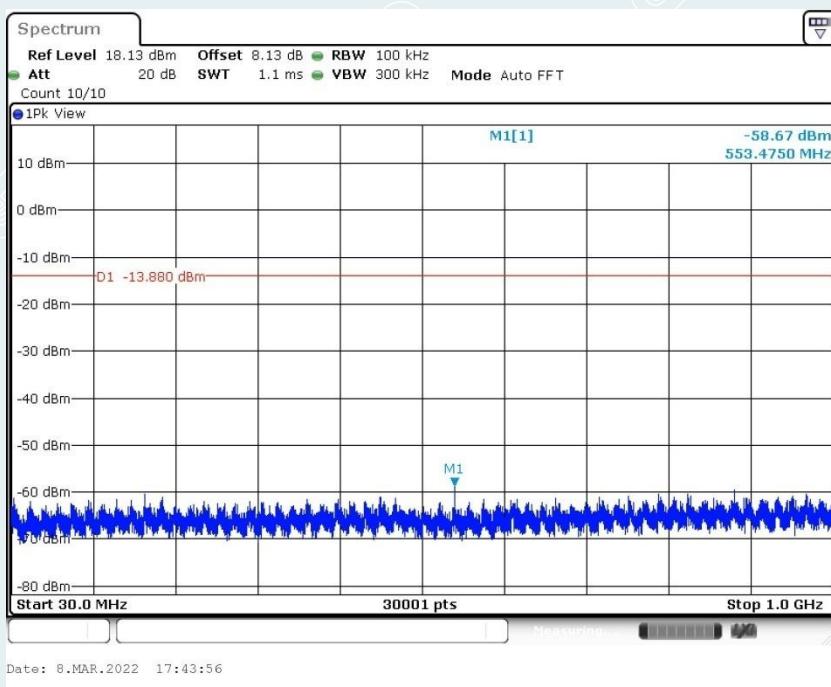
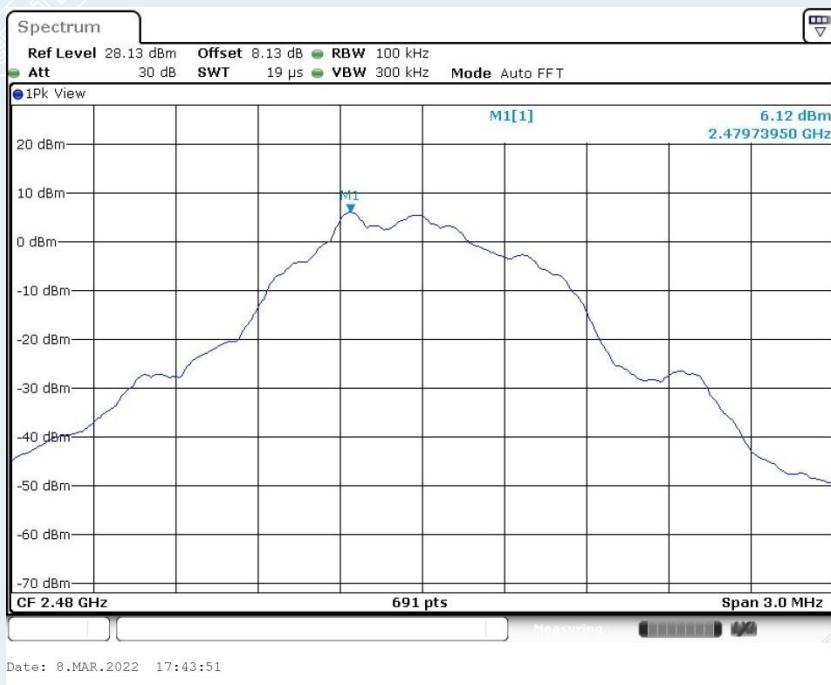


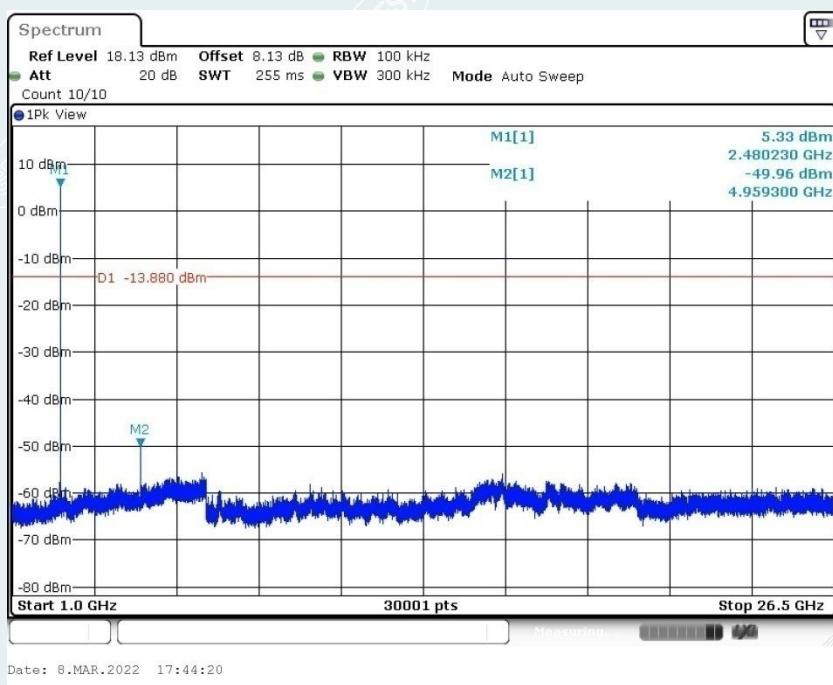
### Middle Frequency (2440MHz)





## Highest Frequency (2480MHz)





----- The following blanks -----

## 11. RESTRICTED BANDS OF OPERATION

### 11.1 LIMITS

Section 15.247(d) In addition, Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 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	2655 - 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	
13.36 - 13.41			

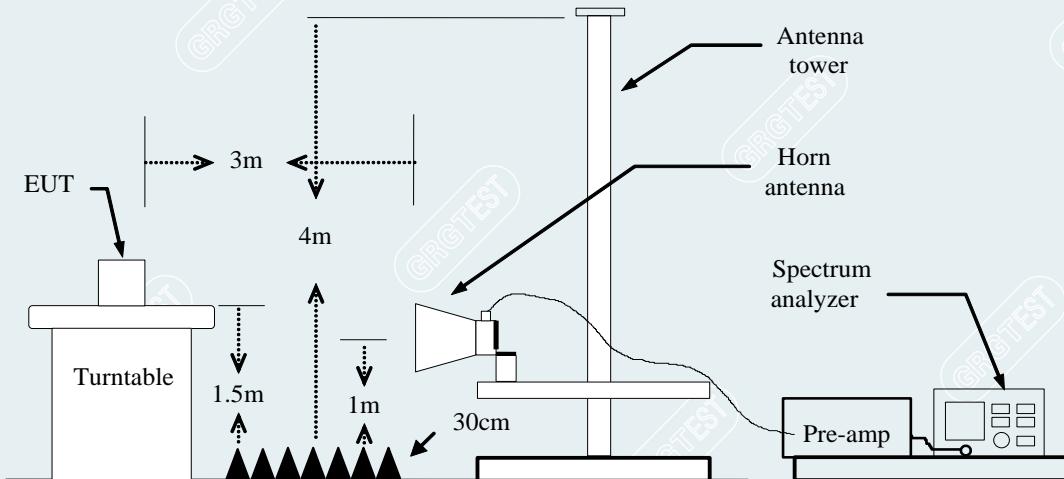
Frequency (MHz)	Quasi-peak( $\mu$ V/m)	Measurement distance(m)	Quasi-peak(dB $\mu$ V/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

## 11.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 DTS Meas Guidance v05r02.

- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO.
  - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

## 11.3 TEST SETUP



## 11.4 TEST RESULTS

Pre-scanned in three orthogonal panels,X,Y,Z.The worst cases mode (Z plane) were recorded in this report.

### For 1Mbps

Lowest Frequency

Frequency 2402MHz

Environment: 25°C/60%RH

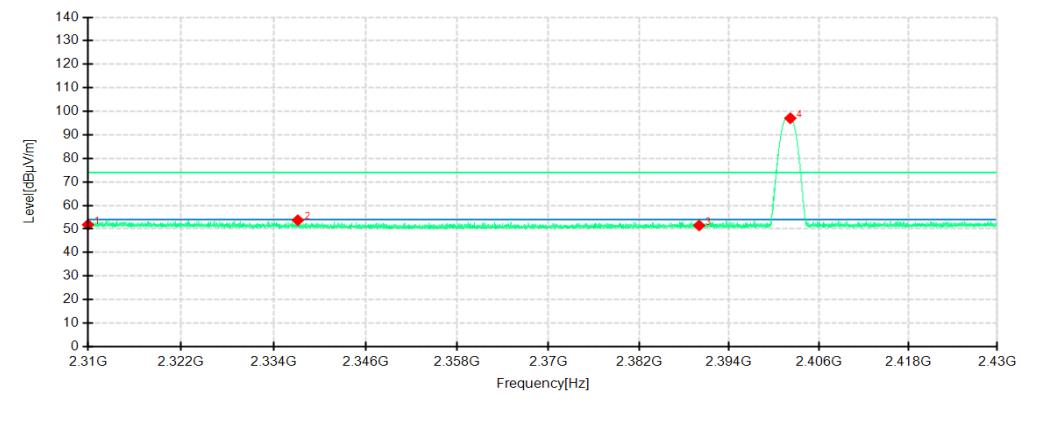
Tested By: Zhang Zishan

Detector mode: Peak

Voltage: DC 3.85V

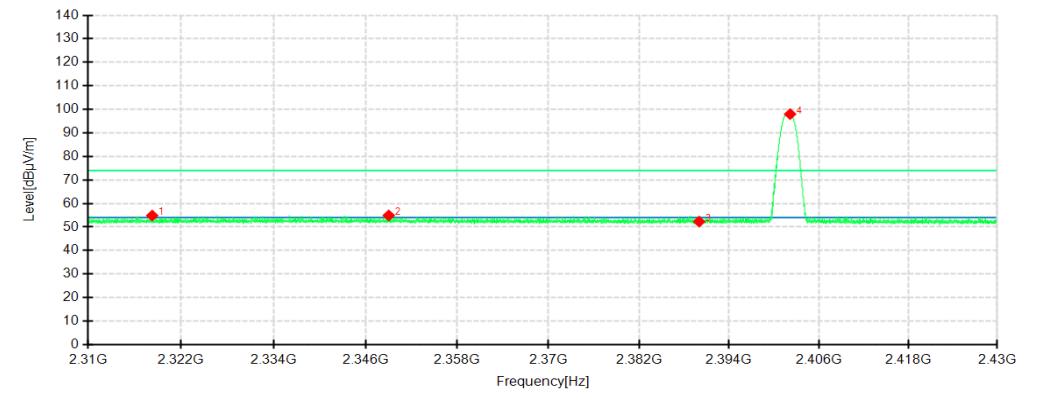
Date: 2022-03-25

Polarity: Horizontal



Detector mode: Peak

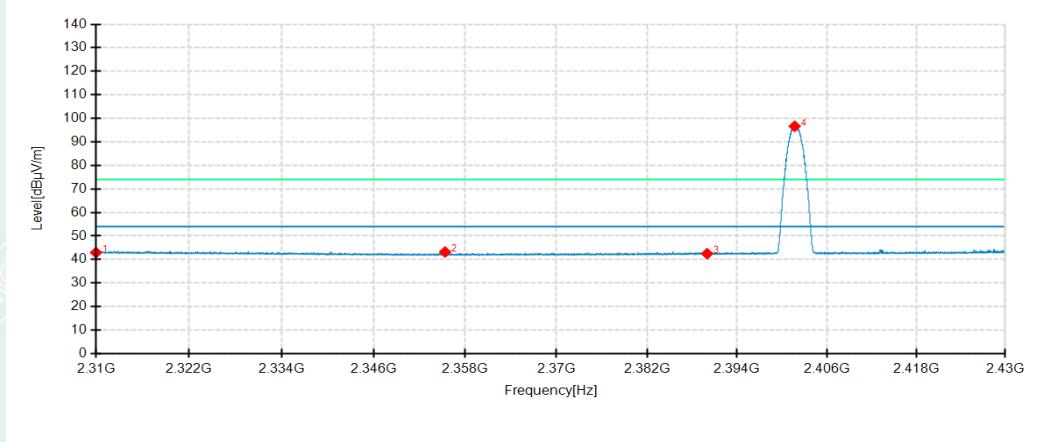
Polarity: Vertical



No.	Frequency MHz	Reading dB $\mu$ V/m	Level dB $\mu$ V/m	Factor dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	47.89	51.82	3.93	74.00	22.18	200	194	Horizontal	/
2	2337.1650	50.47	53.74	3.27	74.00	20.26	200	149	Horizontal	/
3	2390.0000	48.36	51.49	3.13	74.00	22.51	200	10	Horizontal	/
4	2402.1750	93.88	97.08	3.20	74.00	-23.08	100	224	Horizontal	No limit
1	2318.2800	50.32	54.86	4.54	74.00	19.14	200	192	Vertical	/
2	2349.0300	50.25	54.90	4.65	74.00	19.10	200	248	Vertical	/
3	2390.0000	48.01	52.28	4.27	74.00	21.72	200	212	Vertical	/
4	2402.1450	93.83	97.98	4.15	74.00	-23.98	200	128	Vertical	No limit

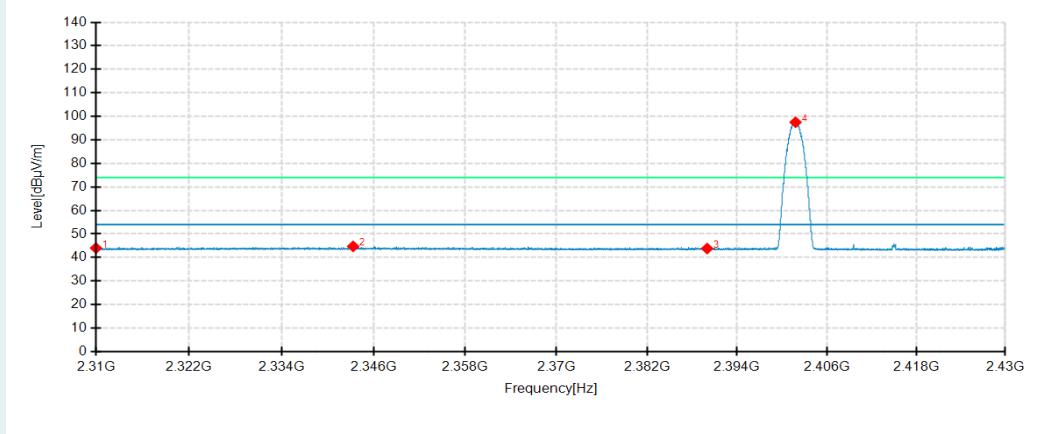
Lowest Frequency  
 Frequency 2402MHz  
 Environment: 25 °C/60%RH  
 Tested By: Zhang Zishan  
 Detector mode: Average

Voltage: DC 3.85V  
 Date: 2022-03-25  
 Polarity: Horizontal



Detector mode: Average

Polarity: Vertical

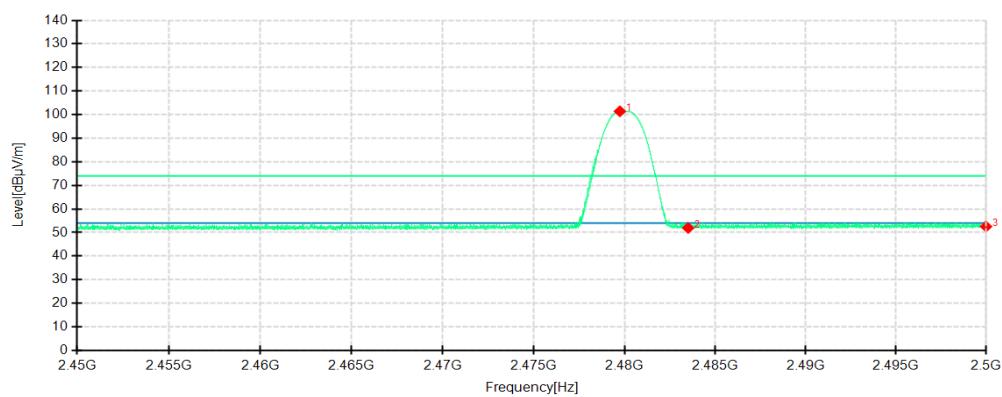


No.	Frequency MHz	Reading dB $\mu$ V/m	Level dB $\mu$ V/m	Factor dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310.0000	39.01	42.94	3.93	54.00	11.06	200	280	Horizontal	/
2	2355.3600	40.24	43.21	2.97	54.00	10.79	200	173	Horizontal	/
3	2390.0000	39.34	42.47	3.13	54.00	11.53	200	1	Horizontal	/
4	2401.6800	93.43	96.63	3.20	54.00	-42.63	100	220	Horizontal	No limit
1	2310.0000	39.50	44.01	4.51	54.00	9.99	200	187	Vertical	/
2	2343.3300	40.11	44.74	4.63	54.00	9.26	200	324	Vertical	/
3	2390.0000	39.54	43.81	4.27	54.00	10.19	200	87	Vertical	/
4	2401.8000	93.35	97.51	4.16	54.00	-43.51	200	105	Vertical	No limit

**Highest Frequency**

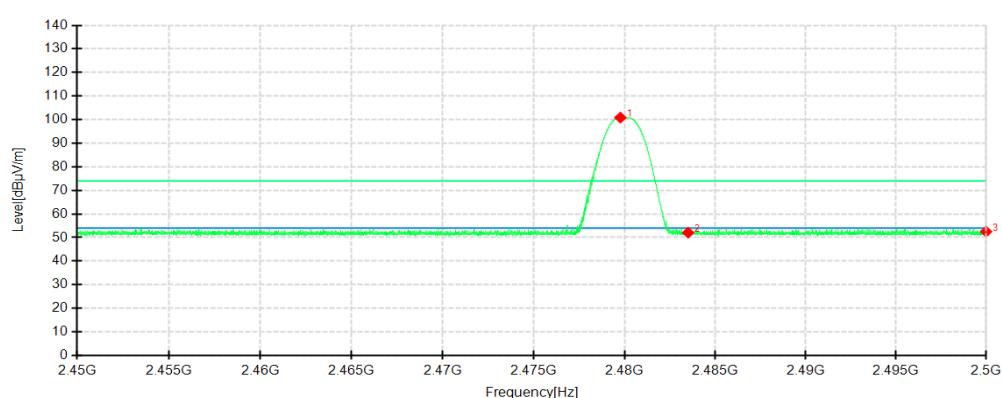
Frequency 2480MHz  
 Environment: 25°C/60%RH  
 Tested By: Zhang Zishan  
 Detector mode: Peak

Voltage: DC 3.85V  
 Date: 2022-03-25  
 Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dB $\mu$ V/m	Level dB $\mu$ V/m	Factor dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.7375	97.15	101.40	4.25	74.00	-27.40	100	235	Horizontal	No limit
2	2483.5000	47.60	51.93	4.33	74.00	22.07	200	153	Horizontal	/
3	2500.0000	47.88	52.53	4.65	74.00	21.47	100	246	Horizontal	/
1	2479.7625	97.19	100.87	3.68	74.00	-26.87	200	136	Vertical	No limit
2	2483.5000	48.37	52.06	3.69	74.00	21.94	100	129	Vertical	/
3	2500.0000	48.76	52.51	3.75	74.00	21.49	100	232	Vertical	/

**Highest Frequency**

Frequency 2480MHz

Environment: 25 °C/60%RH

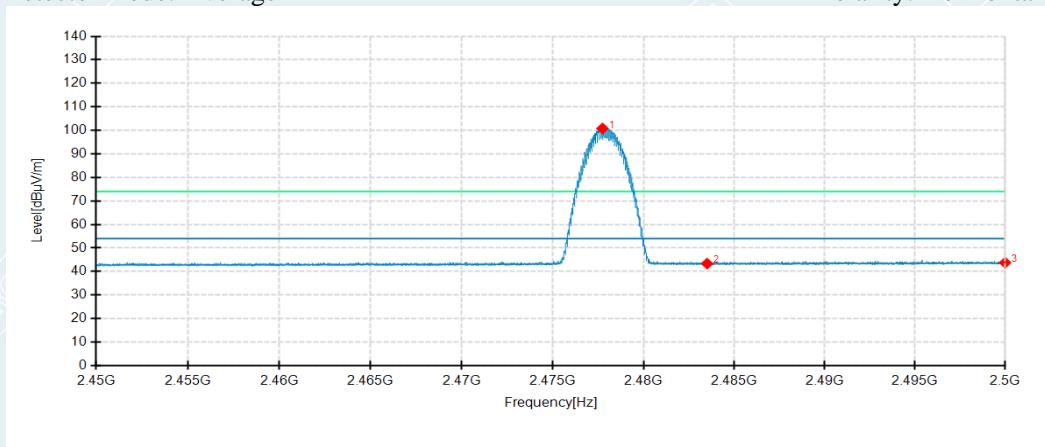
Tested By: Zhang Zishan

Detector mode: Average

Voltage: DC 3.85V

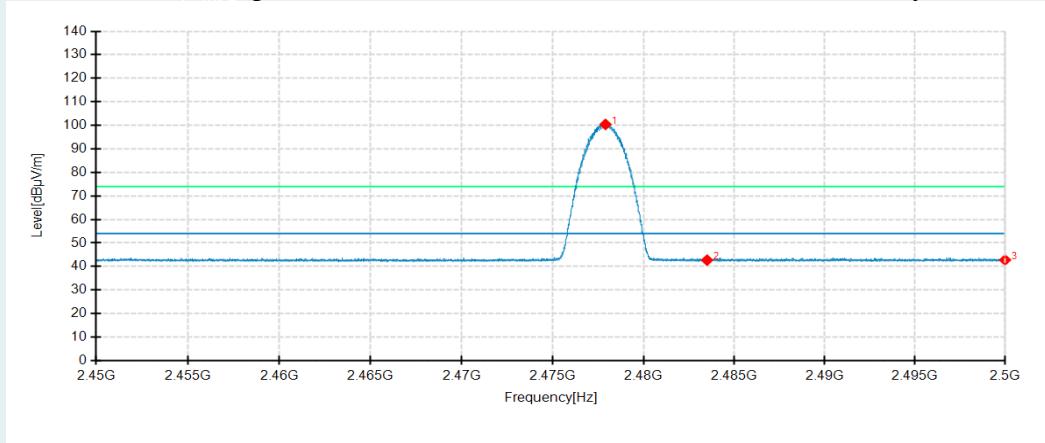
Date: 2022-03-25

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dB $\mu$ V/m	Level dB $\mu$ V/m	Factor dB	Limit dB $\mu$ V/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2477.7313	96.60	100.81	4.21	54.00	-46.81	100	236	Horizontal	No limit
2	2483.5000	39.03	43.36	4.33	54.00	10.64	100	264	Horizontal	/
3	2500.0000	39.12	43.77	4.65	54.00	10.23	100	358	Horizontal	/
1	2477.9000	96.73	100.40	3.67	54.00	-46.40	200	138	Vertical	No limit
2	2483.5000	39.01	42.70	3.69	54.00	11.30	100	233	Vertical	/
3	2500.0000	39.03	42.78	3.75	54.00	11.22	200	127	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

## **APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM**

Please refer to the attached document E202112291004-26-Test photo.

## **APPENDIX B. PHOTOGRAPH OF THE EUT**

Please refer to the attached document E202112291004-27-EUT photo.

----- End of Report -----