

TEST REPORT

Verified Code: 046611

Report No.:	E20210414049301-5	Application No.:	E20210414049301
Client:	Lumi United Technology Co., Ltd		
Address:	8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave, Taoyuan Residential District, Nanshan District, Shenzhen.China		
Sample Description:	Hub E1		
Model:	HE1-G01		
Test Specification:	FCC 47 CFR Part 15 Subpart C 15.247 KDB 558074 D01 15.247 measurement guidance v05r02 ANSI C63.10:2013		
Receipt Date:	2021-04-20		
Test Date:	2021-06-28 to 2021-07-14		
Issue Date:	2021-07-27		
Test Result:	Pass		
Prepared By: Test Engineer Yu shanshan.	Reviewed By: Technical Manager Jiang Tao	Approved By: Manager Johnson	
Other Aspects:			
Note:Note			
Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable;			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			



DIRECTIONS OF TEST

- 1. This station carries out test task according to the national regulation of verification which can be traced to National Primary Standards and BIPM.**
- 2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**
- 3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

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1. TEST RESULT SUMMARY

Technical Requirements		
FCC 47 CFR Part 15 Subpart C 15.247 KDB 558074 D01 15.247 measurement guidance v05r02		
Limit / Severity	Item	Result
§15.207	Conducted emission AC power port	Pass
§15.247(b)(1)	Conducted output power for FHSS	N/A
§15.247(b)(3)	Conducted output power for DTS	Pass
§15.247(e)	Power spectral density	Pass
§15.247(a)(2)	6dB bandwidth	Pass
§15.247(a)(1)	20dB Occupied bandwidth	N/A
--	99% Occupied Bandwidth	N/A
§15.247(a)(1)	Carrier frequency separation	N/A
§15.247(a)(1)(iii)	Number of hopping frequencies	N/A
§15.247(a)(1)(iii)	Dwell Time	N/A
§15.247(d)	Spurious RF conducted emissions	Pass
§15.247(d)	Band edge	Pass
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	Pass
§15.203	Antenna requirement	Pass

The EUT has one antenna. The antenna is internal antenna.

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

2. GENERAL DESCRIPTION OF EUT

2.1. APPLICANT

Name: Lumi United Technology Co., Ltd
Address: 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave,
Taoyuan Residential District, Nanshan District, Shenzhen.China


2.2. MANUFACTURER

Name: Lumi United Technology Co., Ltd
Address: 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave,
Taoyuan Residential District, Nanshan District, Shenzhen.China

2.3. FACTORY

Name: Lumi United Technology Co., Ltd
Address: 8th Floor, JinQi Wisdom Valley, No.1 Tangling Road, Liuxian Ave,
Taoyuan Residential District, Nanshan District, Shenzhen.China

2.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Hub E1
Model No.: HE1-G01
Adding Model: /
Trade Name: Aqara
FCC ID: 2AKIT-HE1G01
Power Supply: Input: 5V , 0.5A
Adapter Specification: /
Frequency Range: 2405 ~ 2475MHz
Transmit Power: 8.73dBm
Modulation type: OQPSK
Channel space: 5MHz
Antenna Specification: Internal antenna 1dBi gain (Max.)
Temperature Range: -10°C ~40°C
Hardware Version: T0
Software Version: 3.2.4_0028
Sample No: E20210414049301-0006
Note: /

2.5. TEST OPERATION MODE

Test Item	Mode No.	Description of the modes
Conducted Emission	1	ZigbeeTX mode
Radiated Emission	1	ZigbeeTX mode

2.6. LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
Notebook	LENOVO	TianYi 310-14ISK	MP18DLC6	/
Adapter (Notebook)	LENOVO	ADLX65NCC3A	N/A	/
Adapter	Apple	A1443	/	/
Cable				
AC cable	/	/	/	Unshielded, 1.00m
DC cable	/	/	/	Shielded, 1.80m

Test software:

Software version	Test level
QCOM_V1.0	90

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.

Add : 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 GB/T 27025(ISO/IEC 17025:2017)

USA A2LA(Certificate#:2861.01)

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

Canada Industry Canada
USA FCC

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.grgtest.com>

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	30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
		18GHz~26GHz	3.65dB
	Vertical	30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
		18GHz~26GHz	3.65dB
Conduction Emission		9 kHz ~ 150 kHz	2.8 dB
		150 kHz ~ 10 MHz	2.8 dB
		10 MHz ~ 30 MHz	2.2 dB

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

4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Conducted Emissions				
EMI TEST RECEIVER	R&S	ESCI	100783	2021-10-08
LISN(EUT)	R&S	ENV216	101543	2022-03-21
Radiated Spurious Emission&Restricted bands of operation				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2022-04-16
Bilog Antenna	Schwarzbeck	VULB 9163	01279	2022-02-25
Horn Antenna	Schwarzbeck	BBHA9120D	286	2021-10-08
Bi-log Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2021-11-05
Amplifier	Tonscend	TAP9E6343	AP20E806065	2022-06-03
Amplifier	Tonscend	TAP01018048	AP20E8060075	2022-06-07
Test S/W	Tonscend	JS32-RE/2.5.2.4		
Test S/W	Tonscend	CCS-3A1-CE		
6 dB Bandwidth				
Spectrum Analyzer	R&S	FSV30	104381	2022-02-21
Maximum Peak Output Power				
Pulse power sensor	Agilent	MA2411B	1126150	2022-03-21
Power meter	Anritsu	ML2495A	1204003	2022-03-21
Conducted band edges and Spurious Emission				
Spectrum Analyzer	R&S	FSV30	104381	2022-02-21
Peak Output Spectral Density Measurement				
Spectrum Analyzer	R&S	FSV30	104381	2022-02-21

5. CONDUCTED EMISSION MEASUREMENT

5.1. LIMITS

Frequency range	Limits (dB μ V)	
	Quasi-peak	Average
150kHz ~ 0.5MHz	66~56	56~46
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	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 C63.4:2014.

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.

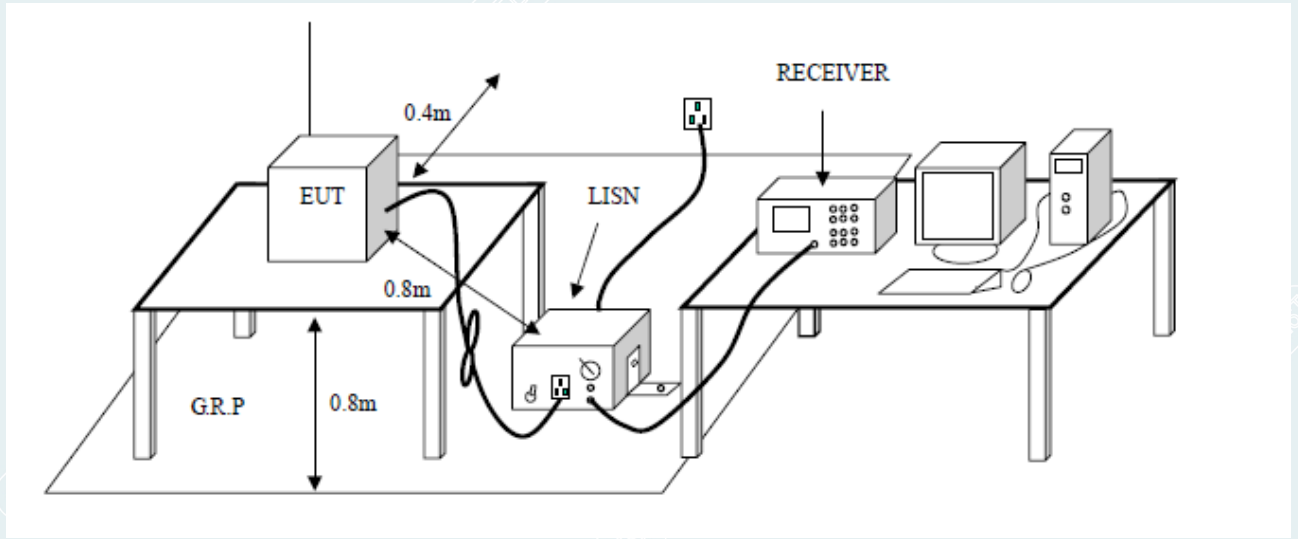
- I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 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



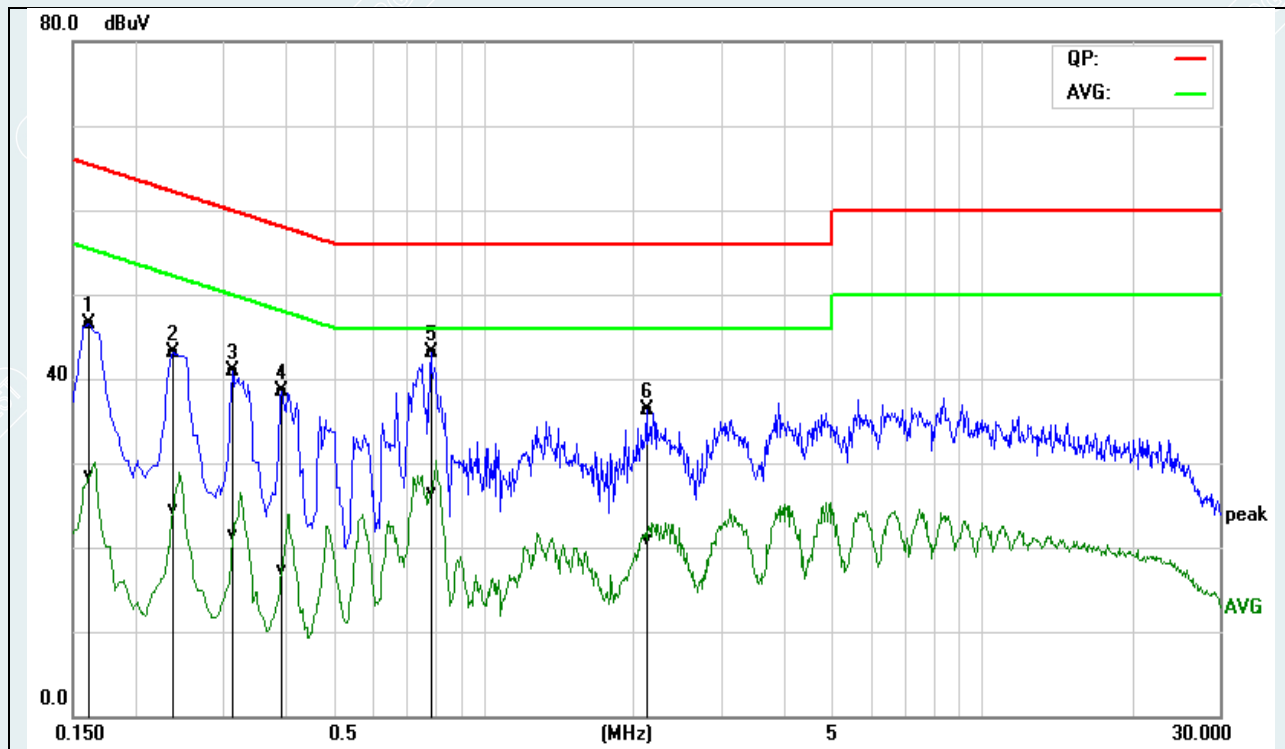
5.4. DATA SAMPLE

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)

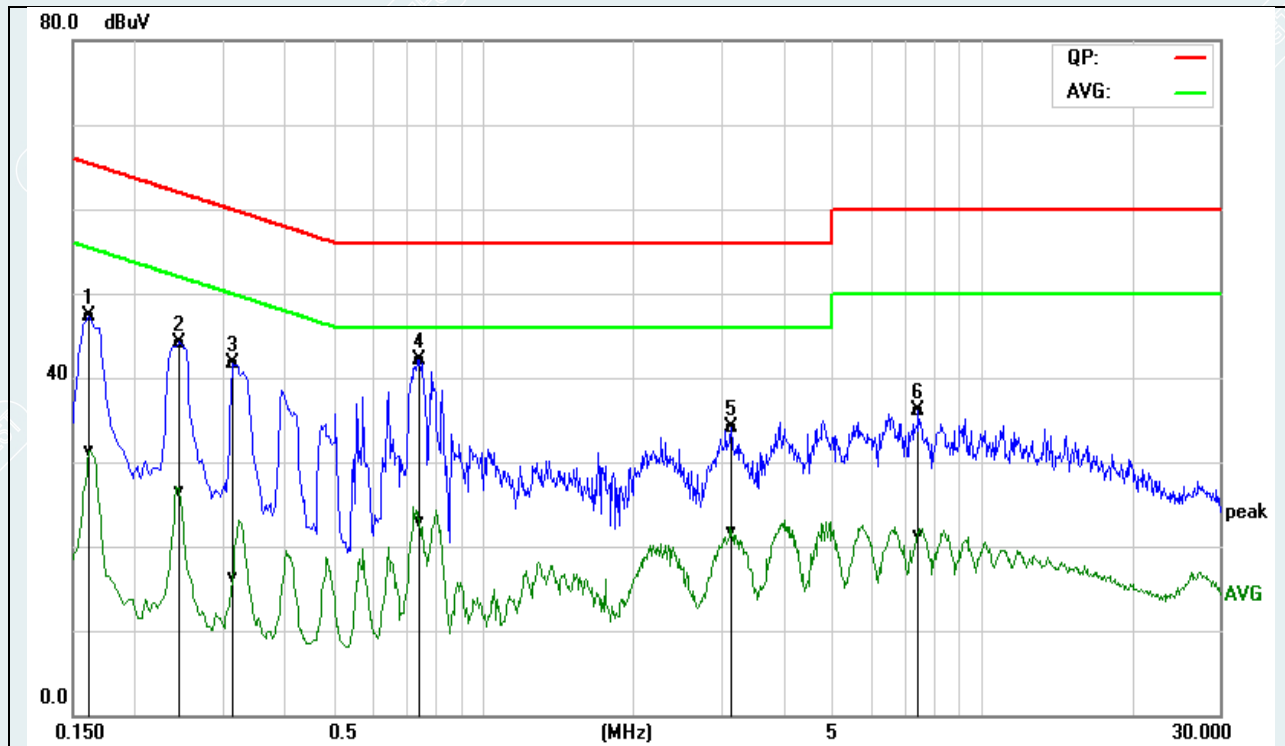
5.5. TEST RESULTS

Model No.	HE1-G01	RBW,VBW	9 kHz
Environmental Conditions	24.2°C/48%RH	Test Mode	Mode 1
Tested By	Wang Xinyuan	Line	L
Tested Date	2021/7/13	Test Voltage	AC120V/60Hz



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	0.1620	36.96	18.82	9.61	46.57	28.43	65.36	55.36	-18.79	-26.93	Pass
2	0.2380	33.55	14.87	9.63	43.18	24.50	62.16	52.17	-18.98	-27.67	Pass
3	0.3140	31.28	11.82	9.64	40.92	21.46	59.86	49.86	-18.94	-28.40	Pass
4	0.3940	28.78	7.57	9.66	38.44	17.23	57.98	47.98	-19.54	-30.75	Pass
5*	0.7860	33.43	16.83	9.66	43.09	26.49	56.00	46.00	-12.91	-19.51	Pass
6	2.1220	26.59	11.29	9.66	36.25	20.95	56.00	46.00	-19.75	-25.05	Pass

Model No.	HE1-G01	RBW,VBW	9 kHz
Environmental Conditions	24.2°C/48%RH	Test Mode	Mode 1
Tested By	Wang Xinyuan	Line	N
Tested Date	2021/7/13	Test Voltage	AC120V/60Hz



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	0.1620	37.72	21.78	9.60	47.32	31.38	65.36	55.36	-18.04	-23.98	Pass
2	0.2460	34.57	16.97	9.63	44.20	26.60	61.89	51.89	-17.69	-25.29	Pass
3	0.3140	32.01	6.67	9.64	41.65	16.31	59.86	49.86	-18.21	-33.55	Pass
4*	0.7460	32.54	13.18	9.66	42.20	22.84	56.00	46.00	-13.80	-23.16	Pass
5	3.1420	24.46	12.06	9.68	34.14	21.74	56.00	46.00	-21.86	-24.26	Pass
6	7.4500	26.34	11.46	9.81	36.15	21.27	60.00	50.00	-23.85	-28.73	Pass

6. RADIATED SPURIOUS EMISSIONS

6.1. LIMITS

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. 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 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak($\mu\text{V}/\text{m}$)	Measurement distance(m)	Quasi-peak($\text{dB}\mu\text{V}/\text{m}$)@distance 3m
0.009-0.490	2400/F(kHz)	300	53.8~88.5
0.490-1.705	24000/F(kHz)	30	43~53.8
1.705-30.0	30	30	49.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

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

NOTE: (2) Above 18G Limit= $74+20\log(3/1)=83.54$ ($\text{dB}\mu\text{V}/\text{m}$).

6.2. TEST PROCEDURES (please refer to measurement standard)

1) Sequence of testing 9 kHz to 30 MHz

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 0.8 m 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 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 0.8 meter.

--- 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 QPK 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 30 MHz to 1 GHz**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 0.8 m 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 315 ° using 45 ° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 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 position ($\pm 45^\circ$) 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 1 GHz to 18 GHz

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 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 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 position ($\pm 45^\circ$) 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 18 GHz**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: 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 ($10 \log(1/\text{duty cycle})$).

6.3. TEST SETUP

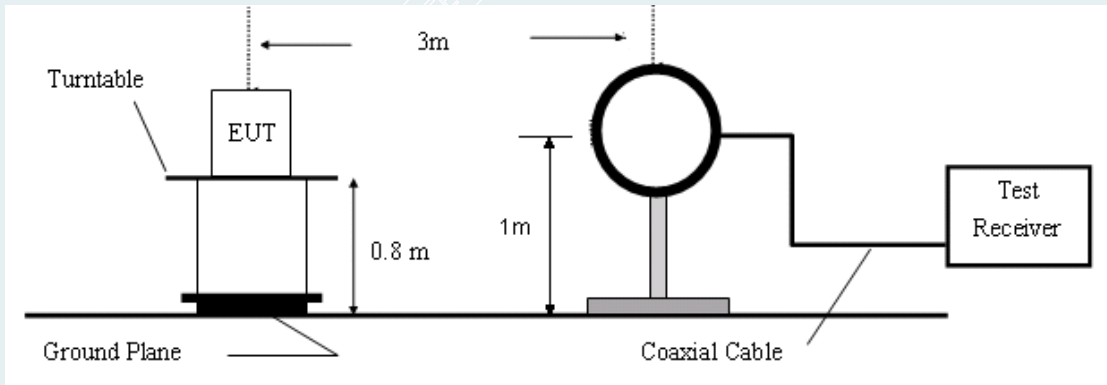


Figure 1. 9 KHz to 30MHz radiated emissions test configuration

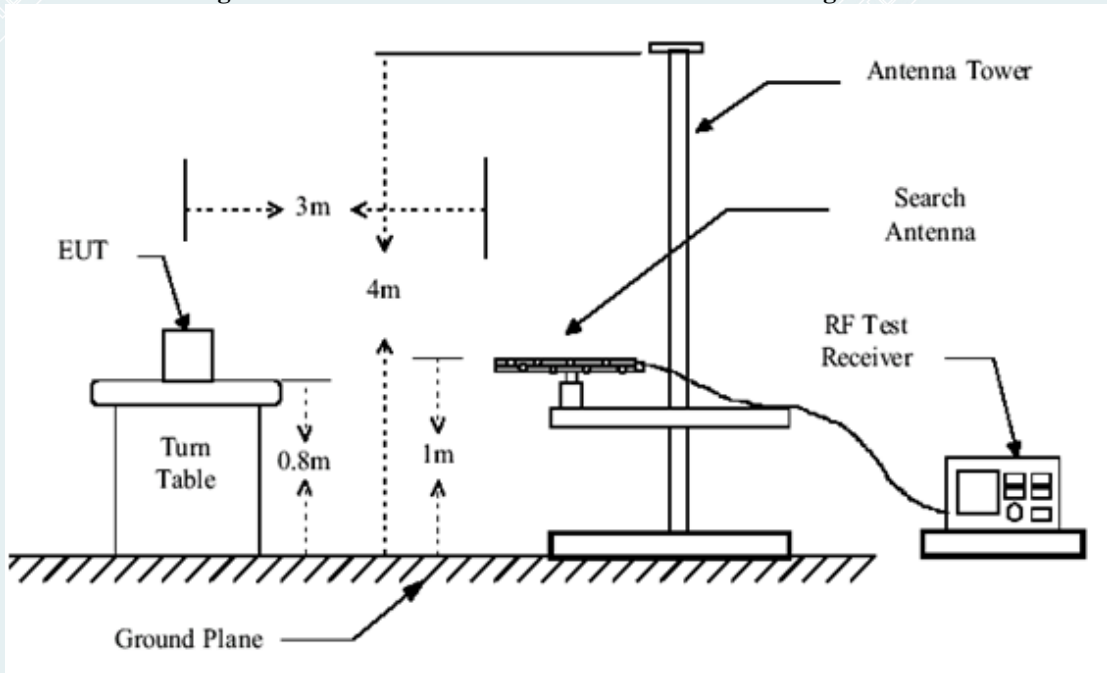


Figure 2. 30MHz to 1GHz radiated emissions test configuration

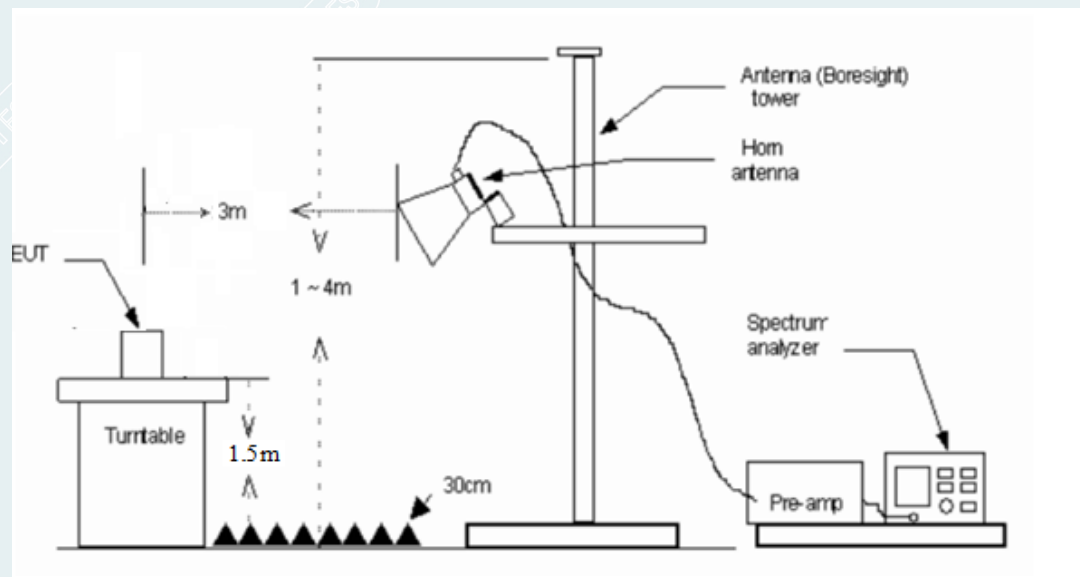


Figure 3. Above 1GHz-18GHz radiated emissions test configuration

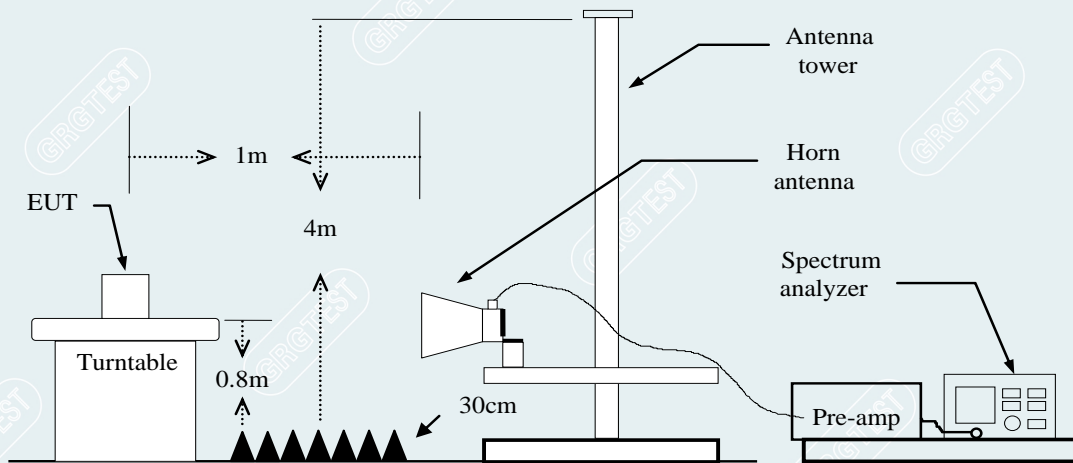


Figure 4. Above 18GHz-26.5GHz radiated emissions test configuration

6.4. DATA SAMPLE

30MHz to 1GHz

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

Above 1 GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
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 18 GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
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

30MHz to 1GHz

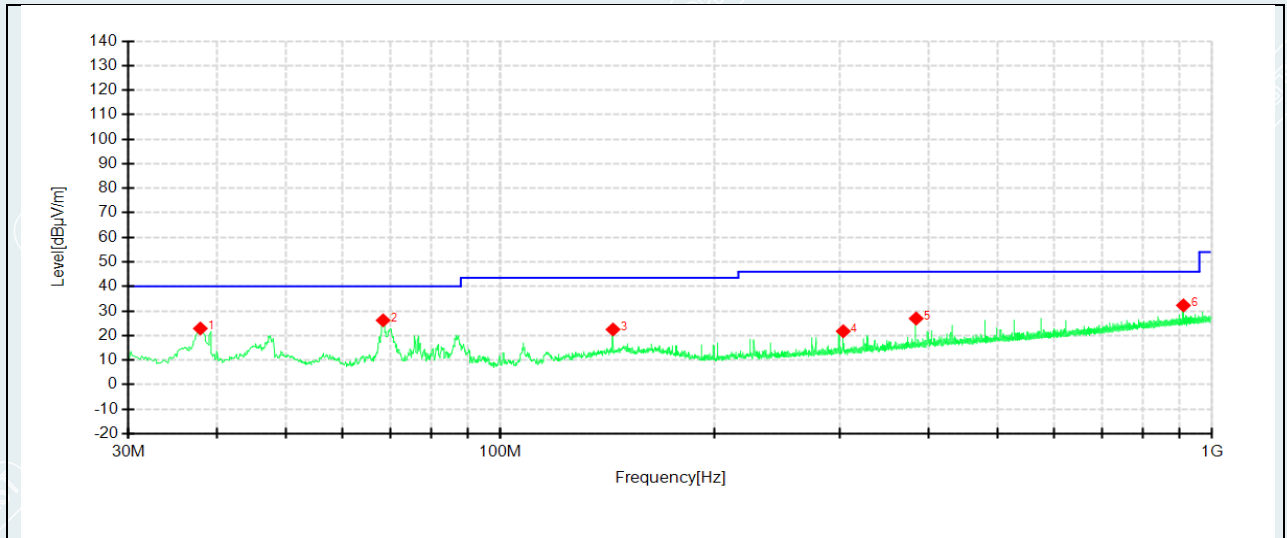
Mode: TX

Lowest channel (2405MHz)

Polarity

Date: 2021-06-30

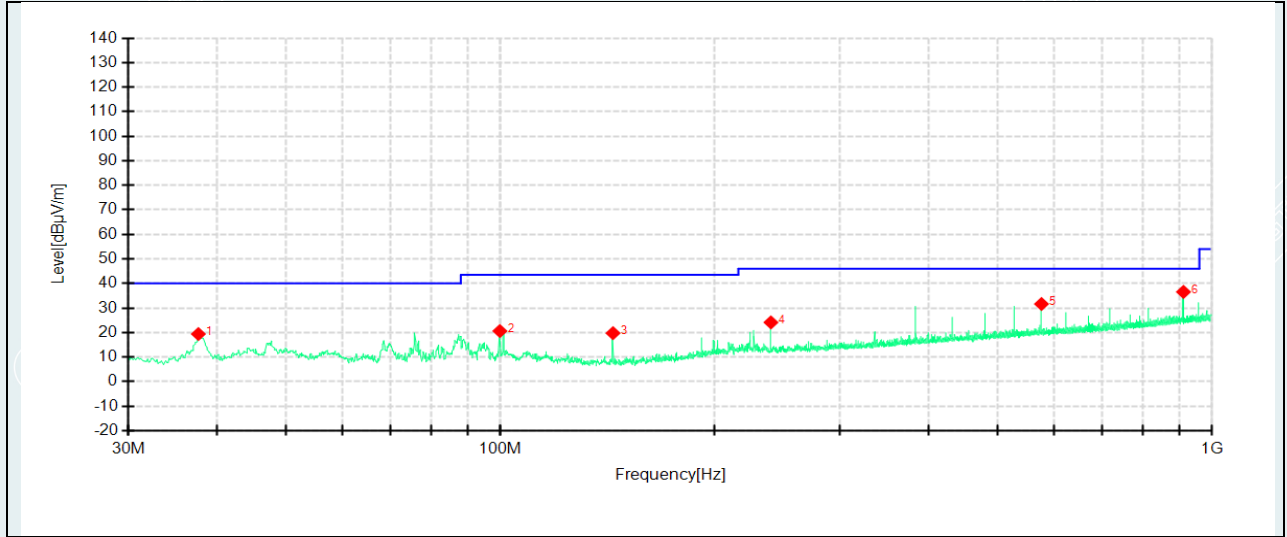
Vertical



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.8822	51.59	22.86	-28.73	40.00	17.14	150	102	Vertical
2	68.4411	56.78	26.17	-30.61	40.00	13.83	150	75	Vertical
3	143.9892	48.55	22.45	-26.10	43.50	21.05	150	178	Vertical
4	303.3317	47.54	21.73	-25.81	46.00	24.27	150	88	Vertical
5	383.9730	50.40	26.92	-23.48	46.00	19.08	150	82	Vertical
6	911.9615	45.78	32.27	-13.51	46.00	13.73	150	48	Vertical

Mode: TX
 Lowest channel (2405MHz)
 Polarity

Date: 2021-06-30
 Horizontal

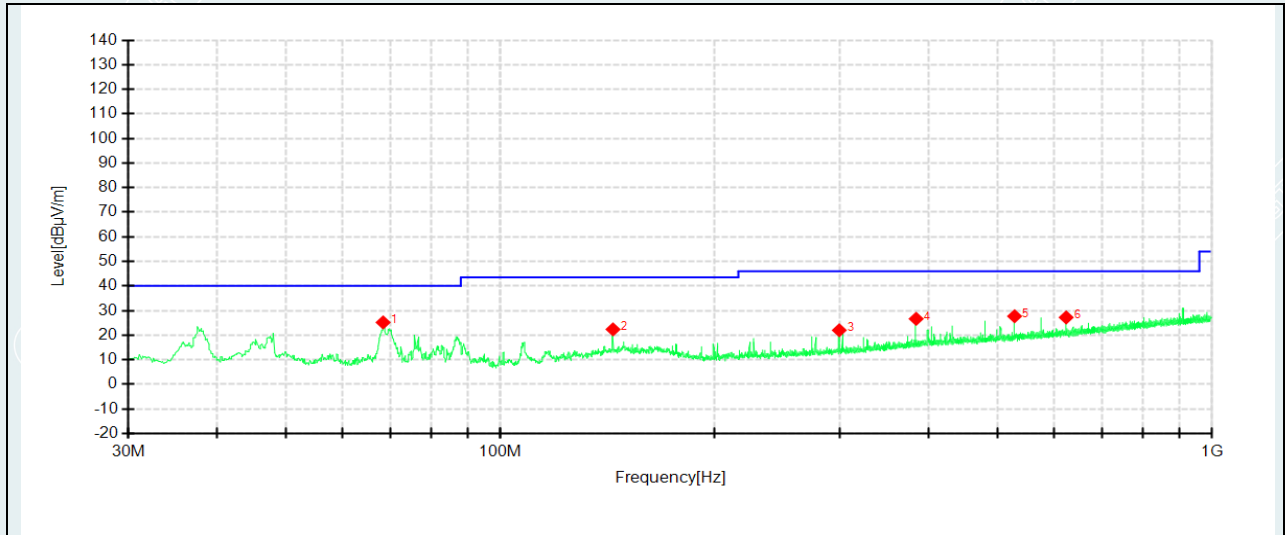


Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.6397	48.56	19.38	-29.18	40.00	20.62	150	352	Horizontal
2	99.8487	49.68	20.60	-29.08	43.50	22.90	150	182	Horizontal
3	143.9892	51.49	19.73	-31.76	43.50	23.77	150	258	Horizontal
4	240.0313	51.18	24.12	-27.06	46.00	21.88	150	80	Horizontal
5	576.0570	50.53	31.61	-18.92	46.00	14.39	150	272	Horizontal
6	911.9615	50.69	36.55	-14.14	46.00	9.45	150	162	Horizontal

Mode: TX
 Middle channel (2440MHz)
 Polarity

Date: 2021-06-30
 Vertical

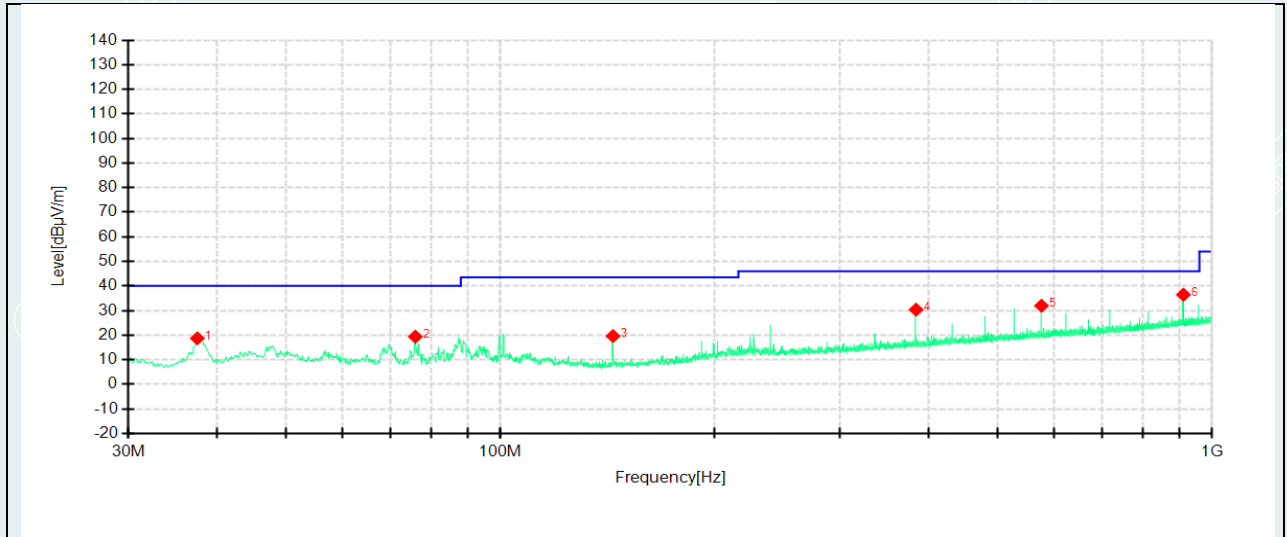


Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	68.4411	55.78	25.17	-30.61	40.00	14.83	150	321	Vertical
2	143.9892	48.44	22.34	-26.10	43.50	21.16	150	164	Vertical
3	299.4512	47.87	21.98	-25.89	46.00	24.02	150	103	Vertical
4	383.9730	50.10	26.62	-23.48	46.00	19.38	150	76	Vertical
5	528.0360	47.86	27.68	-20.18	46.00	18.32	150	110	Vertical
6	623.9567	45.39	27.19	-18.20	46.00	18.81	150	123	Vertical

Mode: TX
 Middle channel (2440MHz)
 Polarity

Date: 2021-06-30
 Horizontal

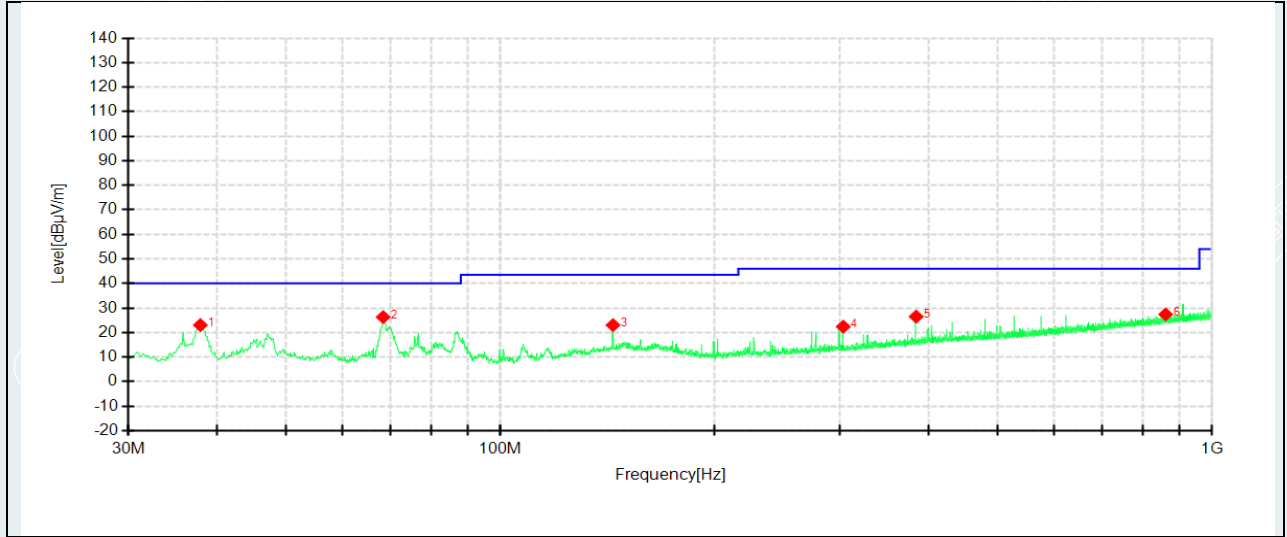


Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.5184	47.90	18.70	-29.20	40.00	21.30	150	12	Horizontal
2	75.9595	51.13	19.36	-31.77	40.00	20.64	150	134	Horizontal
3	143.9892	51.39	19.63	-31.76	43.50	23.87	150	94	Horizontal
4	383.9730	53.65	30.36	-23.29	46.00	15.64	150	66	Horizontal
5	576.0570	50.87	31.95	-18.92	46.00	14.05	150	264	Horizontal
6	911.9615	50.58	36.44	-14.14	46.00	9.56	150	161	Horizontal

Mode: TX
 Highest channel (2475MHz)
 Polarity

Date: 2021-06-30
 Vertical

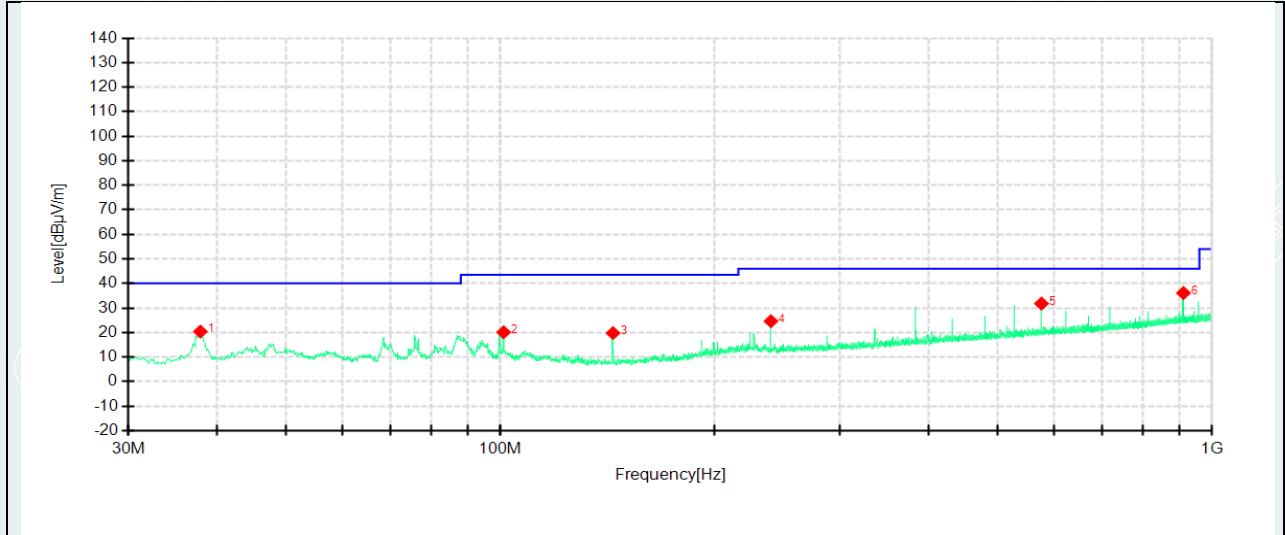


Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.8822	51.75	23.02	-28.73	40.00	16.98	150	143	Vertical
2	68.4411	56.88	26.27	-30.61	40.00	13.73	150	177	Vertical
3	143.9892	49.11	23.01	-26.10	43.50	20.49	150	170	Vertical
4	303.3317	48.19	22.38	-25.81	46.00	23.62	150	68	Vertical
5	383.9730	49.97	26.49	-23.48	46.00	19.51	150	68	Vertical
6	860.9089	41.64	27.40	-14.24	46.00	18.60	150	266	Vertical

Mode: TX
 Highest channel (2475MHz)
 Polarity

Date: 2021-06-30
 Horizontal



Suspected Data List

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	37.8822	49.51	20.38	-29.13	40.00	19.62	150	108	Horizontal
2	101.0614	49.17	20.11	-29.06	43.50	23.39	150	142	Horizontal
3	143.9892	51.53	19.77	-31.76	43.50	23.73	150	285	Horizontal
4	240.0313	51.67	24.61	-27.06	46.00	21.39	150	74	Horizontal
5	576.0570	50.71	31.79	-18.92	46.00	14.21	150	278	Horizontal
6	911.9615	50.25	36.11	-14.14	46.00	9.89	150	169	Horizontal

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 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.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120 kHz.

Above 1GHz-18GHz:

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.

Mode: TX

Lowest channel (2405MHz)

Date:2021-06-28

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1008.0010	62.88	37.73	-25.15	74.00	36.27	150	82	Vertical
2	1104.0130	61.37	36.47	-24.90	74.00	37.53	150	178	Vertical
3	2365.9207	65.59	44.70	-20.89	74.00	29.30	150	55	Vertical
4	2405.6757	91.13	70.60	-20.53	74.00	3.40	150	82	Vertical
5	4811.4764	58.45	47.76	-10.69	74.00	26.24	150	203	Vertical
6	7217.4022	62.75	58.05	-4.70	74.00	15.95	150	101	Vertical

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.8028	-10.69	47.75	37.06	74.00	36.94	150	212	Vertical
2	7216.3918	-4.70	54.71	50.01	74.00	23.99	150	95	Vertical
3	2366.6541	-20.89	59.36	38.47	74.00	35.53	150	22	Vertical
4	2405.1224	-20.53	87.86	67.33	74.00	6.67	150	33	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4810.8028	-10.69	46.08	35.39	54.00	18.61	150	212	Vertical
2	7216.3918	-4.70	54.56	49.86	54.00	4.14	150	95	Vertical
3	2366.6541	-20.89	58.95	38.06	54.00	15.94	150	22	Vertical
4	2405.1224	-20.53	87.55	67.02	54.00	-13.02	150	33	Vertical

Remark:

1. The frequency 2405.1224MHz is fundamental frequency signal..

Suspected Data List								
Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1008.2510	69.48	44.33	-25.15	74.00	29.67	150	110	Horizontal
1104.0130	67.20	42.30	-24.90	74.00	31.70	150	96	Horizontal
1391.7990	61.19	37.50	-23.69	74.00	36.50	150	96	Horizontal
2405.4257	91.86	71.33	-20.53	74.00	2.67	150	260	Horizontal
4809.6012	61.14	50.44	-10.70	74.00	23.56	150	12	Horizontal
7213.6517	64.99	60.33	-4.66	74.00	13.67	150	169	Horizontal

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4811.0922	-10.70	53.56	42.86	74.00	31.14	150	7	Horizontal
2	7216.3929	-4.66	54.67	50.01	74.00	23.99	150	160	Horizontal
3	1007.9384	-25.14	66.42	41.28	74.00	32.72	150	102	Horizontal
4	1104.0130	-24.90	65.68	40.78	74.00	33.22	150	101	Horizontal
5	2404.9927	-20.53	91.74	71.21	74.00	2.79	150	225	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4811.0922	-10.70	51.68	40.98	54.00	13.02	150	7	Horizontal
2	7216.3929	-4.66	54.34	49.68	54.00	4.32	150	160	Horizontal
3	1007.9384	-25.14	65.56	40.42	54.00	13.58	150	102	Horizontal
4	1104.0130	-24.90	65.40	40.50	54.00	13.50	150	101	Horizontal
5	2404.9927	-20.53	91.57	71.04	54.00	-17.04	150	225	Horizontal

Remark:

1. The frequency 2404.9927 MHz is fundamental frequency signal..

Mode: TX
Middle channel (2440MHz)

Date: 2021-06-28

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1008.0010	62.36	37.21	-25.15	74.00	36.79	150	198	Vertical
2	1200.2750	60.41	35.80	-24.61	74.00	38.20	150	21	Vertical
3	2439.4299	85.99	65.60	-20.39	74.00	8.40	150	55	Vertical
4	3571.9465	54.93	38.75	-16.18	74.00	35.25	150	359	Vertical
5	4878.9849	54.97	44.17	-10.80	74.00	29.83	150	203	Vertical
6	7318.6648	60.30	54.83	-5.47	74.00	19.17	150	100	Vertical

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2439.8934	-20.40	88.76	68.36	74.00	5.64	150	54	Vertical
2	4880.9365	-10.80	47.29	36.49	74.00	37.51	150	209	Vertical
3	7318.7380	-5.47	49.20	43.73	74.00	30.27	150	92	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2439.8934	-20.40	88.52	68.12	54.00	-14.12	150	54	Vertical
2	4880.9365	-10.80	45.83	35.03	54.00	18.97	150	209	Vertical
3	7318.7380	-5.47	48.91	43.44	54.00	10.56	150	92	Vertical

Remark:

- The frequency 2439.8934 MHz is fundamental frequency signal..

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1008.0010	70.43	45.28	-25.15	74.00	28.72	150	102	Horizontal
2	1103.7630	66.99	42.09	-24.90	74.00	31.91	150	96	Horizontal
3	1392.0490	61.01	37.32	-23.69	74.00	36.68	150	286	Horizontal
4	2439.4299	92.90	72.51	-20.39	74.00	1.49	150	334	Horizontal
5	4880.8601	62.34	51.52	-10.82	74.00	22.48	150	326	Horizontal
6	7318.6648	60.43	54.96	-5.47	74.00	19.04	150	169	Horizontal

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1007.9304	-25.14	67.02	41.88	74.00	32.12	150	113	Horizontal
2	2439.9178	-20.40	89.28	68.88	74.00	5.12	150	338	Horizontal
3	4880.9089	-10.82	54.29	43.47	74.00	30.53	150	323	Horizontal
4	7321.2263	-5.47	40.16	34.69	74.00	39.31	150	167	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1007.9304	-25.14	66.42	41.28	54.00	12.72	150	113	Horizontal
2	2439.9178	-20.40	89.06	68.66	54.00	-14.66	150	338	Horizontal
3	4880.9089	-10.82	52.53	41.71	54.00	12.29	150	323	Horizontal
4	7321.2263	-5.47	39.76	34.29	54.00	19.71	150	167	Horizontal

Remark:

1. The frequency 2439.9178 MHz is fundamental frequency signal..

Mode: TX
Highest channel (2475MHz)

Date:2021-06-30

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1008.0010	63.78	38.63	-25.15	74.00	35.37	150	161	Vertical
2	1104.2630	62.21	37.31	-24.90	74.00	36.69	150	161	Vertical
3	1200.2750	60.47	35.86	-24.61	74.00	38.14	150	6	Vertical
4	2474.4343	89.16	68.80	-20.36	74.00	5.20	150	11	Vertical
5	4952.1190	65.88	54.91	-10.97	74.00	19.09	150	8	Vertical
6	7427.4284	56.04	51.25	-4.79	74.00	22.75	150	28	Vertical

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.0777	-20.36	83.48	63.12	74.00	10.88	150	5	Vertical
2	4950.8810	-10.97	56.50	45.53	74.00	28.47	150	7	Vertical
3	7423.6404	-4.79	47.07	42.28	74.00	31.72	150	276	Vertical

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.0777	-20.36	83.35	62.99	54.00	-8.99	150	5	Vertical
2	4950.8810	-10.97	54.61	43.64	54.00	10.36	150	7	Vertical
3	7423.6404	-4.79	46.75	41.96	54.00	12.04	150	276	Vertical

Remark:

- The frequency 2475.0777 MHz is fundamental frequency signal..

Suspected Data List									
NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1007.7510	67.16	42.01	-25.15	74.00	31.99	150	148	Horizontal
2	1391.7990	63.04	39.35	-23.69	74.00	34.65	150	60	Horizontal
3	2474.4343	95.45	75.09	-20.36	74.00	-1.09	150	204	Horizontal
4	2512.6891	67.22	47.05	-20.17	74.00	26.95	150	53	Horizontal
5	4948.3685	72.16	61.18	-10.98	74.00	12.82	150	144	Horizontal
6	7423.6780	57.65	52.88	-4.77	74.00	21.12	150	117	Horizontal

PK Final Data List									
NO.	Freq. [MHz]	Factor [dB]	PK Reading [dB μ V/m]	PK Value [dB μ V/m]	PK Limit [dB μ V/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.0282	-20.36	90.94	70.58	74.00	3.42	150	184	Horizontal
2	2513.4932	-20.17	60.99	40.82	74.00	33.18	150	51	Horizontal
3	4950.8427	-10.98	63.23	52.25	74.00	21.75	150	144	Horizontal
4	7426.4248	-4.77	49.44	44.67	74.00	29.33	150	198	Horizontal

AV Final Data List									
NO.	Freq. [MHz]	Factor [dB]	AV Reading [dB μ V/m]	AV Value [dB μ V/m]	AV Limit [dB μ V/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.0282	-20.36	90.80	70.44	54.00	-16.44	150	184	Horizontal
2	2513.4932	-20.17	60.52	40.35	54.00	13.65	150	51	Horizontal
3	4950.8427	-10.98	60.20	49.22	54.00	4.78	150	144	Horizontal
4	7426.4248	-4.77	49.18	44.41	54.00	9.59	150	198	Horizontal

Remark:

1. The frequency 2475.0282 MHz is fundamental frequency signal..

Above 18GHz-26.5GHz:

Recorded the worst case results in this report (CH25)

Mode: TX

Highest channel (2475MHz)

Date: 2021-06-30

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18388.8750	59.53	48.00	-11.53	83.50	35.50	150	49	Vertical
2	19772.2500	58.79	47.92	-10.87	83.50	35.58	150	240	Vertical
3	20576.3500	59.30	48.86	-10.44	83.50	34.64	150	22	Vertical
4	21086.3500	59.59	49.30	-10.29	83.50	34.20	150	153	Vertical
5	21620.1500	57.36	47.44	-9.92	83.50	36.06	150	110	Vertical
6	25171.4500	57.17	49.50	-7.67	83.50	34.00	150	214	Vertical

Suspected Data List

NO.	Freq. [MHz]	Reading [dB μ V/m]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18346.3750	59.87	48.32	-11.55	83.50	35.18	150	162	Horizontal
2	20464.1500	58.80	48.29	-10.51	83.50	35.21	150	301	Horizontal
3	21091.0250	57.85	47.56	-10.29	83.50	35.94	150	6	Horizontal
4	22122.0750	56.85	47.03	-9.82	83.50	36.47	150	144	Horizontal
5	23260.6500	56.52	47.71	-8.81	83.50	35.79	150	1	Horizontal
6	25125.1250	56.75	49.02	-7.73	83.50	34.48	150	144	Horizontal

7. 6dB BANDWIDTH

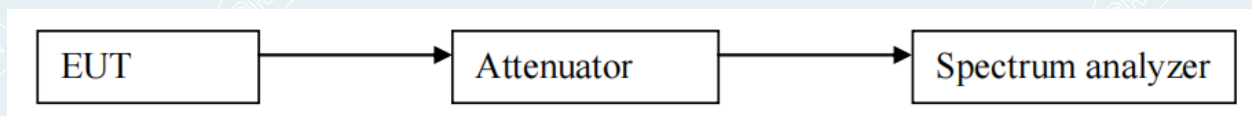
7.1. LIMITS

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.

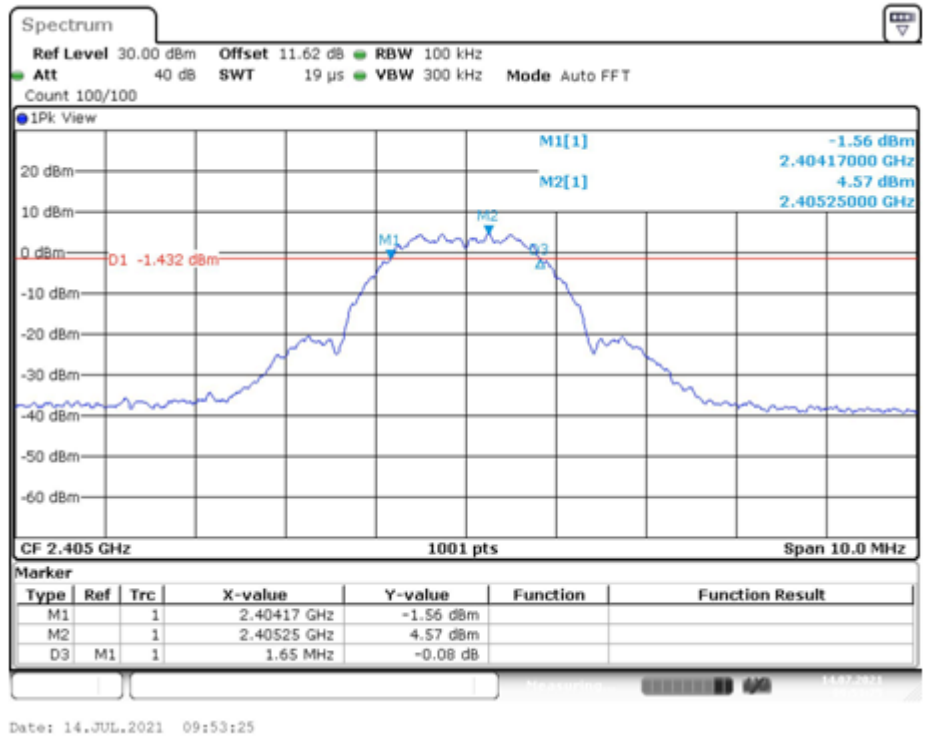
7.3. TEST SETUP



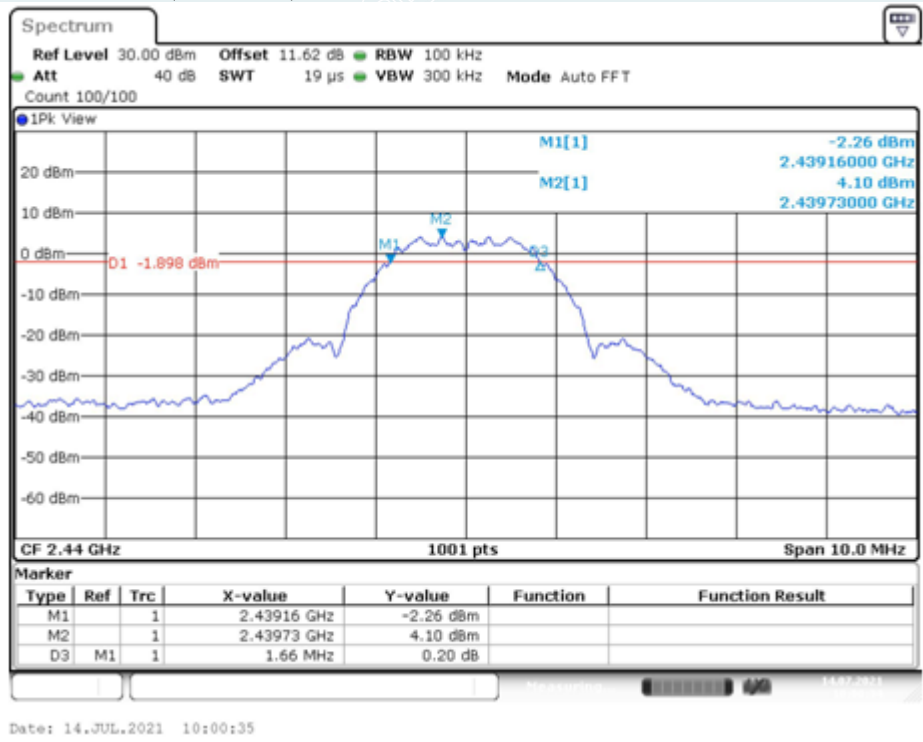
7.4. TEST RESULTS

TestMode	Channel	Frequency (MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
ZIGB	Lowest	2405	1.650	2404.170	2405.820	0.5	PASS
	Middle	2440	1.660	2439.160	2440.820	0.5	PASS
	Highest	2475	1.660	2474.160	2475.820	0.5	PASS

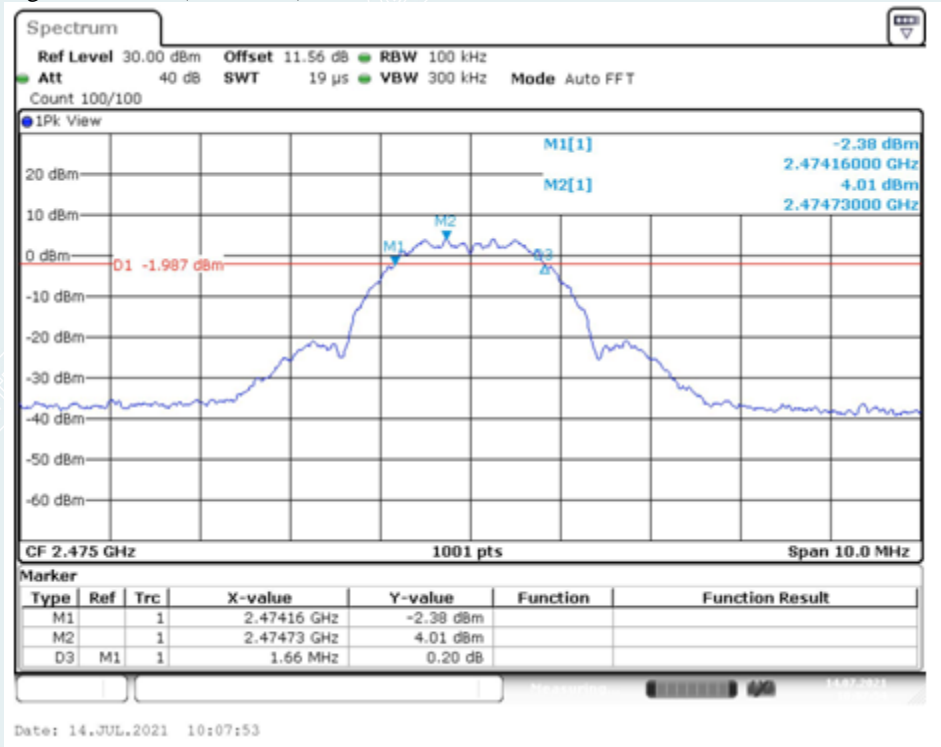
Lowest channel (2405MHz)



Middle channel (2440 MHz)



Highest channel (2475MHz)



8. MAXIMUM PEAK OUTPUT POWER

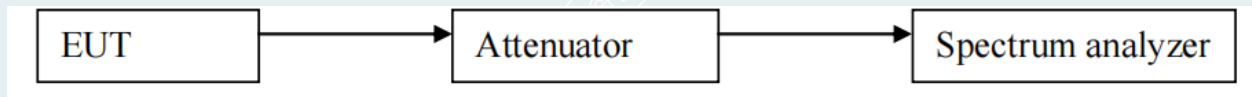
8.1.LIMITS

The maximum Peak output power measurement is 1W

8.2.TEST PROCEDURES

- 1) Place the EUT on a bench and set it in transmitting mode.
- 2) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

8.3.TEST SETUP



8.4.TEST RESULTS

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/Average	Result
Lowest	2405	8.68	1W (30dBm)	Peak	Pass
Middle	2440	8.73			Pass
Highest	2475	8.62			Pass

9. POWER SPECTRAL DENSITY

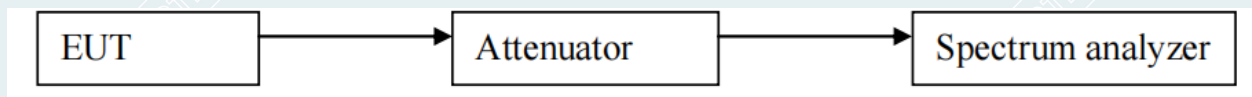
9.1. LIMITS

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 = 3 kHz. Set the VBW ≥ 3 RBW. Detector = peak. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
- 4) Repeat above procedures until all frequencies measured were complete.

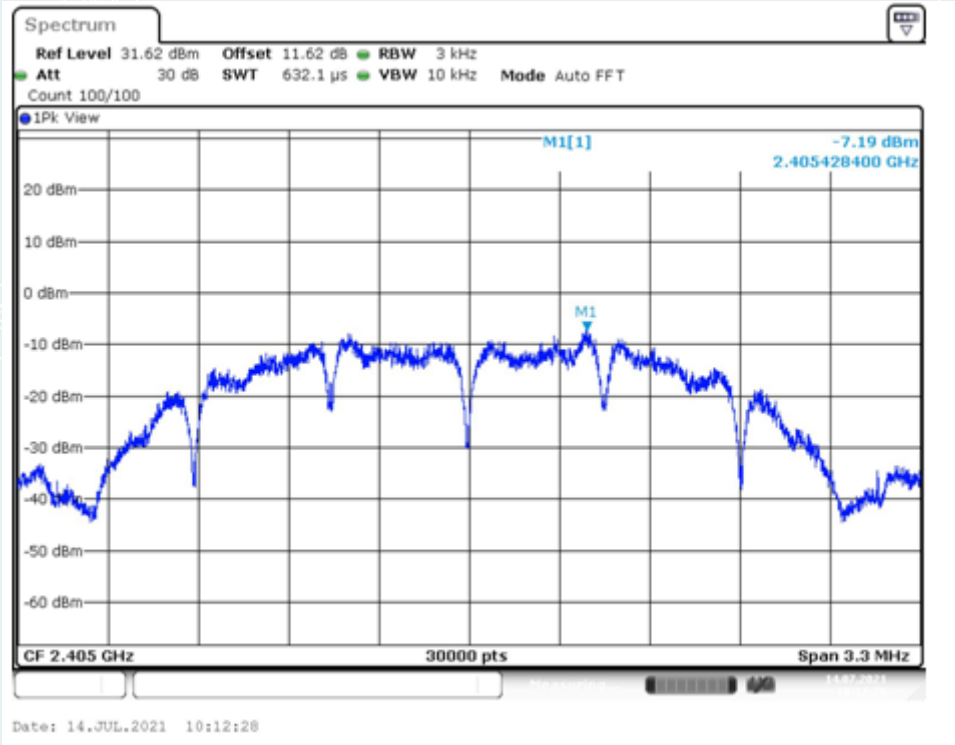
9.3. TEST SETUP



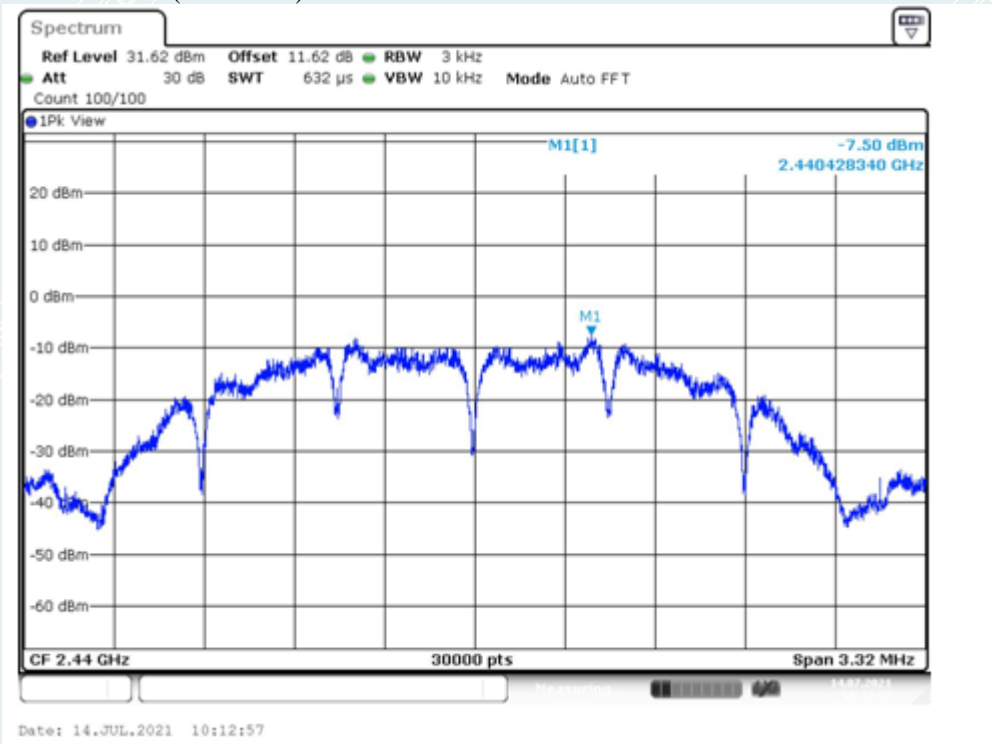
9.4. TEST RESULTS

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm/3kHz)	Test Result
Lowest	2405	-7.19	≤ 8	PASS
Middle	2440	-7.50		PASS
Highest	2475	-8.14		PASS

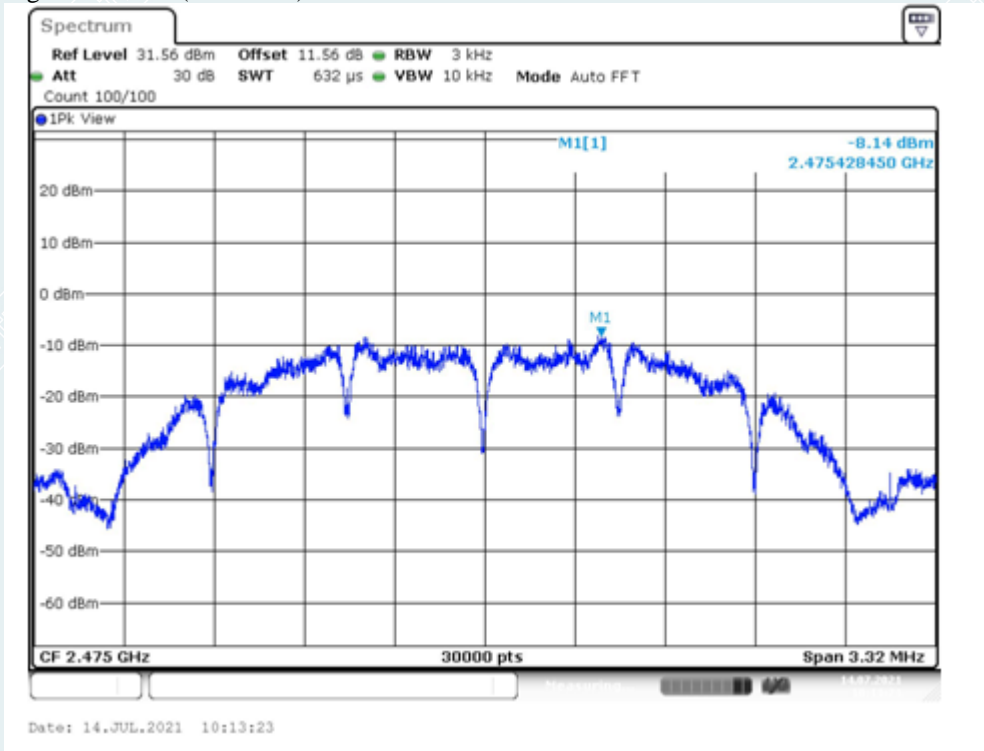
Lowest channel (2405MHz)



Middle channel (2440 MHz)



Highest channel (2475MHz)



10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

10.1. LIMITS

(d) 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. 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 30 dB instead of 20 dB.

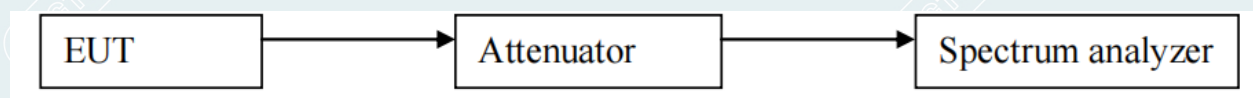
10.2. TEST PROCEDURES

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.

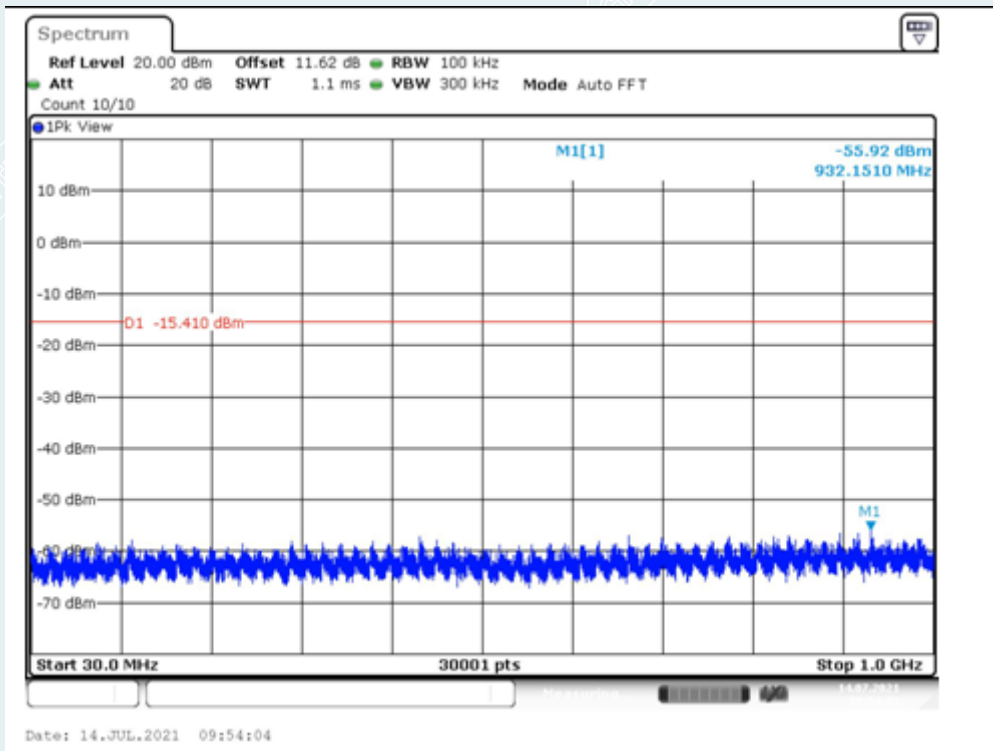
- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100KHz; VBW =300KHz, Span = 10MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- 5) Measurements are made over the 9 kHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels. No emission found between lowest internal used/generated frequency to 10MHz, it is only recorded 10MHz to 26GHz.

10.3. TEST SETUP

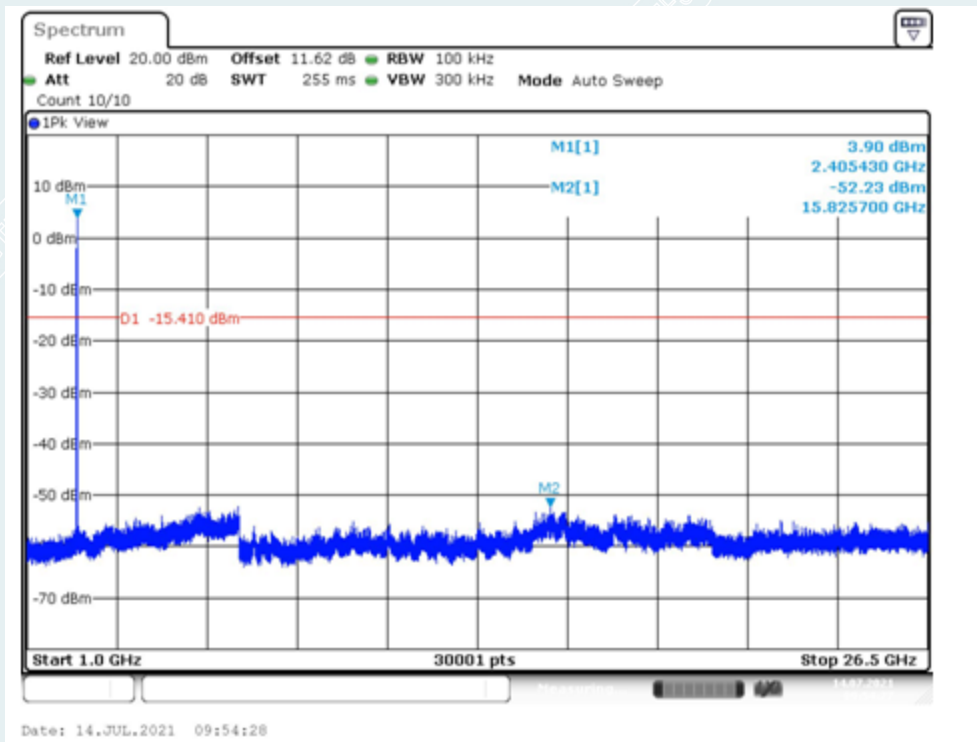


10.4. TEST RESULTS

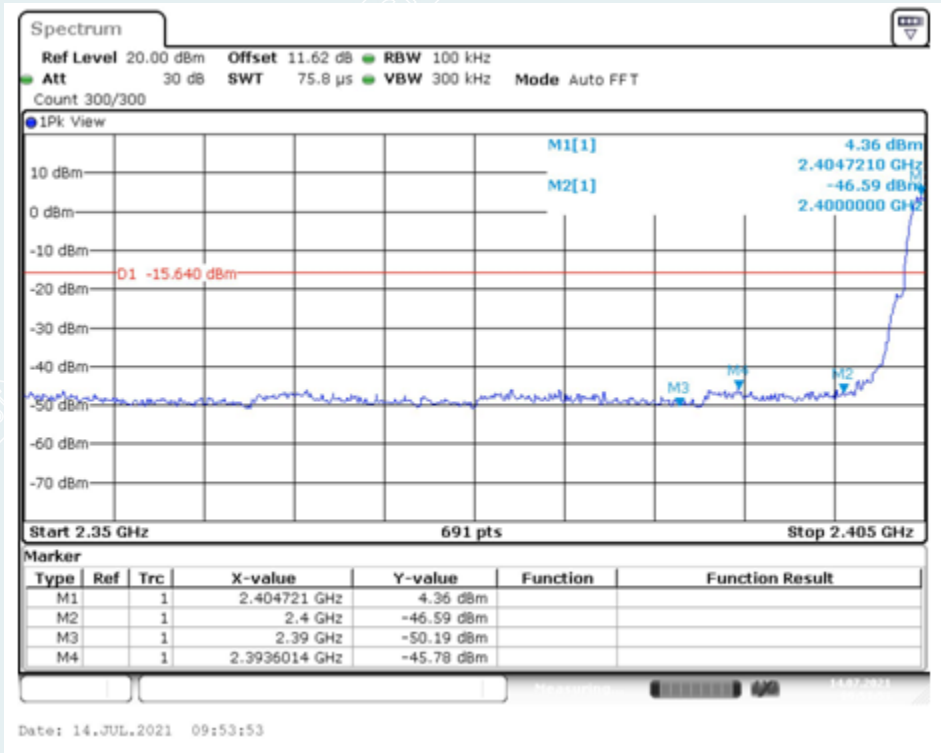
Lowest channel (2405MHz)
0.03GHz-1GHz



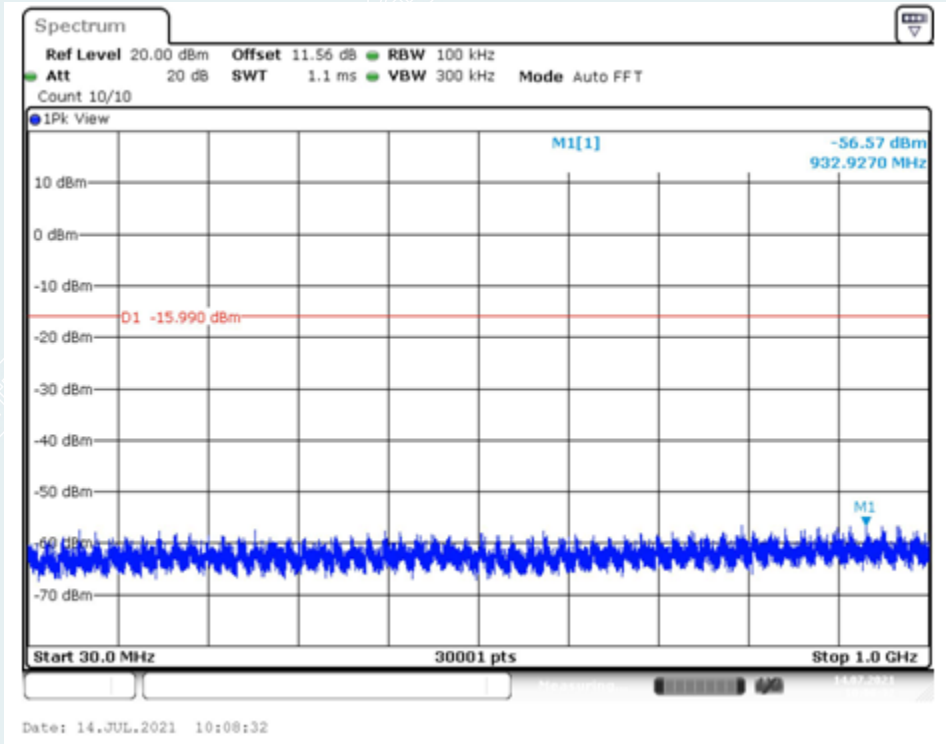
1GHz-26.5GHz



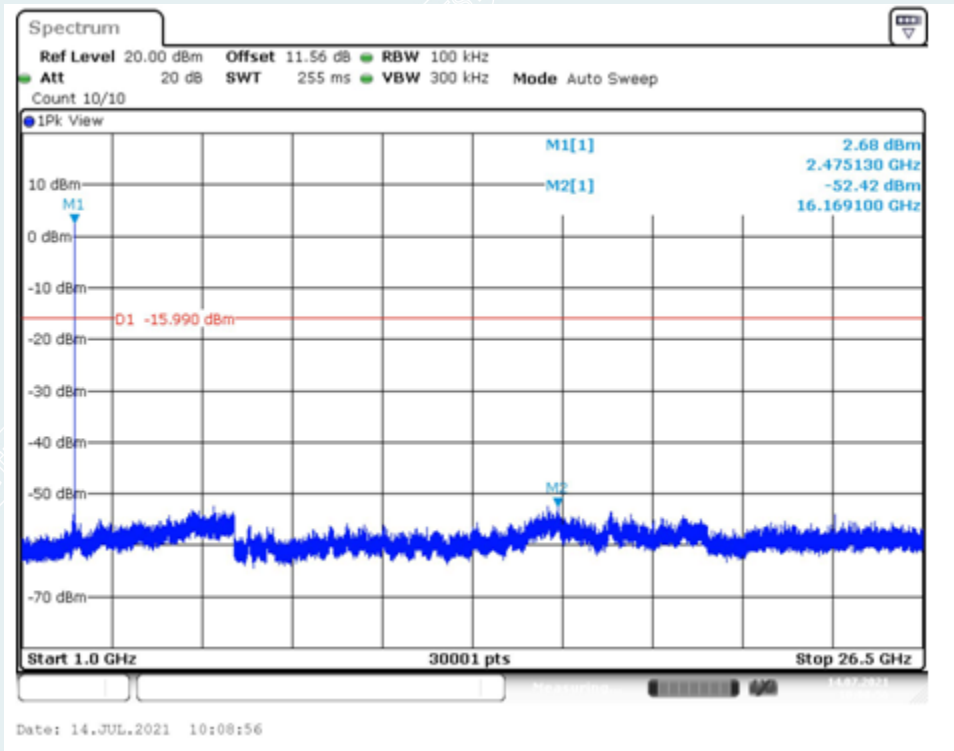
2.35GHz-2.405GHz



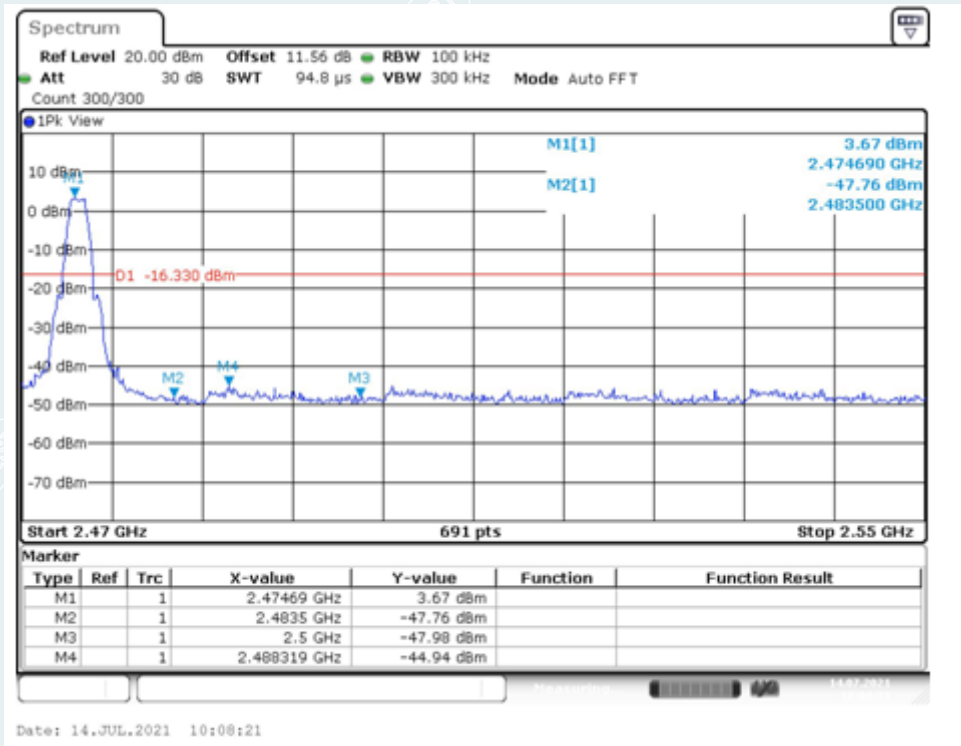
Highest channel (2475MHz)
0.03GHz-1GHz



1GHz-26.5GHz



2.47GHz-2.55GHz



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)).

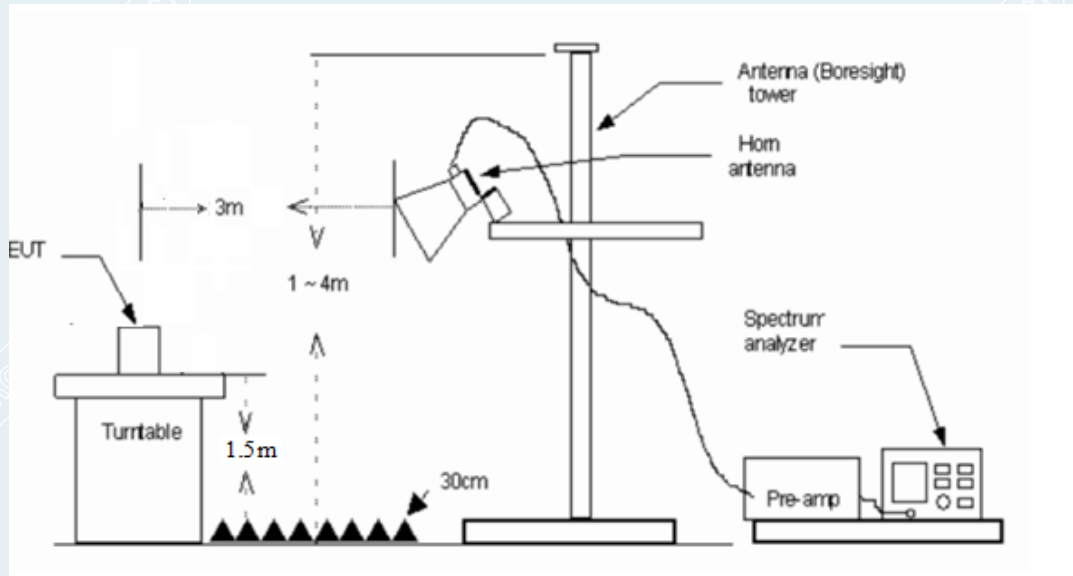
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 -	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.69525	960 - 1240	7.25 - 7.75
4.125 - 4.128	16.80425 -	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	16.80475	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	25.5 - 25.67	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	37.5 - 38.25	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	73 - 74.6	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	74.8 - 75.2	2200 - 2300	14.47 - 14.5
8.291 - 8.294	108 - 121.94	2310 - 2390	15.35 - 16.2
8.362 - 8.366	123 - 138	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	149.9 - 150.05	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.52475 -	3260 - 3267	23.6 - 24.0
12.29 - 12.293	156.52525	3332 - 3339	31.2 - 31.8
12.51975 -	156.7 - 156.9	3345.8 - 3358	36.43 - 36.5
12.52025	162.0125 - 167.17	3600 - 4400	
12.57675 -	167.72 - 173.2		
12.57725	240 - 285		
13.36 - 13.41	322 - 335.4		

11.2. TEST PROCEDURES

Test procedures follow KDB 558074 D01 DTS Meas Guidance v03r01.

- 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



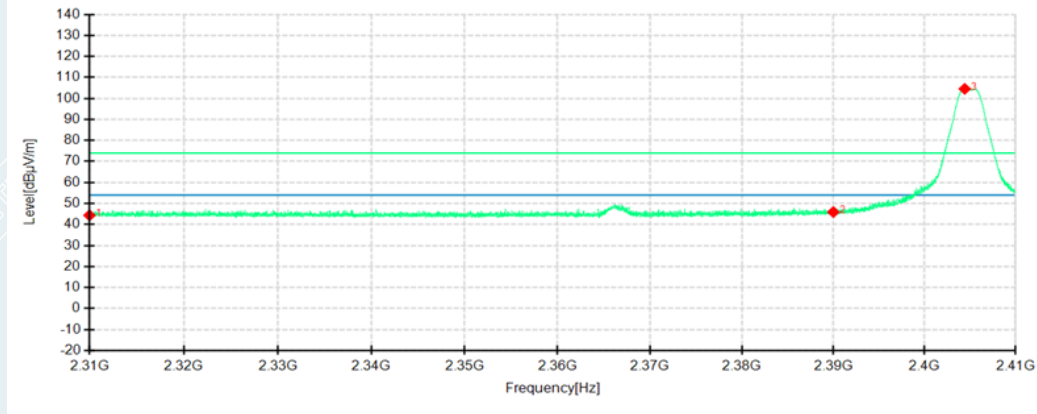
11.4. TEST RESULTS

Lowest Channel

Channel 2405MHz

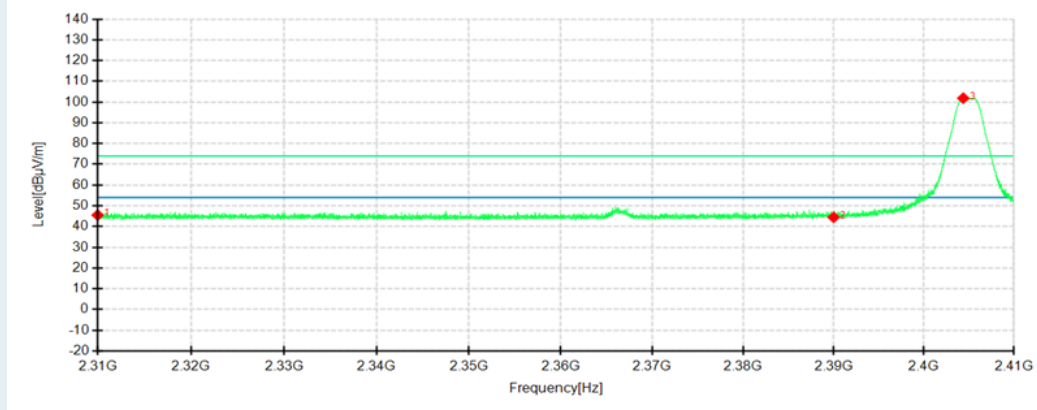
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



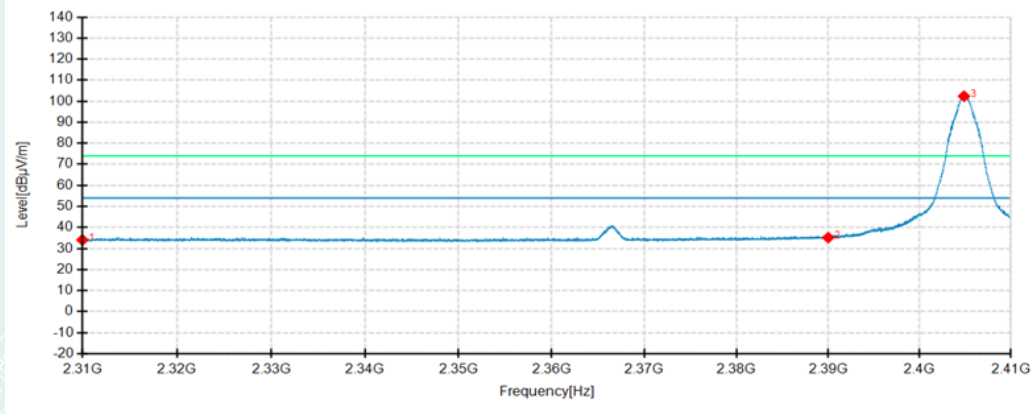
No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	41.37	44.36	2.99	74.00	29.64	150	270	Horizontal	/
2	2390.0000	42.73	45.92	3.19	74.00	28.08	150	270	Horizontal	/
3	2404.4125	101.20	104.56	3.36	74.00	-30.56	150	360	Horizontal	No limit
1	2310.0000	42.52	45.51	2.99	74.00	28.49	150	90	Vertical	/
2	2390.0000	41.24	44.43	3.19	74.00	29.57	150	180	Vertical	/
3	2404.3750	98.51	101.86	3.35	74.00	-27.86	150	90	Vertical	No limit

Lowest Channel

Channel 2405MHz

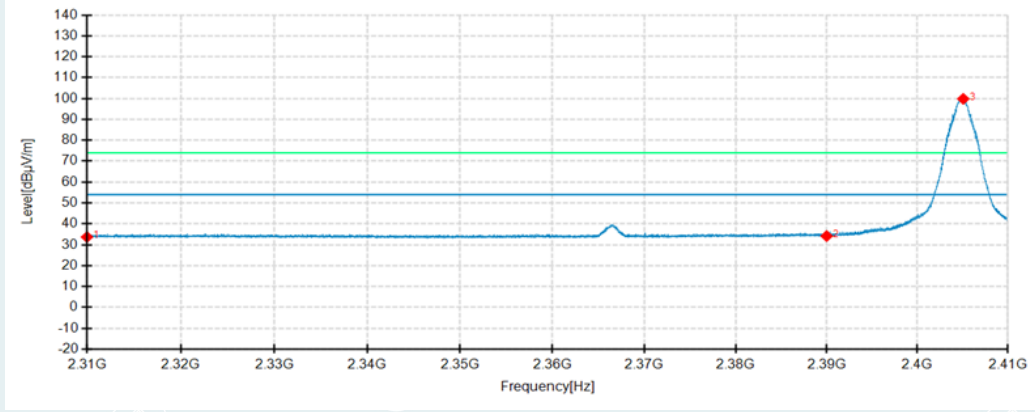
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



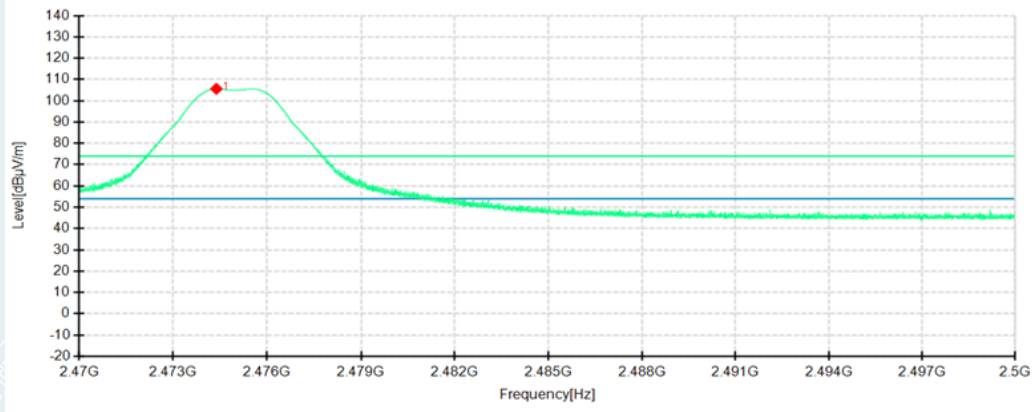
No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	31.08	34.07	2.99	54.00	19.93	150	180	Horizontal	/
2	2390.0000	31.97	35.16	3.19	54.00	18.84	150	0	Horizontal	/
3	2404.8625	99.02	102.38	3.36	54.00	-48.38	150	0	Horizontal	No limit
1	2310.0000	30.70	33.69	2.99	54.00	20.31	150	270	Vertical	/
2	2390.0000	30.95	34.14	3.19	54.00	19.86	150	90	Vertical	/
3	2405.0750	96.48	99.84	3.36	54.00	-45.84	150	90	Vertical	No limit

Highest Channel

Channel 2475MHz

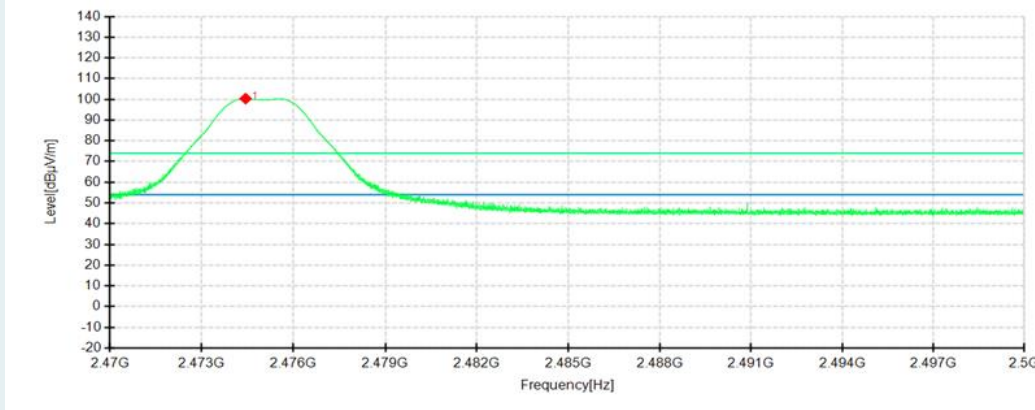
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



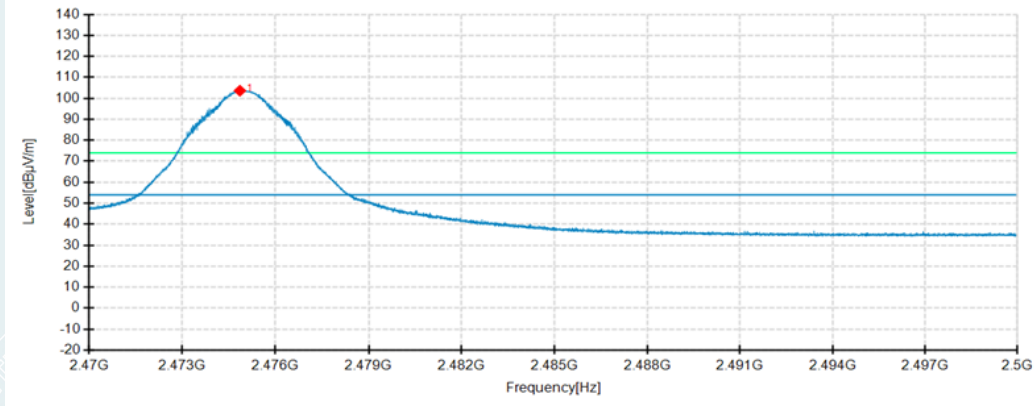
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2474.3800	102.06	105.60	3.54	74.00	-31.60	150	90	Horizontal	No limit
1	2474.4325	96.81	100.35	3.54	74.00	-26.35	150	90	Vertical	No limit

Highest Channel

Channel 2475MHz

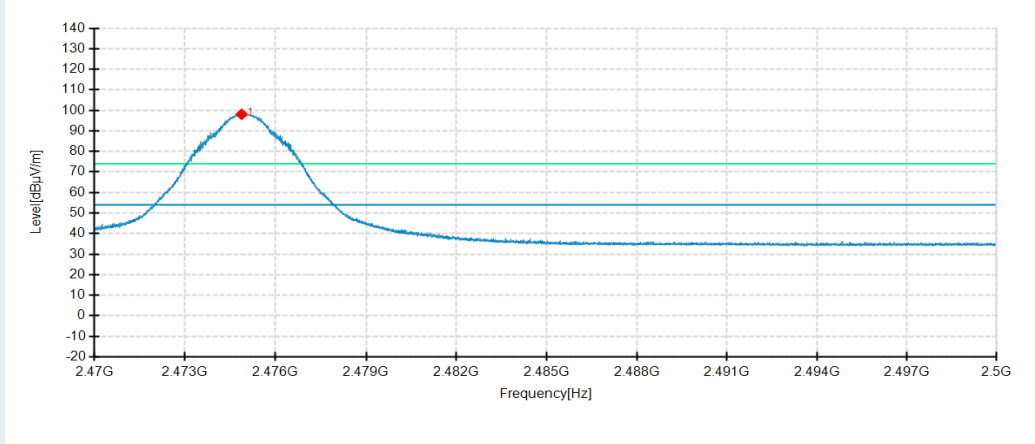
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBµV/m	Level dBµV/ m	Factor dB	Limit dBµV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2474.8525	100.08	103.62	3.54	54.00	-49.62	150	90	Horizontal	No limit
1	2474.8713	94.53	98.07	3.54	54.00	-44.07	150	90	Vertical	No limit

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

-----This is the last page of the report. -----