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Certificate # 2861.01

GRGTEST®

TEST REPORT

Verified Code: 475155

Report No.:	E20200904990101-2-G2	Application No.:	E20200904990101
Client:	OnePlus Technology (Shenzhen) Co., Ltd.		
Address:	18C02,18C03,18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen, Guangdong, China		
Sample Description:	Watch		
Model:	W301GB		
Test Specification:	CFR47 FCC Part 15 Subpart C 15.247 RADIO FREQUENCY DEVICES Subpart C—Intentional Radiators		
Receipt Date:	2020-09-08		
Test Date:	2020-09-15 to 2020-09-22		
Issue Date:	2021-03-31		
Test Result:	Pass		
Prepared By: Test Engineer <i>Xie Jiang</i>	Reviewed By: Technical Manager <i>Wu Haoting</i>	Approved By: Manager <i>John Lee</i>	
Other Aspects:			
Note: This report instead the report E20200904990101-2-G1, and from the date of issuance of this report, the report which being replaced become invalid.			
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 verifications 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		
CFR47 FCC 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 1dBi, which accordance 15.203, is considered sufficient to comply with the provisions of this section.

2. GENERAL DESCRIPTION OF EUT

2.1. APPLICANT

Name: OnePlus Technology (Shenzhen) Co., Ltd.
Address: 18C02,18C03,18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian Distict, Shenzhen,Guangdong, China

2.2. MANUFACTURER

Name: OnePlus Technology (Shenzhen) Co., Ltd.
Address: 18C02,18C03,18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian Distict, Shenzhen,Guangdong, China

2.3. FACTORY

Name : Longcheer Electronic (HuiZhou) Co., Ltd.
Address : Building 1, No.28 (west) Hechang Six Road, Zhongkai High-Tech Zone, Huizhou, Guangdong,China.

2.4. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Watch

Model No.: W301GB

Adding Model: W501GB

The difference between Model: W301GB and Model: W501GB are the screen TP and the material of the middle frame, and the two watches are the same software, but in order to distinguish, the software version numbers of the two watches are named differently.:

Models discrepancy: For W301GB, the screen TP is aluminosilicate glass and the middle frame is stainless steel. And the software version number is W301GB_11_A.01.

For W501GB, the screen TP is sapphire glass and the middle frame is cobalt alloy. And the software version number is W501GB_11_A.01. Except for the above, all others is the same.

Trade Name: ONEPLUS

FCC ID: 2ABZ2-W301GB

Power supply: DC3.87V power supplied by bettery
DC5V power supplied by adapter
Rechargeable Li-ion Battery/XE202

Battery specification: Limited Charge Voltage:4.45Vdc
Rated Capacity: 402mAh/1.56Wh
Nominal Voltage:3.87Vdc
Typical Capacity: 410mAh/1.59Wh

Frequency Range: 2402 ~ 2480MHz

Transmit Power: GFSK for 1Mbps :11.648dBm
 Modulation type: GFSK for 2Mbps :11.278 dBm
 Channel space: 2MHz
 Antenna Specification: Internal antenna 1dBi gain (Max.)
 Temperature Range: 0°C~35°C
 Hardware: W301GB: LTAM281
 Version: W501GB: LTAM281
 Software: W301GB: W301GB_11_A.01
 Version: W501GB: W501GB_11_A.01
 Sample No: E20200904990101-0010
 Note: /

2.5. TEST OPERATION MODE

Test Item	Mode No.	Description of the modes
Conducted Emission	1	Continuously Transmitting (CH0) with adapter
	2	Continuously Transmitting (CH0) with notebook
Radiated Emission	1	Continuously Transmitting (CH0, CH19, CH39)

2.6. LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
Notebook	HP	/	/	/
Cable				
/	/	/	/	/

Test software:

Software version	Test level
/	/

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)
China CNAS(L0446)

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
	Vertical	30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
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	2020/11/27
LISN(EUT)	R&S	ENV216	101543	2021/03/24
Test S/W	EZ	CCS-3A1-CE	/	/
Radiated Spurious Emission& Restricted bands of operation				
EMI TEST RECEIVER	R&S	ESPI	100529	2020/12/08
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/11/18
Bilog Antenna	Schwarzbeck	VULB 9163	01279	2021/03/14
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	02143	2020/12/28
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	2020/11/30
Amplifier	Tonscend	TAP9E6343	AP20E806065	2021/06/28
Amplifier	Tonscend	TAP01018048	AP20E8060075	2021/06/28
Amplifier	Tonscend	TAP184050	AP20E806071	2021/06/05
Test S/W	Tonscend	JS36-RE/2.5.1.5		
6 dB Bandwidth				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/11/18
Peak/AV Output Power				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/11/18
Conducted band edges and Spurious Emission				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/11/18
Peak Output Spectral Density Measurement				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/11/18

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.

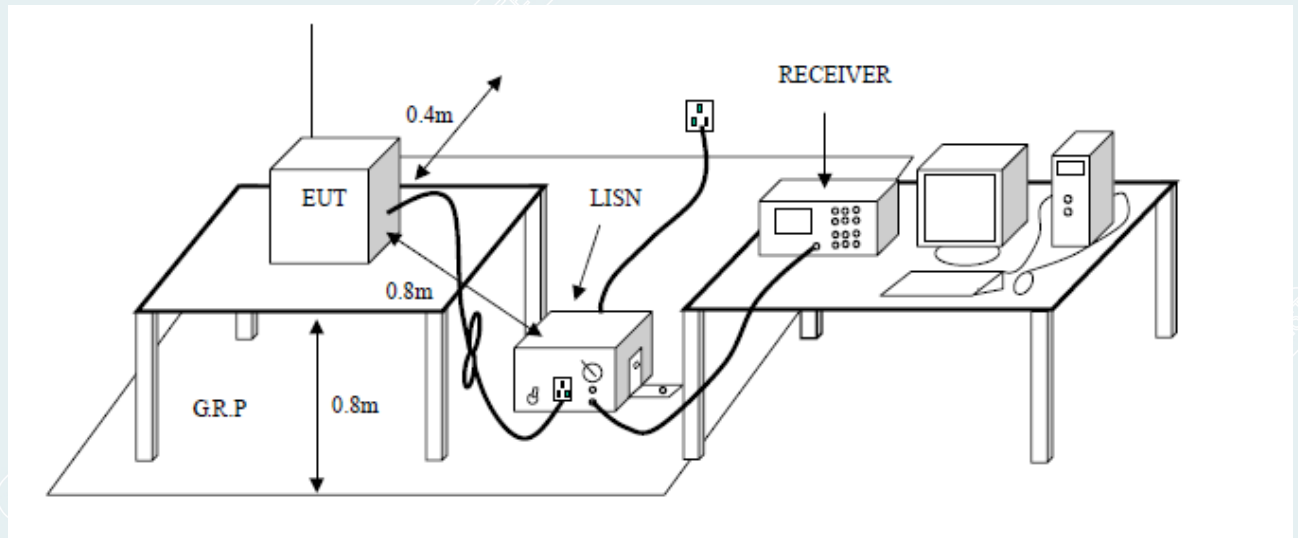
- I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

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



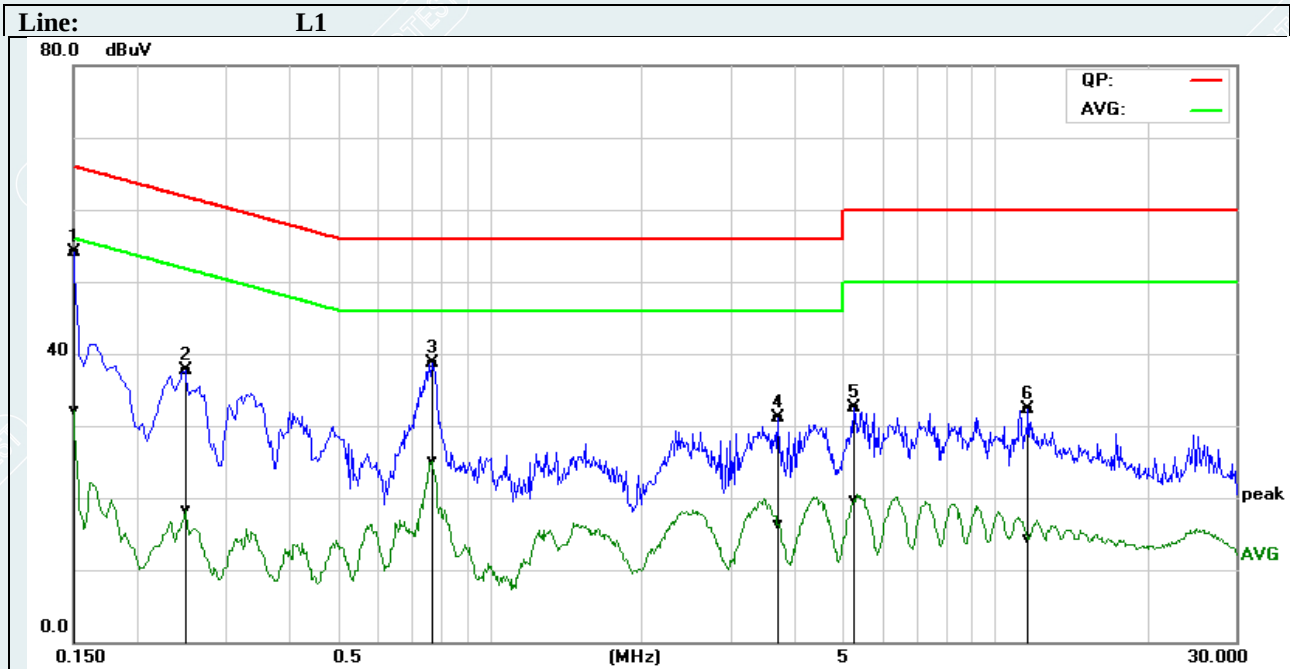
5.4. DATA SAMPLE

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)

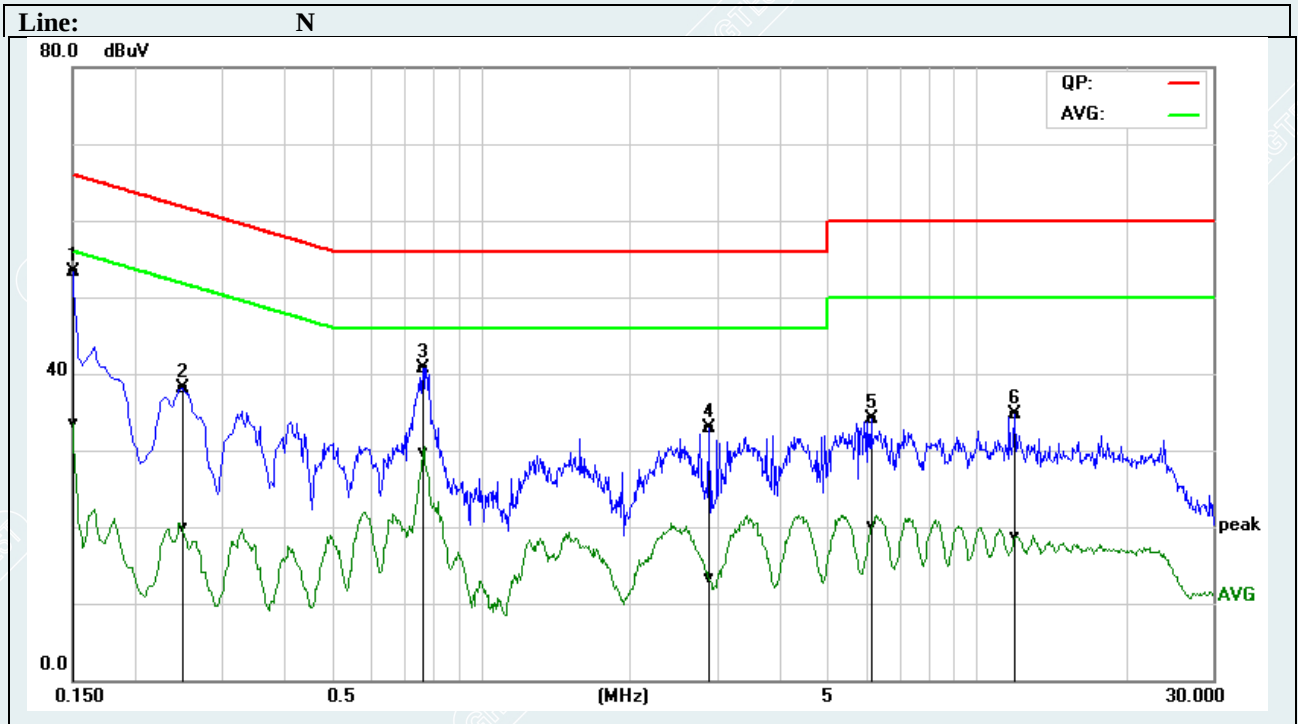
5.5. TEST RESULTS

EUT Name	Watch	Model	W301GB
Environmental Conditions	24°C/46%RH/100kPa	Test Mode	Mode 1
Power supply	AC120V/60Hz	Tested By	LingYuMei
Test Date	2020/09/16	Sample No.	E20200904990101-0010



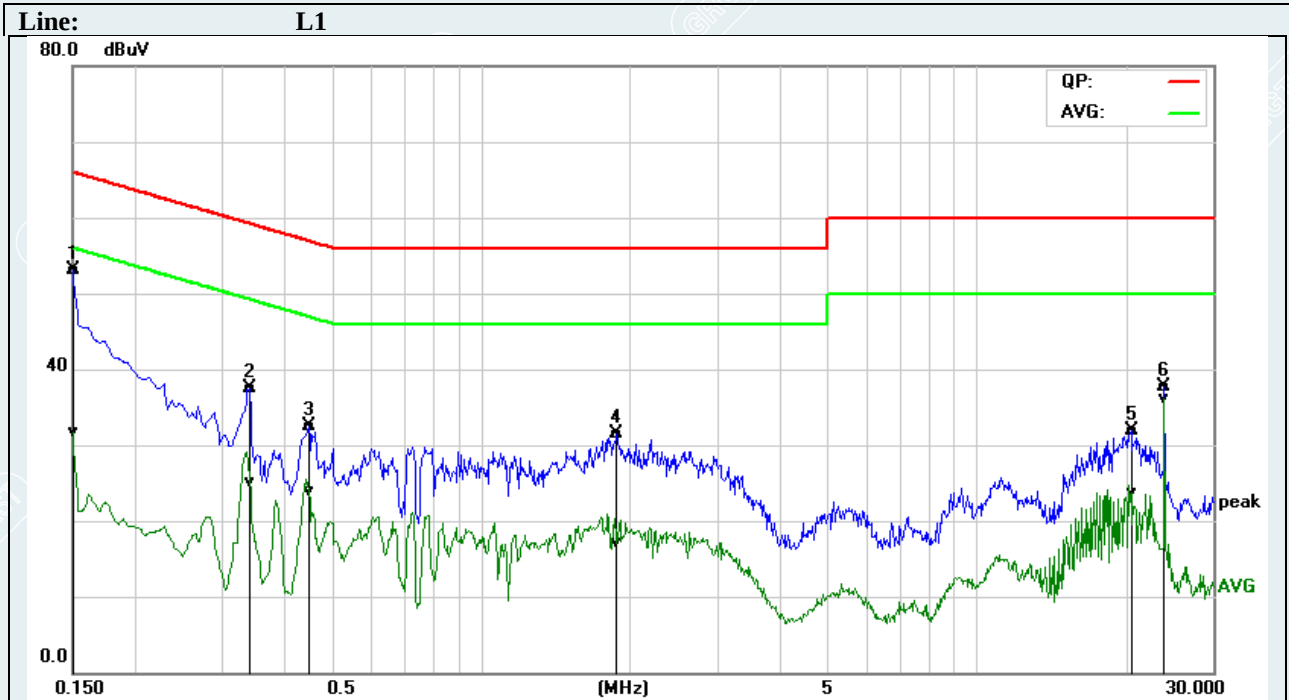
No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1500	44.42	22.37	9.67	54.09	32.04	65.99	56.00	-11.90	-23.96	Pass
2	0.2500	27.96	8.63	9.68	37.64	18.31	61.75	51.76	-24.11	-33.45	Pass
3	0.7700	28.93	15.33	9.68	38.61	25.01	56.00	46.00	-17.39	-20.99	Pass
4	3.7300	21.36	6.45	9.77	31.13	16.22	56.00	46.00	-24.87	-29.78	Pass
5	5.2700	22.68	9.94	9.80	32.48	19.74	60.00	50.00	-27.52	-30.26	Pass
6	11.6740	22.46	4.38	9.85	32.31	14.23	60.00	50.00	-27.69	-35.77	Pass

EUT Name	Watch	Model	W301GB
Environmental Conditions	24°C/46%RH/100kPa	Test Mode	Mode 1
Power supply	AC120V/60Hz	Tested By	LingYuMei
Test Date	2020/09/16	Sample No.	E20200904990101-0010



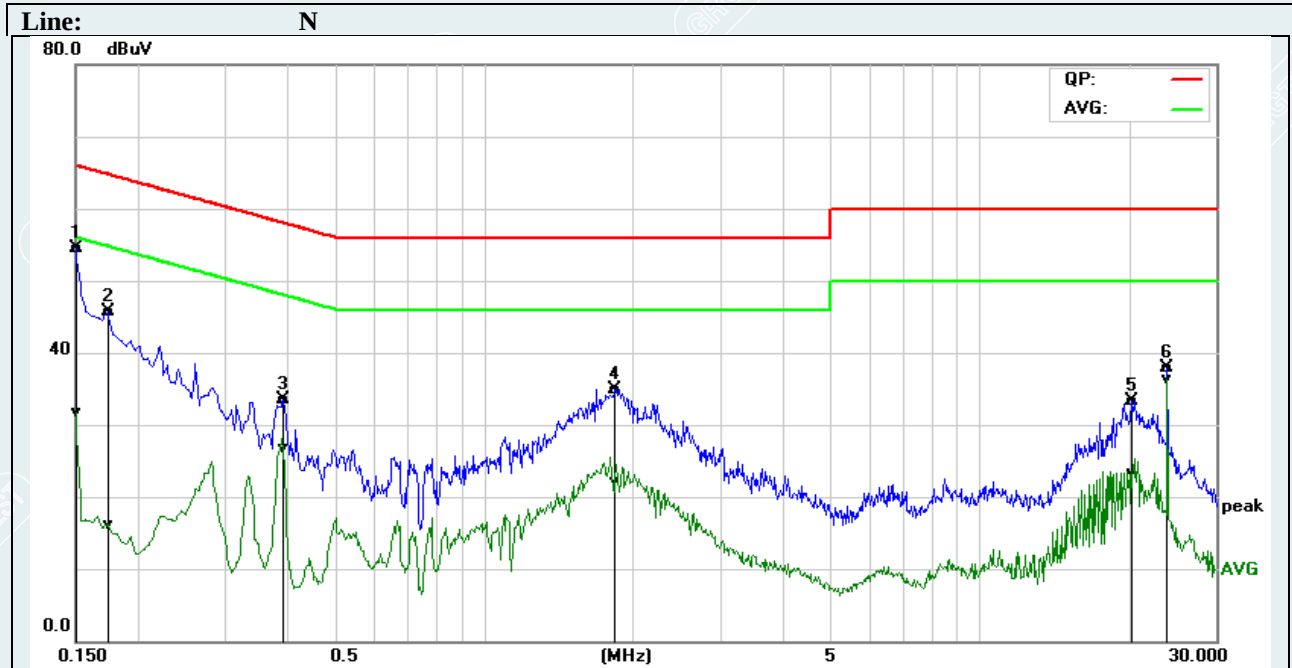
No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1500	43.69	23.75	9.67	53.36	33.42	65.99	56.00	-12.63	-22.58	Pass
2	0.2500	28.46	10.16	9.68	38.14	19.84	61.75	51.76	-23.61	-31.92	Pass
3	0.7660	30.97	20.01	9.68	40.65	29.69	56.00	46.00	-15.35	-16.31	Pass
4	2.8860	23.25	3.46	9.75	33.00	13.21	56.00	46.00	-23.00	-32.79	Pass
5	6.1420	24.21	10.24	9.81	34.02	20.05	60.00	50.00	-25.98	-29.95	Pass
6	11.9940	24.83	8.84	9.86	34.69	18.70	60.00	50.00	-25.31	-31.30	Pass

EUT Name	Watch	Model	W301GB
Environmental Conditions	24°C/46%RH/100kPa	Test Mode	Mode 1
Power supply	DC5V	Tested By	LingYuMei
Test Date	2020/09/16	Sample No.	E20200904990101-0010



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*	0.1500	43.47	22.05	9.67	53.14	31.72	65.99	56.00	-12.85	-24.28	Pass
2	0.3420	27.80	15.52	9.68	37.48	25.20	59.15	49.15	-21.67	-23.95	Pass
3	0.4500	22.89	14.24	9.67	32.56	23.91	56.87	46.88	-24.31	-22.97	Pass
4	1.8780	21.71	7.31	9.73	31.44	17.04	56.00	46.00	-24.56	-28.96	Pass
5	20.5940	21.93	13.68	10.01	31.94	23.69	60.00	50.00	-28.06	-26.31	Pass
6	23.9980	27.61	26.06	10.10	37.71	36.16	60.00	50.00	-22.29	-13.84	Pass

EUT Name	Watch	Model	W301GB
Environmental Conditions	24°C/46%RH/100kPa	Test Mode	Mode 1
Power supply	DC5V	Tested By	LingYuMei
Test Date	2020/09/16	Sample No.	E20200904990101-0010



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1*	0.1500	44.74	21.98	9.67	54.41	31.65	65.99	56.00	-11.58	-24.35	Pass
2	0.1740	36.12	6.53	9.67	45.79	16.20	64.76	54.77	-18.97	-38.57	Pass
3	0.3940	23.88	17.11	9.67	33.55	26.78	57.98	47.98	-24.43	-21.20	Pass
4	1.8460	25.21	12.39	9.73	34.94	22.12	56.00	46.00	-21.06	-23.88	Pass
5	20.3020	23.31	13.39	9.99	33.30	23.38	60.00	50.00	-26.70	-26.62	Pass
6	23.9980	27.88	26.25	10.10	37.98	36.35	60.00	50.00	-22.02	-13.65	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(μ V/m)	Measurement distance(m)	Quasi-peak(dB μ V/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.

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

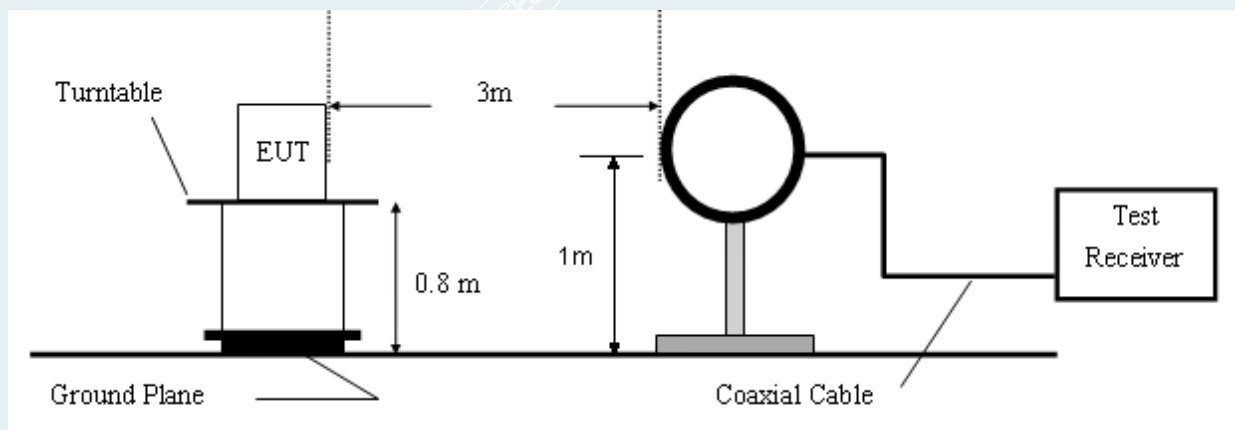


Figure 1. 9KHz to 30MHz radiated emissions test configuration

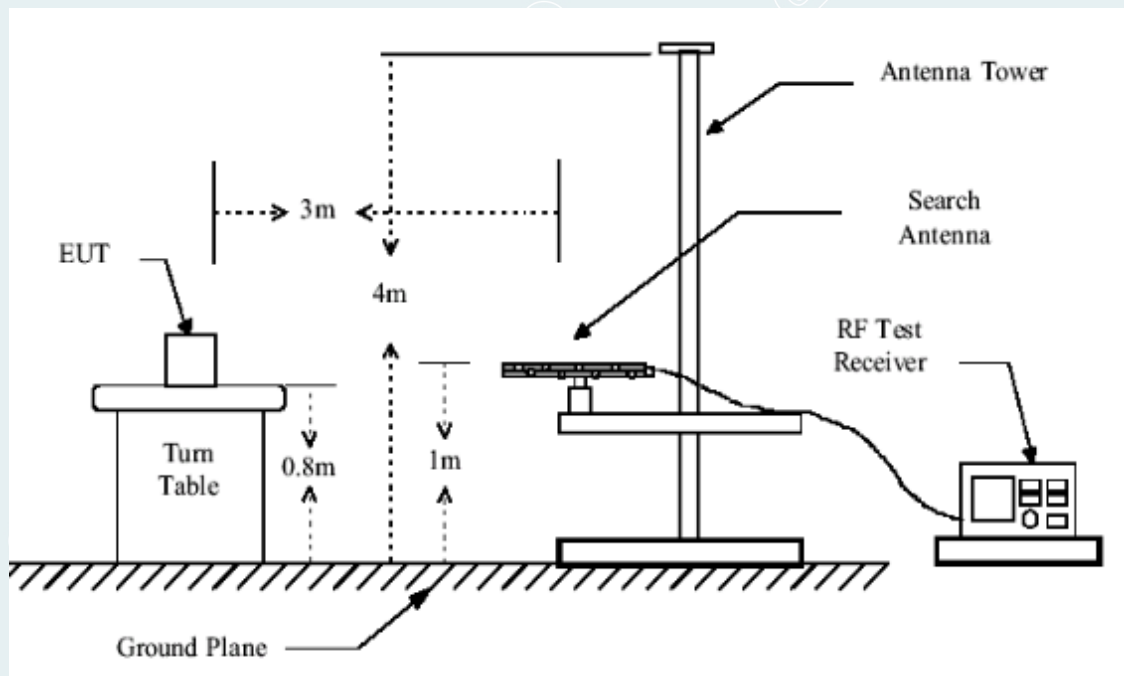


Figure 2. 30MHz to 1GHz radiated emissions test configuration

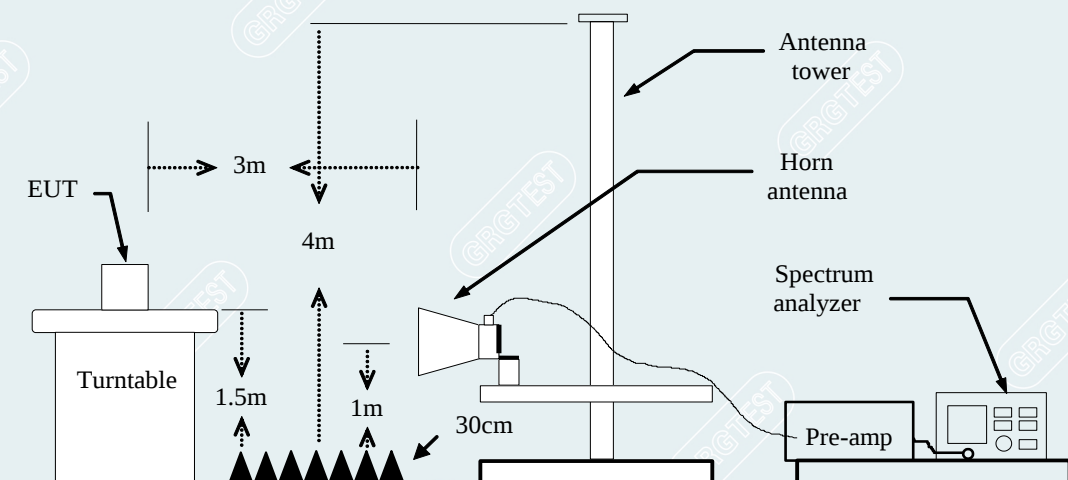


Figure 3. Above 1GHz radiated emissions test configuration

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

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

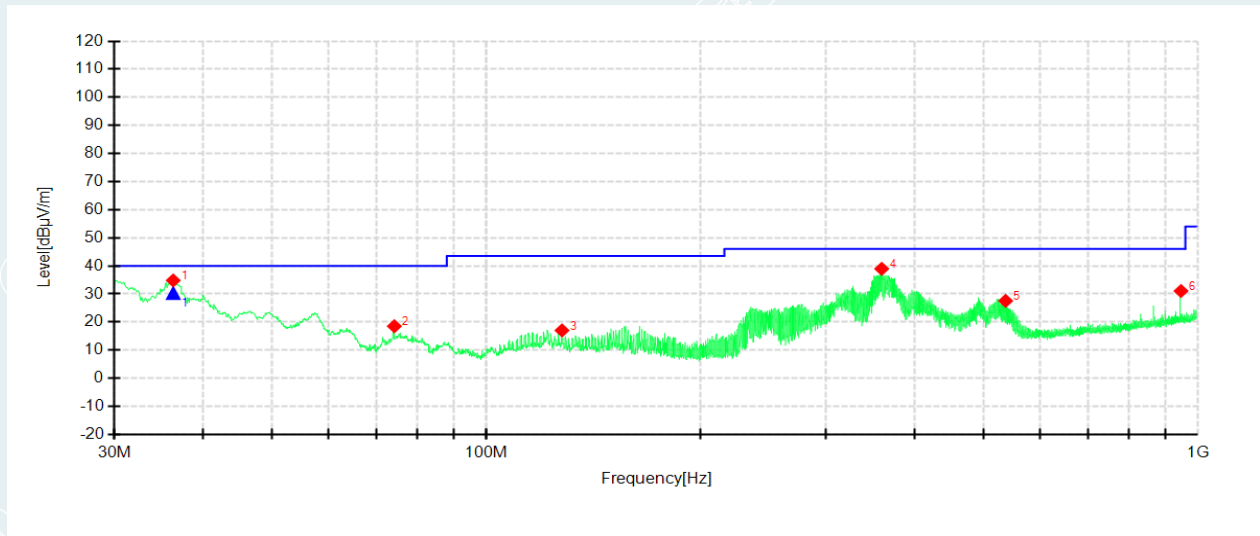
6.5. TEST RESULTS

30MHz to 1GHz

Mode: TX/ 1Mbps

Lowest channel (2402MHz)

Date: 2020/09/16



Suspected Data List

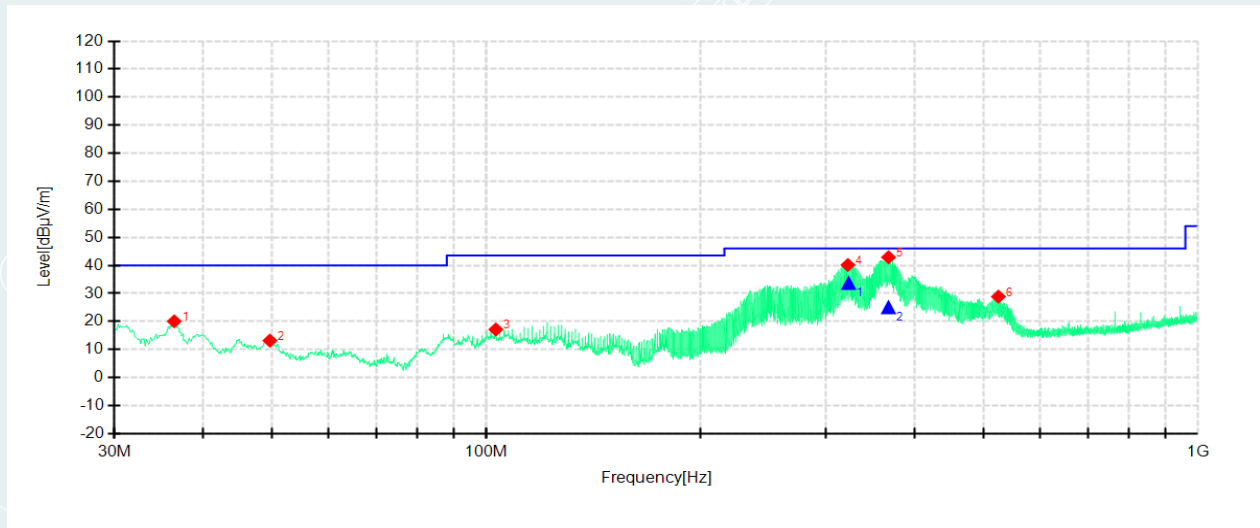
NO.	Freq. [MHz]	Reading[dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.3050	64.89	34.82	-30.07	40.00	5.18	PK	100	289	Vertical
2	74.2563	50.65	18.53	-32.12	40.00	21.47	PK	100	323	Vertical
3	127.7275	46.58	17.03	-29.55	43.50	26.47	PK	100	78	Vertical
4	359.4363	64.34	38.95	-25.39	46.00	7.05	PK	200	3	Vertical
5	536.7038	49.13	27.55	-21.58	46.00	18.45	PK	100	51	Vertical
6	946.6500	45.22	31.06	-14.16	46.00	14.94	PK	100	6	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading[dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.3065	-30.07	60.32	30.25	40.00	9.75	100	195.3	Vertical

Mode: TX/ 1Mbps
Lowest channel (2402MHz)

Date: 2020/09/16

**Suspected Data List**

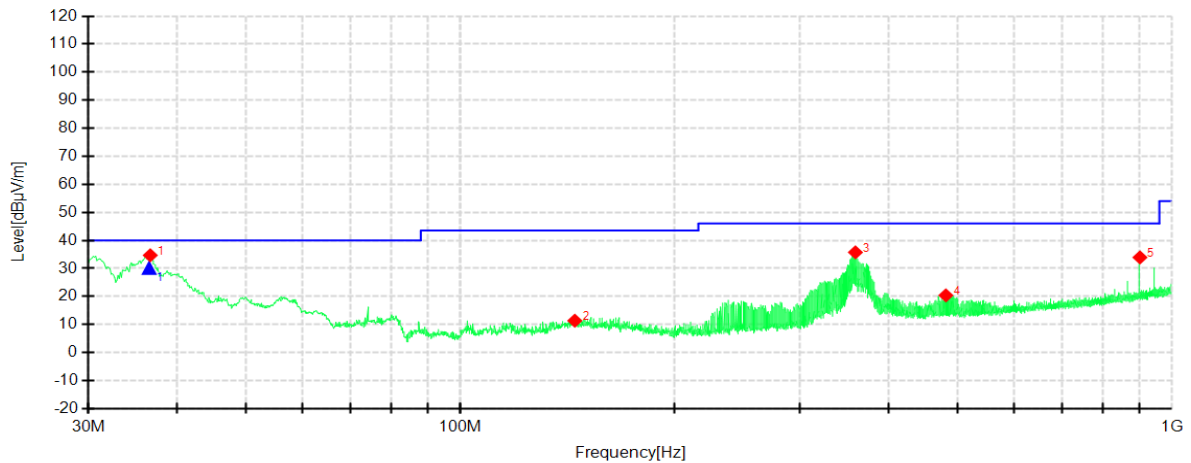
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.4263	50.73	20.07	-30.66	40.00	19.93	PK	200	104	Horizontal
2	49.6425	41.95	13.18	-28.77	40.00	26.82	PK	200	313	Horizontal
3	103.1138	47.17	17.15	-30.02	43.50	26.35	PK	200	332	Horizontal
4	322.2125	66.10	40.16	-25.94	46.00	5.84	PK	100	331	Horizontal
5	367.4388	67.83	42.89	-24.94	46.00	3.11	PK	100	349	Horizontal
6	524.3363	50.14	28.86	-21.28	46.00	17.14	PK	200	316	Horizontal

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	322.9214	-25.92	59.56	33.64	46.00	12.36	100	314.9	Horizontal
2	367.3433	-24.94	49.92	24.98	46.00	21.02	100	271.1	Horizontal

Mode: TX/ 1Mbps
Highest channel (2480MHz)

Date: 2020/09/16

**Suspected Data List**

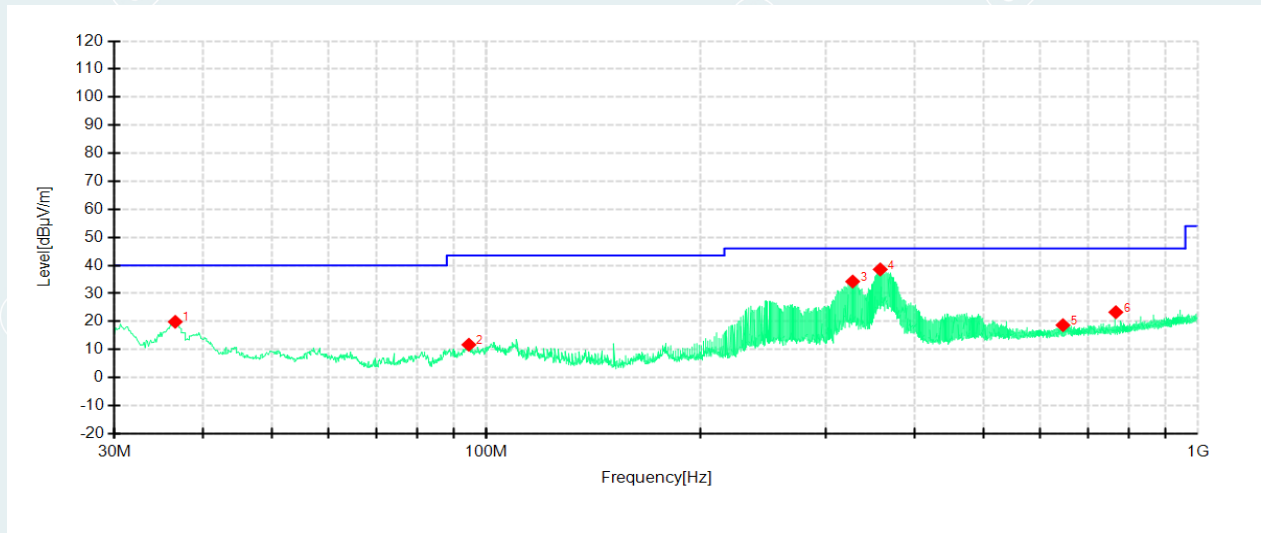
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.6688	64.74	34.69	-30.05	40.00	5.31	PK	100	75	Vertical
2	144.8238	38.33	11.37	-26.96	43.50	32.13	PK	200	319	Vertical
3	359.0725	61.13	35.74	-25.39	46.00	10.26	PK	100	33	Vertical
4	481.1713	42.72	20.39	-22.33	46.00	25.61	PK	100	26	Vertical
5	901.5450	48.54	33.93	-14.61	46.00	12.07	PK	100	316	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.5339	-30.05	60.20	30.15	40.00	9.85	100	242.2	Vertical

Mode: TX/ 1Mbps
Highest channel (2480MHz)

Date: 2020/09/16



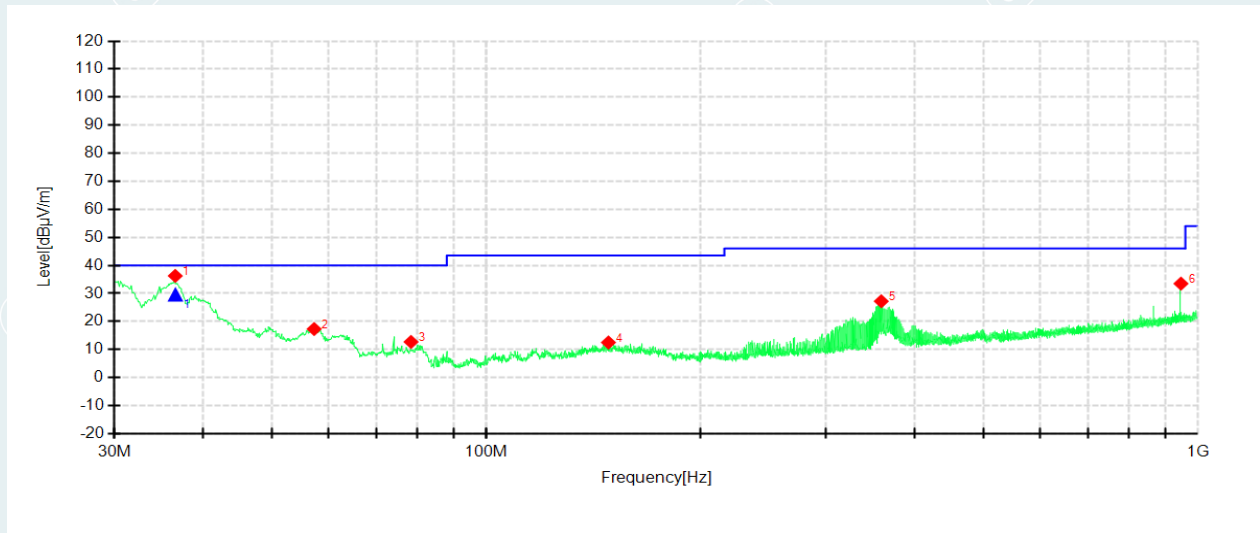
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.5475	50.52	19.88	-30.64	40.00	20.12	PK	200	304	Horizontal
2	94.5050	42.62	11.72	-30.90	43.50	31.78	PK	200	304	Horizontal
3	327.1838	60.00	34.24	-25.76	46.00	11.76	PK	100	332	Horizontal
4	357.7388	63.61	38.56	-25.05	46.00	7.44	PK	100	354	Horizontal
5	646.1925	37.51	18.68	-18.83	46.00	27.32	PK	100	116	Horizontal
6	766.7150	41.17	23.30	-17.87	46.00	22.70	PK	100	290	Horizontal

Mode: TX/ 2Mbps

Lowest channel (2402MHz)

Date: 2020/09/16

**Suspected Data List**

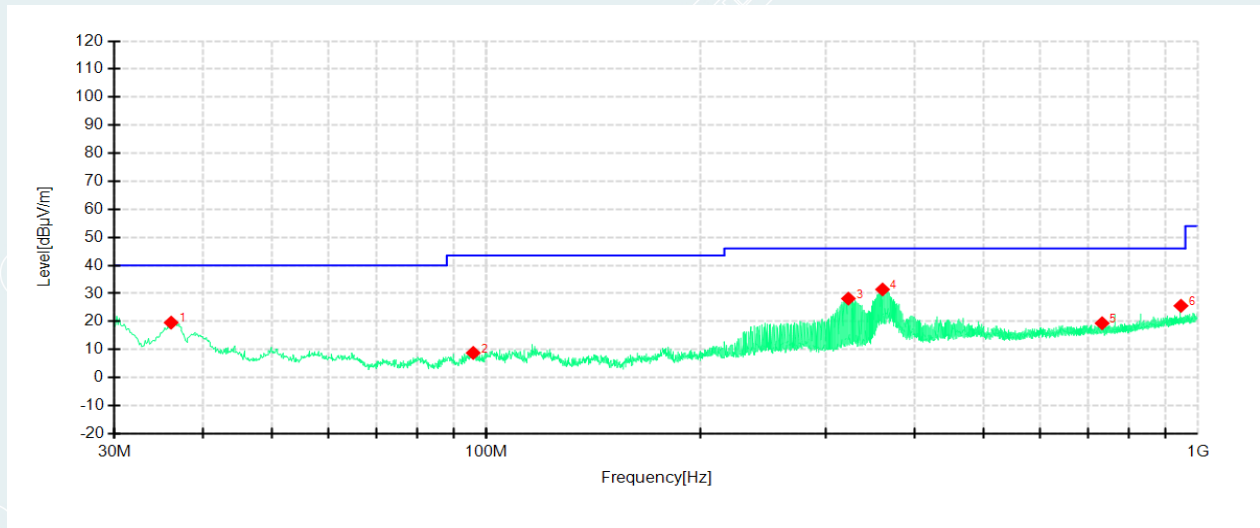
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.5475	66.31	36.26	-30.05	40.00	3.74	PK	100	278	Vertical
2	57.2813	47.84	17.32	-30.52	40.00	22.68	PK	100	15	Vertical
3	78.3788	45.15	12.71	-32.44	40.00	27.29	PK	100	56	Vertical
4	148.4613	39.25	12.51	-26.74	43.50	30.99	PK	100	147	Vertical
5	358.9513	52.60	27.21	-25.39	46.00	18.79	PK	200	26	Vertical
6	946.5288	47.66	33.50	-14.16	46.00	12.50	PK	100	8	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.5636	-30.05	59.57	29.52	40.00	10.48	106	221.4	Vertical

Mode: TX/ 2Mbps
Lowest channel (2402MHz)

Date: 2020/09/16

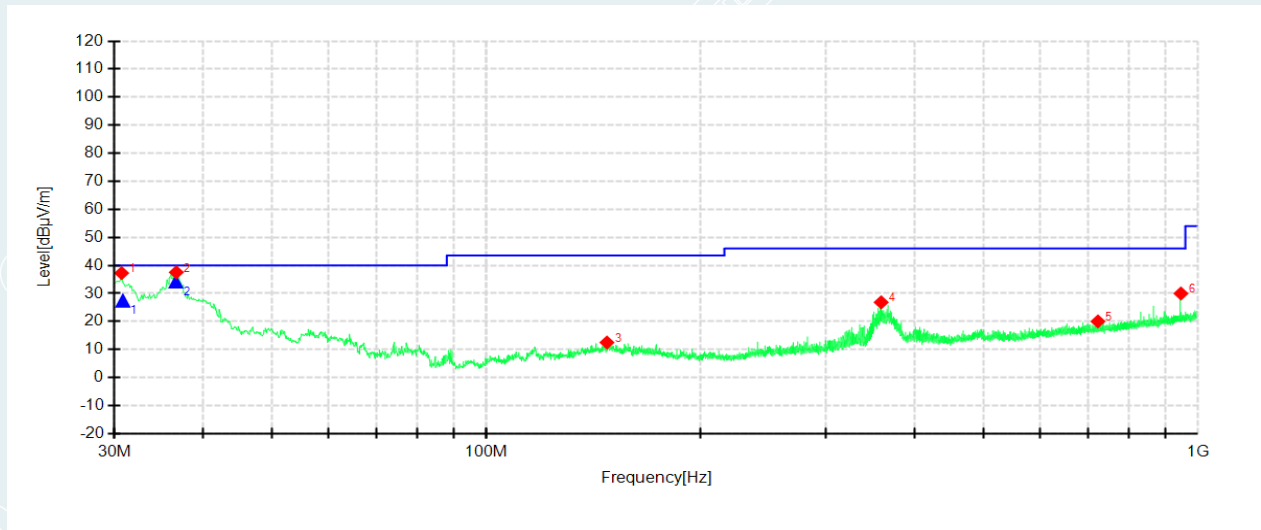


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	36.0625	50.33	19.59	-30.74	40.00	20.41	PK	200	22	Horizontal
2	95.8388	39.46	8.79	-30.67	43.50	34.71	PK	100	312	Horizontal
3	322.6975	54.08	28.16	-25.92	46.00	17.84	PK	100	320	Horizontal
4	360.4063	56.46	31.43	-25.03	46.00	14.57	PK	100	0	Horizontal
5	733.3713	37.45	19.37	-18.08	46.00	26.63	PK	100	154	Horizontal
6	946.5288	40.42	25.57	-14.85	46.00	20.43	PK	100	102	Horizontal

Mode: TX/ 2Mbps
Highest channel (2480MHz)

Date: 2020/09/16

**Suspected Data List**

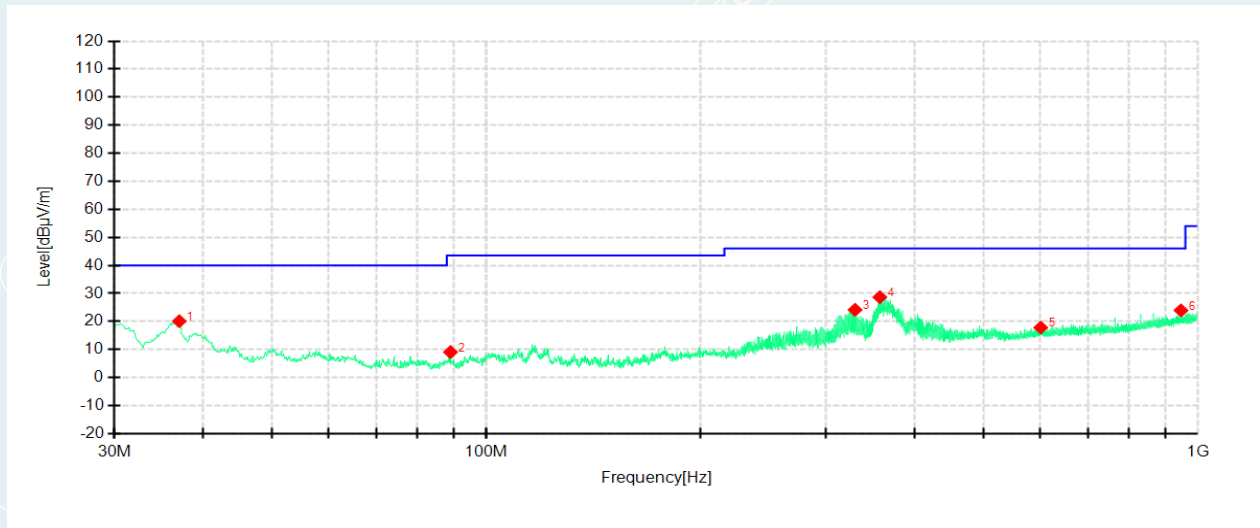
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	30.7275	67.69	37.26	-30.43	40.00	2.74	PK	100	297	Vertical
2	36.6688	67.58	37.53	-30.05	40.00	2.47	PK	100	0	Vertical
3	147.7338	39.30	12.51	-26.79	43.50	30.99	PK	200	154	Vertical
4	358.8300	52.22	26.83	-25.39	46.00	19.17	PK	200	14	Vertical
5	723.5500	37.69	20.03	-17.66	46.00	25.97	PK	200	164	Vertical
6	946.5288	44.14	29.98	-14.16	46.00	16.02	PK	100	44	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.8449	-30.43	57.80	27.37	40.00	12.63	137	298.2	Vertical
2	36.6079	-30.05	64.19	34.14	40.00	5.86	100	252.9	Vertical

Mode: TX/ 2Mbps
Highest channel (2480MHz)

Date: 2020/09/16



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	37.0325	50.65	20.11	-30.54	40.00	19.89	PK	200	52	Horizontal
2	89.0488	40.90	9.09	-31.81	43.50	34.41	PK	200	108	Horizontal
3	329.7300	49.83	24.16	-25.67	46.00	21.84	PK	100	342	Horizontal
4	357.2538	53.72	28.67	-25.05	46.00	17.33	PK	100	350	Horizontal
5	601.3300	37.07	17.84	-19.23	46.00	28.16	PK	100	68	Horizontal
6	946.6500	38.80	23.94	-14.86	46.00	22.06	PK	200	288	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:

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/ 1Mbps

Lowest channel (2402MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2449.6812	27.20	-5.08	74.00	46.80	150	314	Vertical
2	7557.4723	45.03	-1.92	74.00	28.97	150	357	Vertical
3	9553.5346	45.65	2.13	74.00	28.35	150	0	Vertical
4	12946.5592	47.71	7.33	74.00	26.29	150	134	Vertical
5	15091.6932	49.03	9.40	74.00	24.97	150	145	Vertical
6	17992.4995	59.12	21.14	74.00	14.88	150	156	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15091.6932	9.40	49.03	74.00	24.97	40.94	54.00	13.06	150	145	Vertical
2	17992.4995	21.14	59.12	74.00	14.88	42.78	54.00	11.22	150	156	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2443.9305	23.33	-5.07	74.00	50.67	150	195	Horizontal
2	5632.6645	39.99	-8.97	74.00	34.01	150	127	Horizontal
3	7155.2597	44.19	-3.39	74.00	29.81	150	357	Horizontal
4	10571.7232	47.62	4.88	74.00	26.38	150	16	Horizontal
5	13999.4375	49.30	10.42	74.00	24.70	150	59	Horizontal
6	17979.3737	57.99	20.84	74.00	16.01	150	271	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13999.4375	10.42	49.30	74.00	24.70	41.47	54.00	12.53	150	59	Horizontal
2	17979.3737	20.84	57.99	74.00	16.01	41.68	54.00	12.32	150	271	Horizontal

Mode: TX/ 1Mbps
Middle channel (2440MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1555.5694	16.10	-8.86	74.00	57.90	150	181	Vertical
2	3976.9361	38.76	-13.46	74.00	35.24	150	319	Vertical
3	5970.1856	40.78	-8.19	74.00	33.22	150	357	Vertical
4	8964.7478	44.63	0.30	74.00	29.37	150	178	Vertical
5	13883.180	48.41	9.26	74.00	25.59	150	265	Vertical
6	17993.437	56.55	21.16	74.00	17.45	150	1	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13883.1802	9.26	48.41	74.00	25.59	40.08	54.00	13.92	150	265	Vertical
2	17993.4371	21.16	56.55	74.00	17.45	42.62	54.00	11.38	150	1	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2338.9174	22.54	-5.69	74.00	51.46	150	17	Horizontal
2	3839.1149	38.69	-13.41	74.00	35.31	150	325	Horizontal
3	6188.6368	41.22	-6.76	74.00	32.78	150	26	Horizontal
4	8892.5558	44.46	-0.24	74.00	29.54	150	270	Horizontal
5	12202.137	48.28	6.45	74.00	25.72	150	48	Horizontal
6	18000.000	57.64	21.31	74.00	16.36	150	303	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	12202.1376	6.45	48.28	74.00	25.72	37.47	54.00	16.53	150	48	Horizontal
2	18000.0000	21.31	57.64	74.00	16.36	42.68	54.00	11.32	150	303	Horizontal

Mode: TX/ 1Mbps
Highest channel (2480MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1943.8680	21.75	-7.53	74.00	52.25	150	169	Vertical
2	3892.5558	37.88	-13.57	74.00	36.12	150	312	Vertical
3	5482.6552	40.15	-9.25	74.00	33.85	150	357	Vertical
4	8578.4737	44.68	-0.40	74.00	29.32	150	191	Vertical
5	12401.837	49.57	6.28	74.00	24.43	150	225	Vertical
6	17985.936	57.08	20.99	74.00	16.92	150	5	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	12401.8376	6.28	49.57	74.00	24.43	37.82	54.00	16.18	150	225	Vertical
2	17985.9366	20.99	57.08	74.00	16.92	42.07	54.00	11.93	150	5	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2187.1484	20.20	-7.07	74.00	53.80	150	117	Horizontal
2	3622.5389	38.93	-14.02	74.00	35.07	150	2	Horizontal
3	5762.9852	41.67	-8.89	74.00	32.33	150	213	Horizontal
4	10612.0383	47.28	5.09	74.00	26.72	150	357	Horizontal
5	13950.6844	48.78	10.02	74.00	25.22	150	245	Horizontal
6	17994.3746	56.98	21.18	74.00	17.02	150	146	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13950.6844	10.02	48.78	74.00	25.22	41.64	54.00	12.36	150	245	Horizontal
2	17994.3746	21.18	56.98	74.00	17.02	43.02	54.00	10.98	150	146	Horizontal

Mode: TX/ 2Mbps
Lowest channel (2402MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1745.3432	18.68	-8.29	74.00	55.32	150	301	Vertical
2	3583.1614	38.19	-14.05	74.00	35.81	150	238	Vertical
3	7341.8339	44.61	-3.21	74.00	29.39	150	281	Vertical
4	9379.1487	45.30	1.02	74.00	28.70	150	150	Vertical
5	13918.8074	49.57	9.76	74.00	24.43	150	73	Vertical
6	17982.1864	55.94	20.91	74.00	18.06	150	128	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	13918.8074	9.76	49.57	74.00	24.43	41.62	54.00	12.38	150	73	Vertical
2	17982.1864	20.91	55.94	74.00	18.06	42.30	54.00	11.70	150	128	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1970.8714	18.54	-7.59	74.00	55.46	150	360	Horizontal
2	4086.6304	39.29	-12.48	74.00	34.71	150	226	Horizontal
3	6084.5678	42.38	-7.48	74.00	31.62	150	73	Horizontal
4	9090.3806	45.92	1.13	74.00	28.08	150	347	Horizontal
5	14518.8449	50.17	10.20	74.00	23.83	150	357	Horizontal
6	17993.4371	57.98	21.16	74.00	16.02	150	73	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	14518.8449	10.20	50.17	74.00	23.83	41.40	54.00	12.60	150	357	Horizontal
2	17993.4371	21.16	57.98	74.00	16.02	43.63	54.00	10.37	150	73	Horizontal

Mode: TX/ 2Mbps
Middle channel (2440MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1867.3584	18.50	-7.73	74.00	55.50	150	270	Vertical
2	3468.7793	38.61	-15.84	74.00	35.39	150	325	Vertical
3	5674.8547	40.40	-9.23	74.00	33.60	150	72	Vertical
4	7038.0649	45.20	-3.59	74.00	28.80	150	182	Vertical
5	12201.2001	48.76	6.44	74.00	25.24	150	269	Vertical
6	17999.0624	55.68	21.29	74.00	18.32	150	5	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	12201.2001	6.44	48.76	74.00	25.24	38.14	54.00	15.86	150	269	Vertical
2	17999.0624	21.29	55.68	74.00	18.32	43.59	54.00	10.41	150	5	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	3632.8521	38.36	-14.15	74.00	35.64	150	116	Horizontal
2	5481.7176	40.18	-9.25	74.00	33.82	150	28	Horizontal
3	7784.3615	44.90	-1.55	74.00	29.10	150	193	Horizontal
4	9863.8665	46.64	2.72	74.00	27.36	150	159	Horizontal
5	12939.0587	46.82	7.37	74.00	27.18	150	269	Horizontal
6	17988.7493	57.13	21.06	74.00	16.87	150	105	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	17988.7493	21.06	57.13	74.00	16.87	41.04	54.00	12.96	150	105	Horizontal

Mode: TX/ 2Mbps
Highest channel (2480MHz)

Date: 2020/09/16

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2420.1775	23.56	-5.04	74.00	50.44	150	294	Vertical
2	3780.9863	38.00	-13.62	74.00	36.00	150	96	Vertical
3	6386.4617	41.77	-6.74	74.00	32.23	150	96	Vertical
4	8585.9741	44.94	-0.37	74.00	29.06	150	53	Vertical
5	14565.7229	49.57	10.43	74.00	24.43	150	96	Vertical
6	17994.3746	56.70	21.18	74.00	17.30	150	206	Vertical

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	14565.7229	10.43	49.57	74.00	24.43	41.07	54.00	12.93	150	96	Vertical
2	17994.3746	21.18	56.70	74.00	17.30	42.72	54.00	11.28	150	206	Vertical

Suspected Data List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1848.1060	19.37	-7.91	74.00	54.63	150	285	Horizontal
2	3851.3032	37.74	-13.44	74.00	36.26	150	357	Horizontal
3	6297.3936	41.28	-7.62	74.00	32.72	150	170	Horizontal
4	9426.0266	45.38	1.22	74.00	28.62	150	105	Horizontal
5	14086.6304	48.38	9.36	74.00	25.62	150	170	Horizontal
6	17994.3746	56.53	21.18	74.00	17.47	150	237	Horizontal

Final Data List											
NO	Freq. [MHz]	Factor [dB]	PK Value [dBμV/m]	PK Limit [dBμV/m]	PK Margin [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	14086.6304	9.36	48.38	74.00	25.62	41.00	54.00	13.00	150	170	Horizontal
2	17994.3746	21.18	56.53	74.00	17.47	42.53	54.00	11.47	150	237	Horizontal

Remark:

- 1 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
- 4 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
- 5 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.

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

For 1Mbps

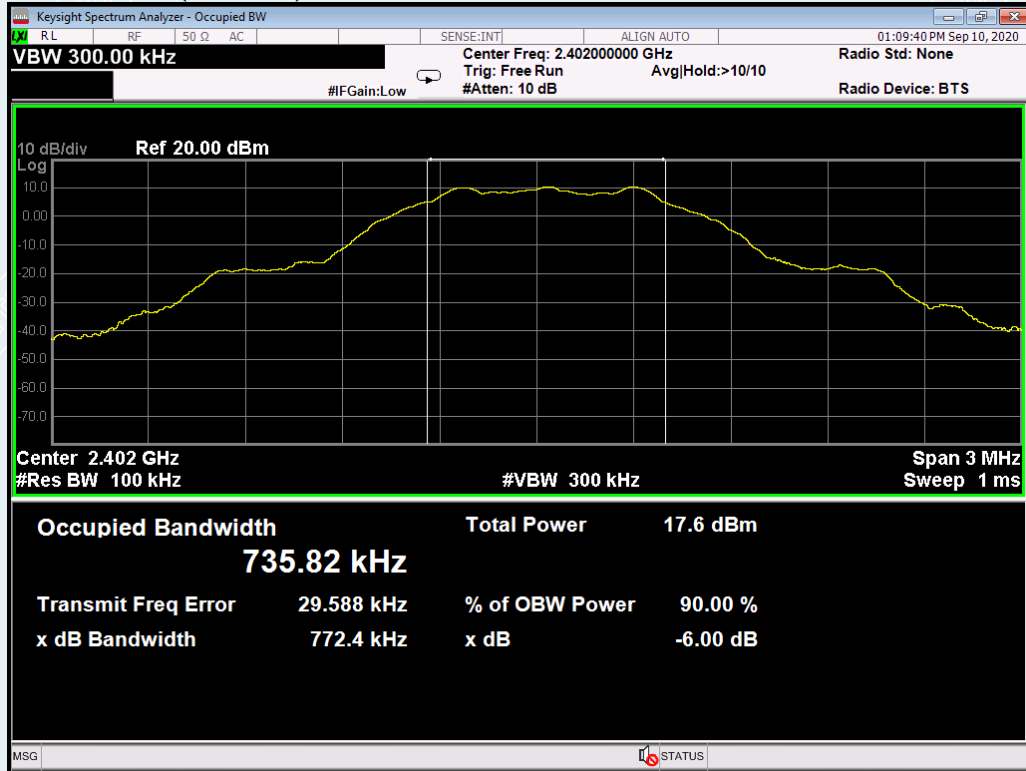
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	772.4	>500	PASS
Middle	2440	772.5		PASS
Highest	2480	773.0		PASS

For 2Mbps

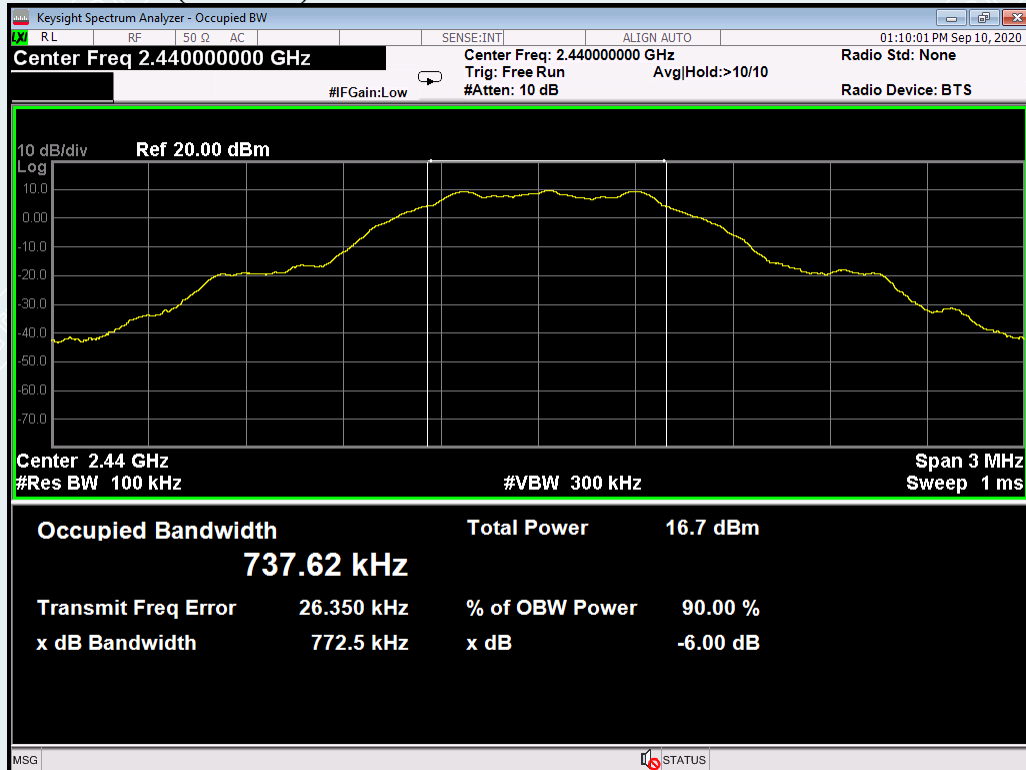
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	1110	>500	PASS
Middle	2440	1107		PASS
Highest	2480	1109		PASS

For 1Mbps

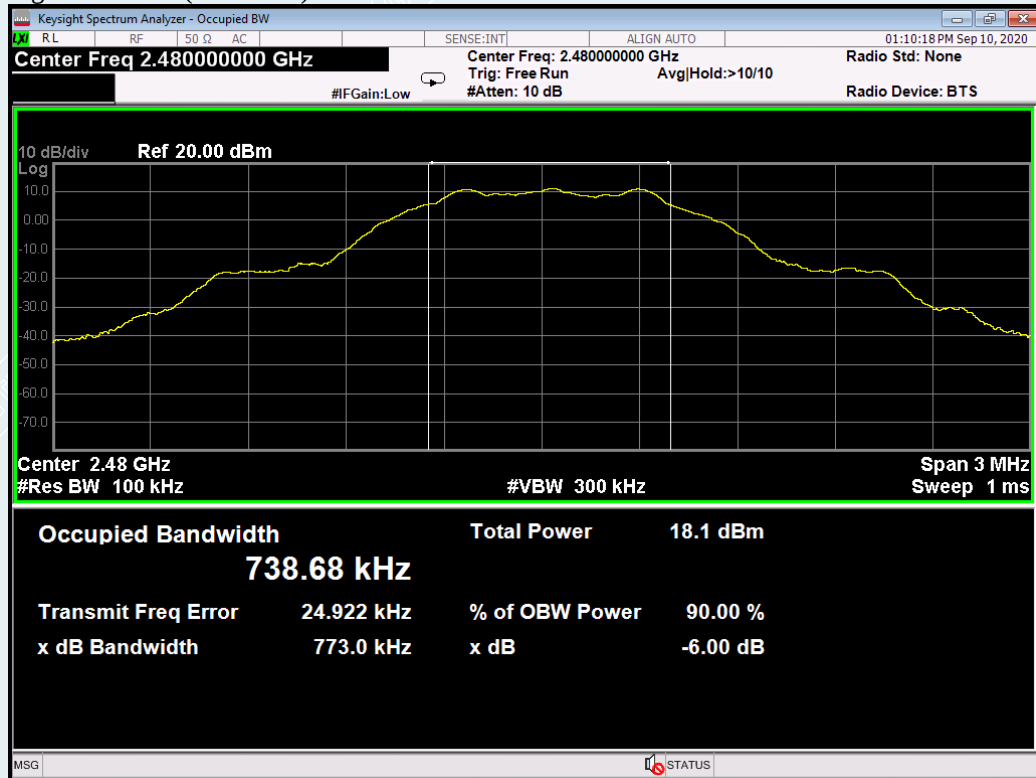
Lowest channel (2402MHz)



Middle channel (2440 MHz)

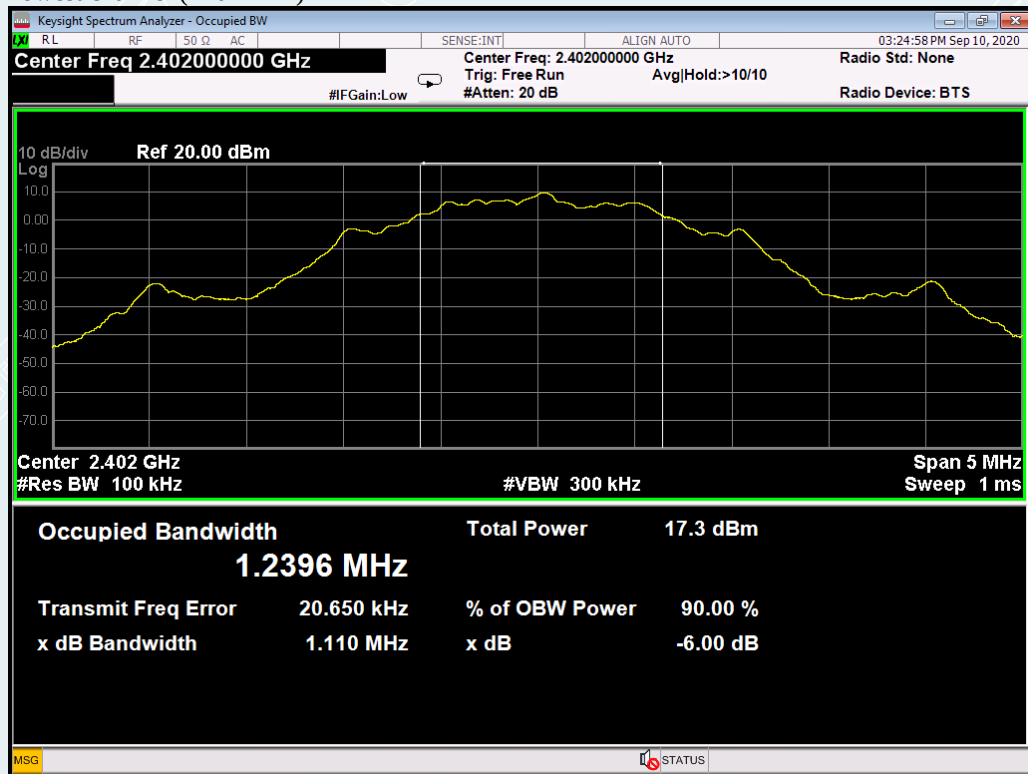


Highest channel (2480MHz)

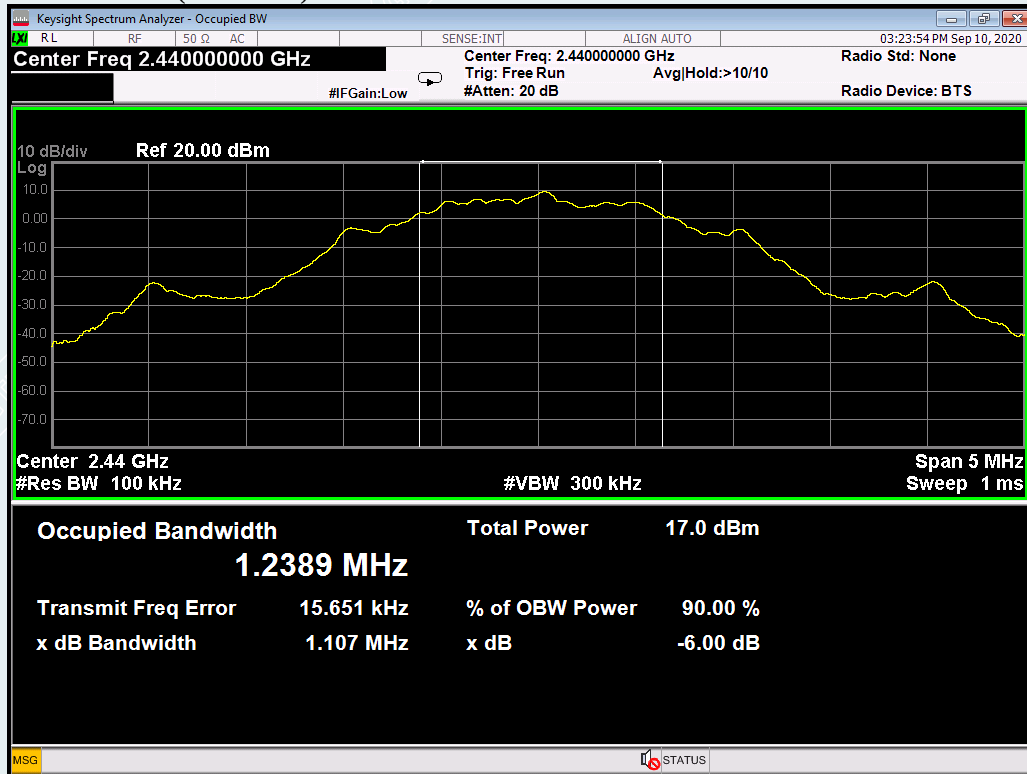


For 2Mbps

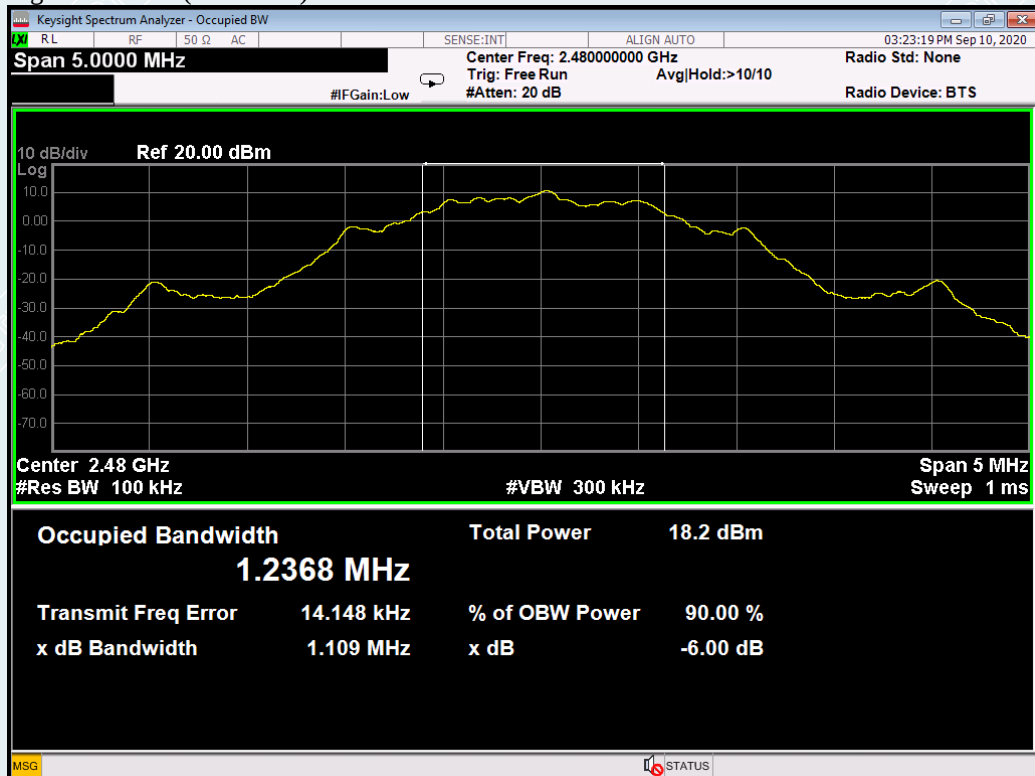
Lowest channel (2402MHz)



Middle channel (2440 MHz)



Highest channel (2480MHz)



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

For 1Mbps

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	11.066	1W (30dBm)	Peak	Pass
Middle	2440	10.191			Pass
Highest	2480	11.648			Pass

For 2Mbps

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	10.457	1W (30dBm)	Peak	Pass
Middle	2440	10.024			Pass
Highest	2480	11.278			Pass

9. POWER SPECTRAL DENSITY

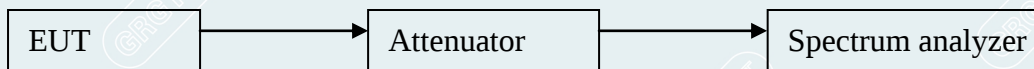
9.1. LIMITS

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 $\geq 2 \times$ 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

For 1Mbps

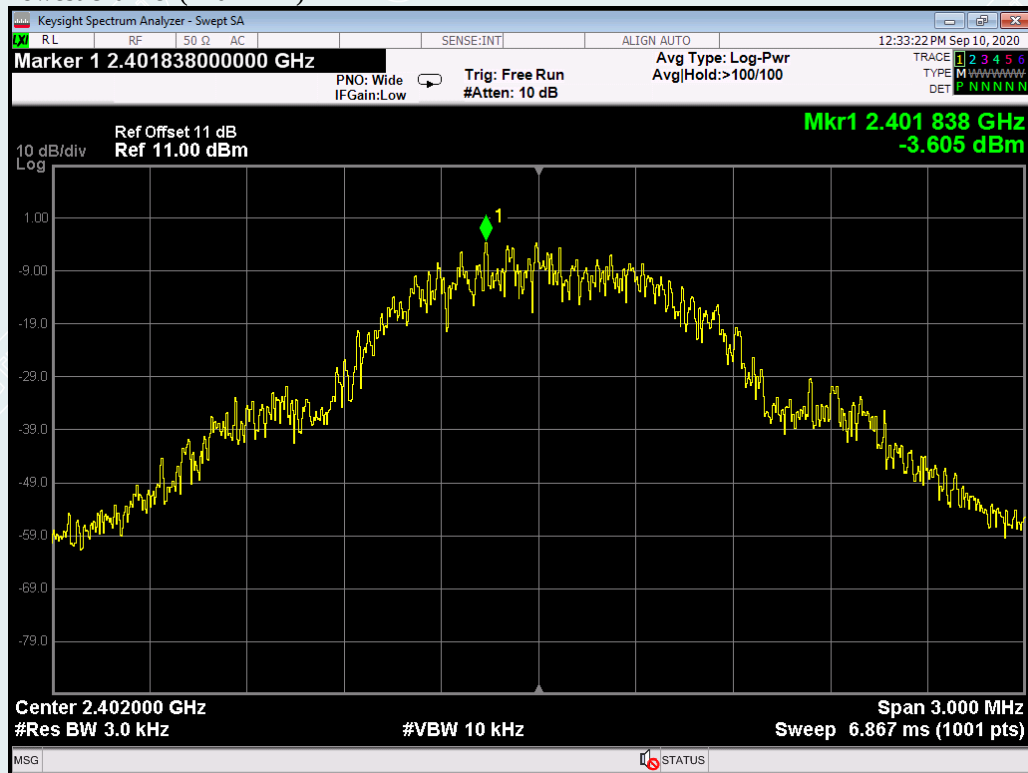
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-3.605	8	PASS
Middle	2440	-4.490		PASS
Highest	2480	-3.072		PASS

For 2Mbps

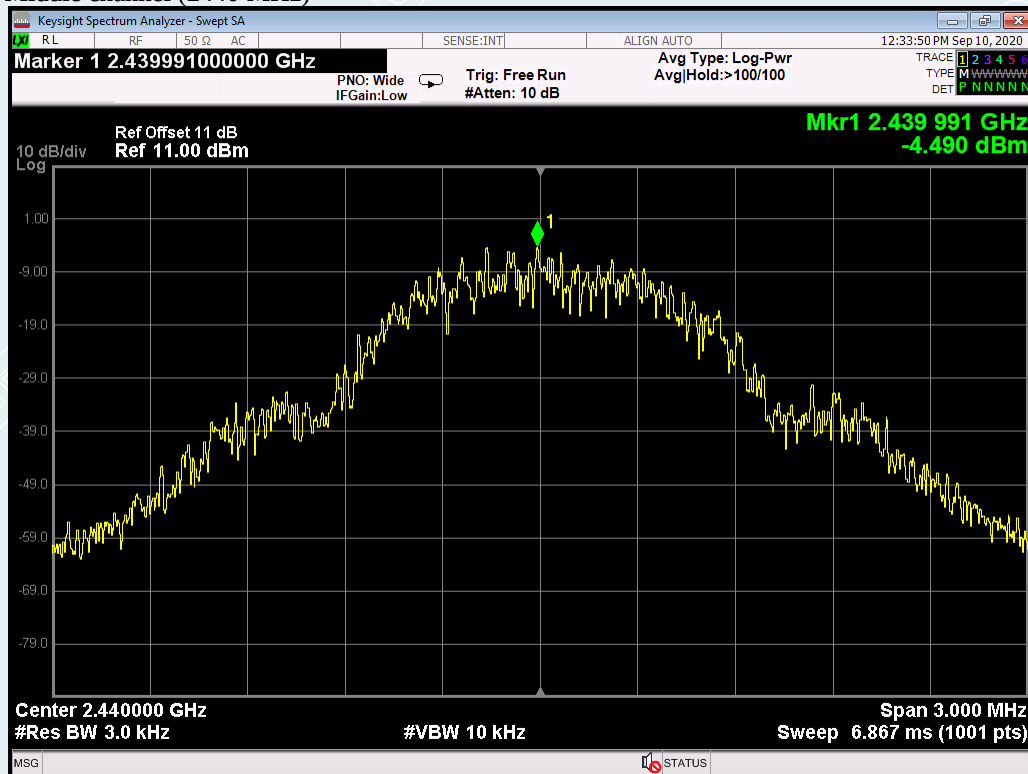
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-6.486	8	PASS
Middle	2440	-6.718		PASS
Highest	2480	-5.574		PASS

For 1Mbps

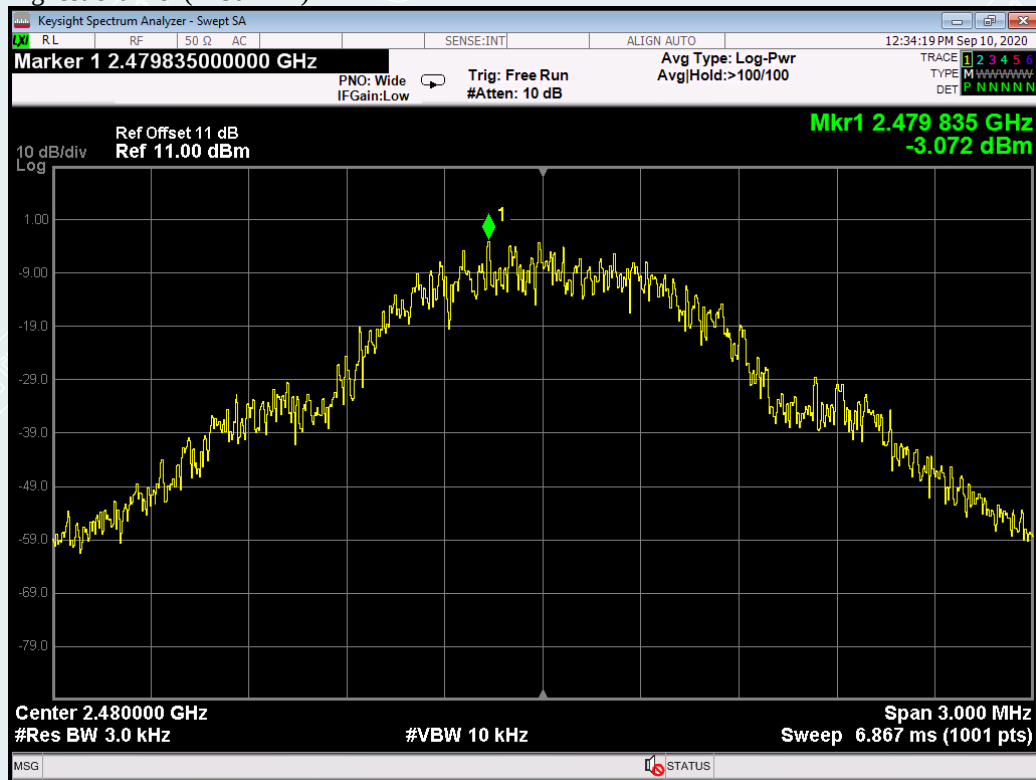
Lowest channel (2402MHz)



Middle channel (2440 MHz)

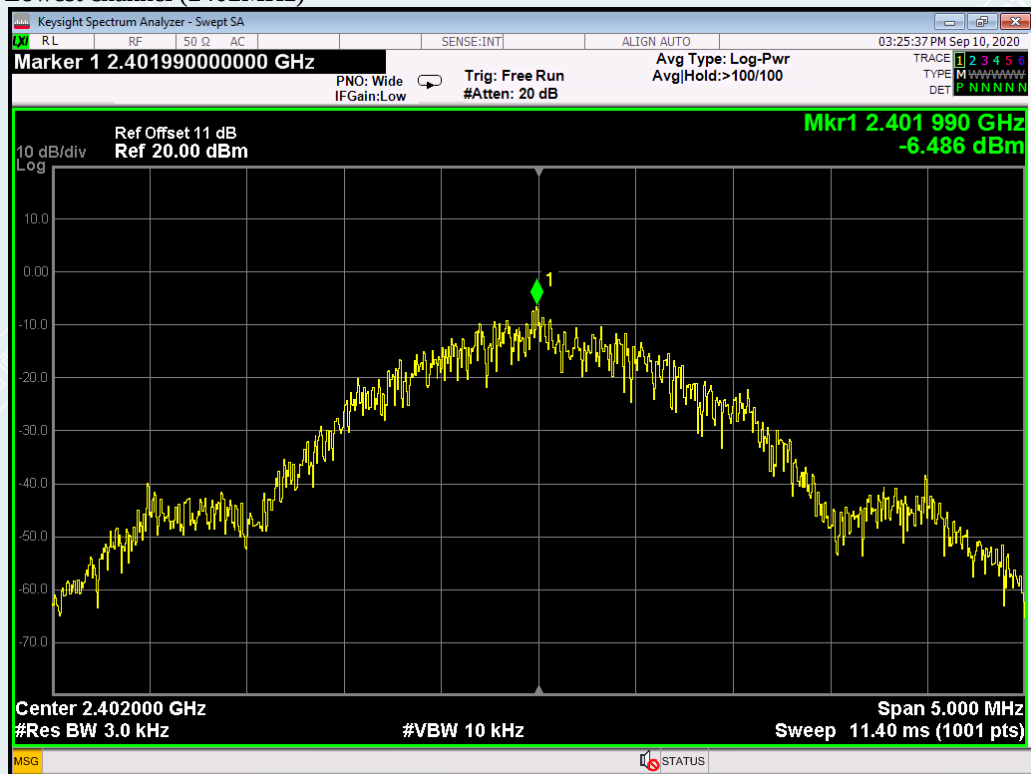


Highest channel (2480MHz)

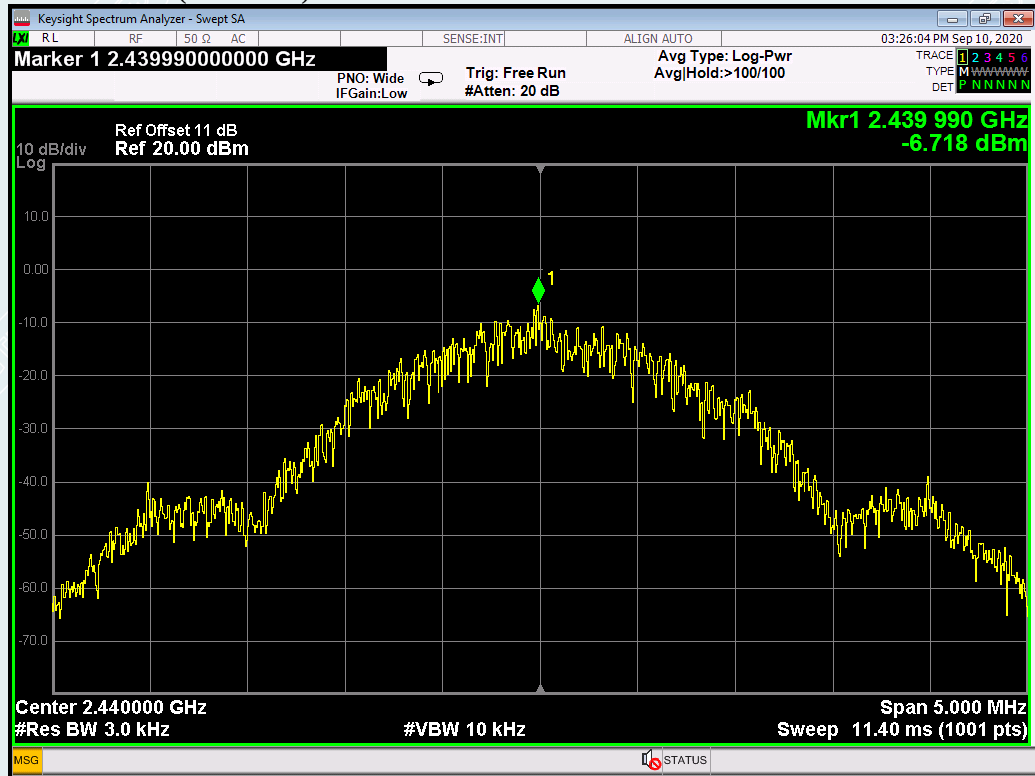


For 2Mbps

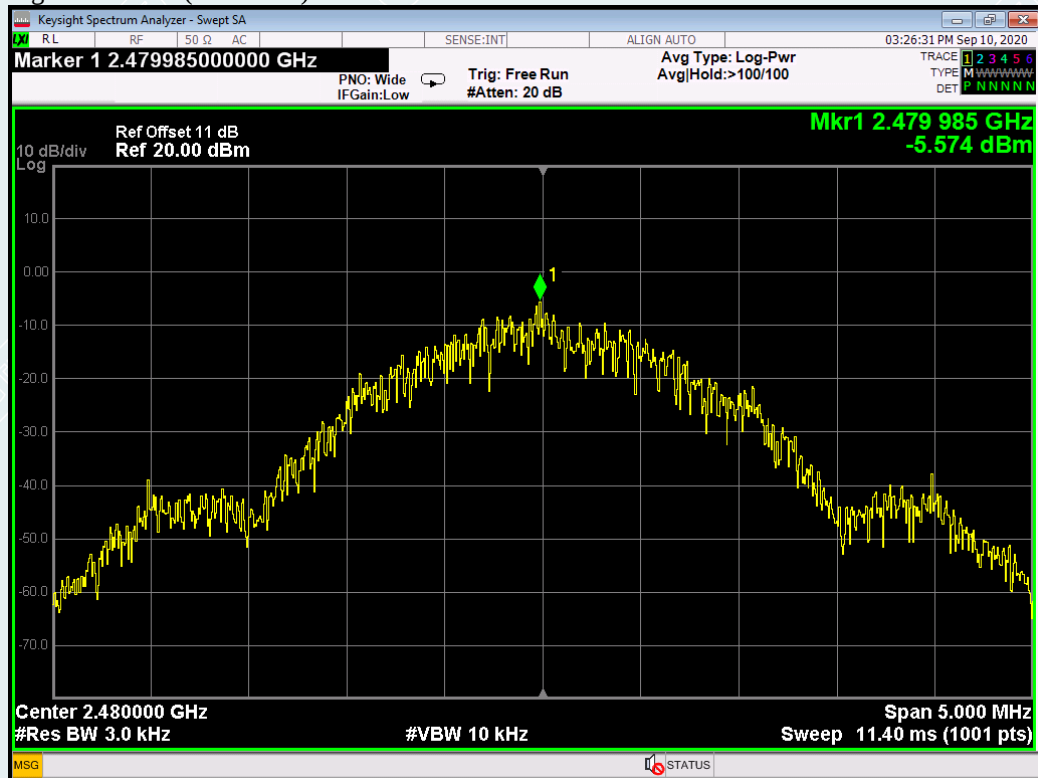
Lowest channel (2402MHz)



Middle channel (2440 MHz)



Highest channel (2480MHz)



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 26GHz; 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

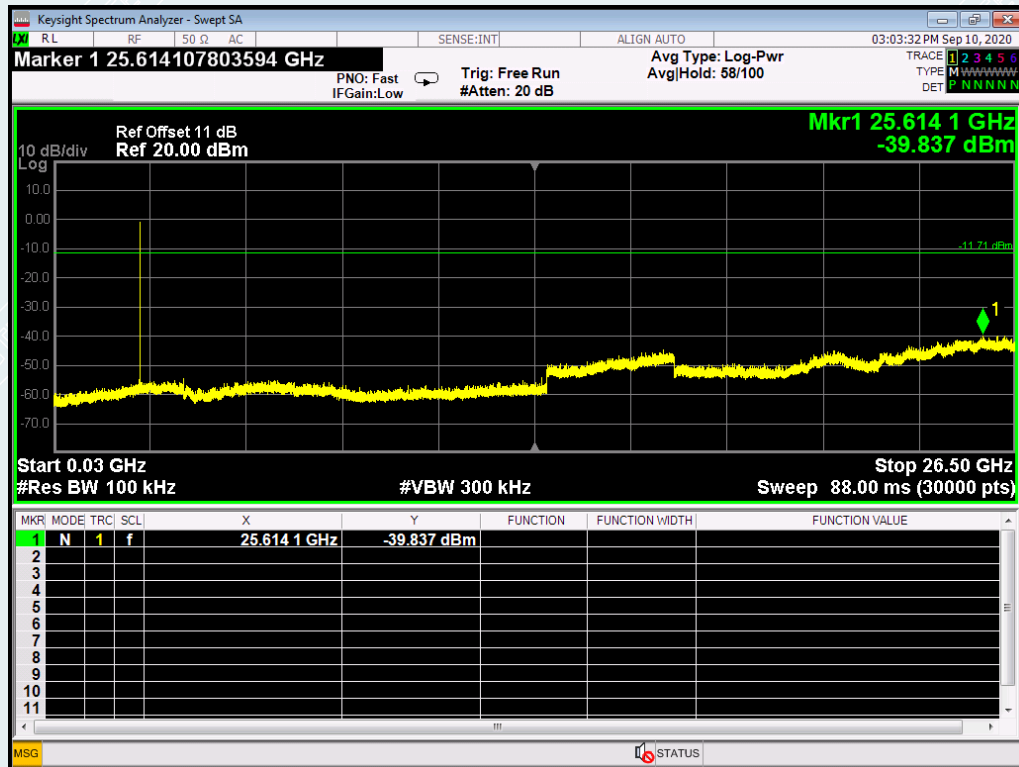


10.4. TEST RESULTS

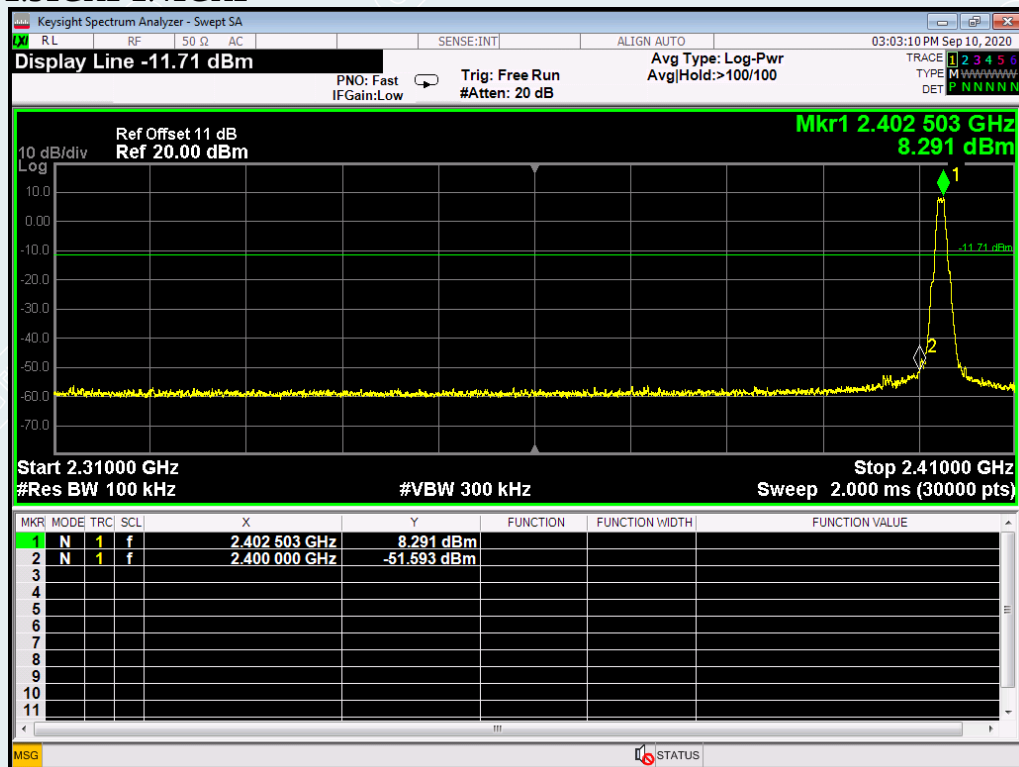
For 1Mbps

Lowest channel (2402MHz)

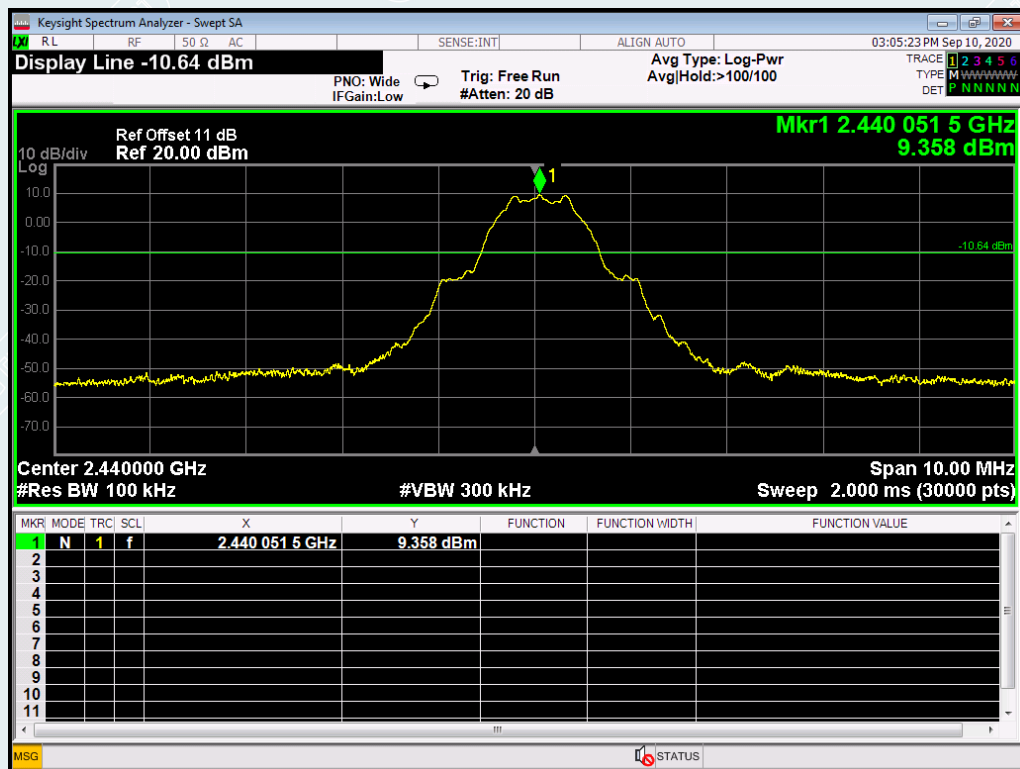
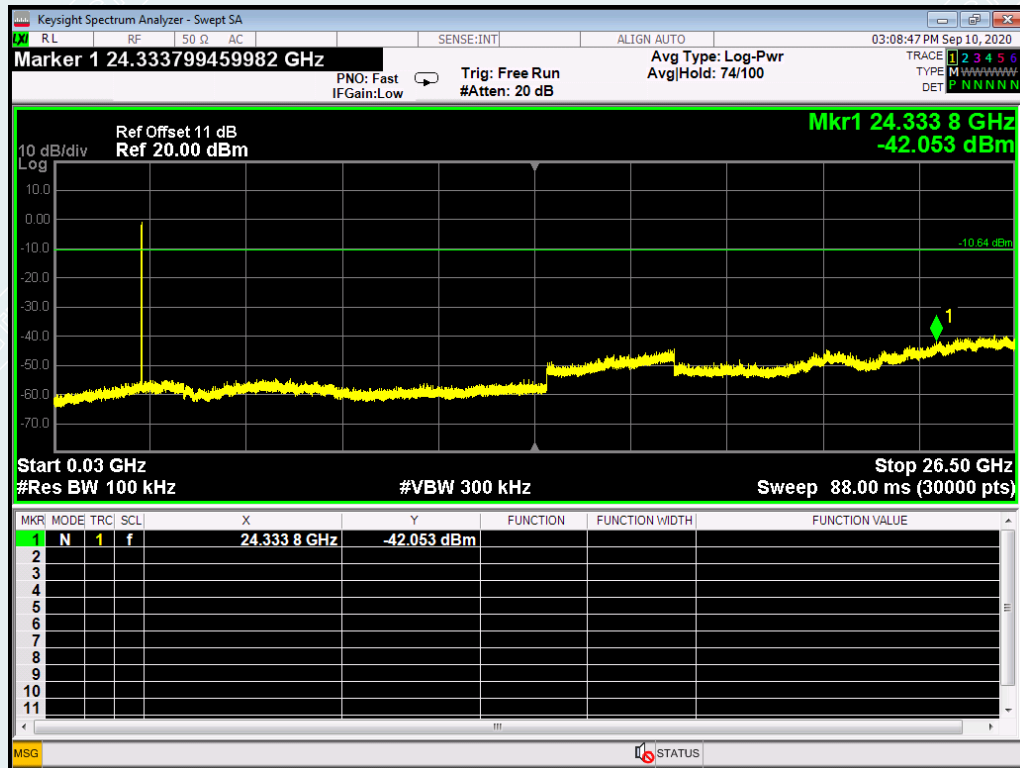
0.03GHz-26.5GHz



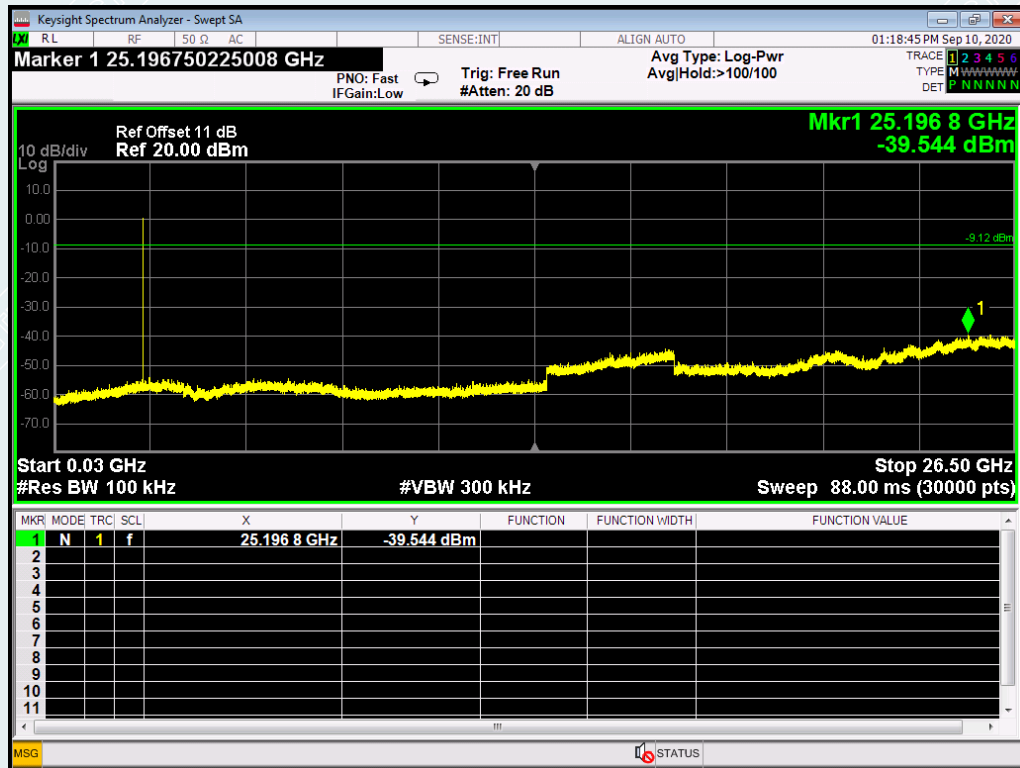
2.31GHz-2.41GHz



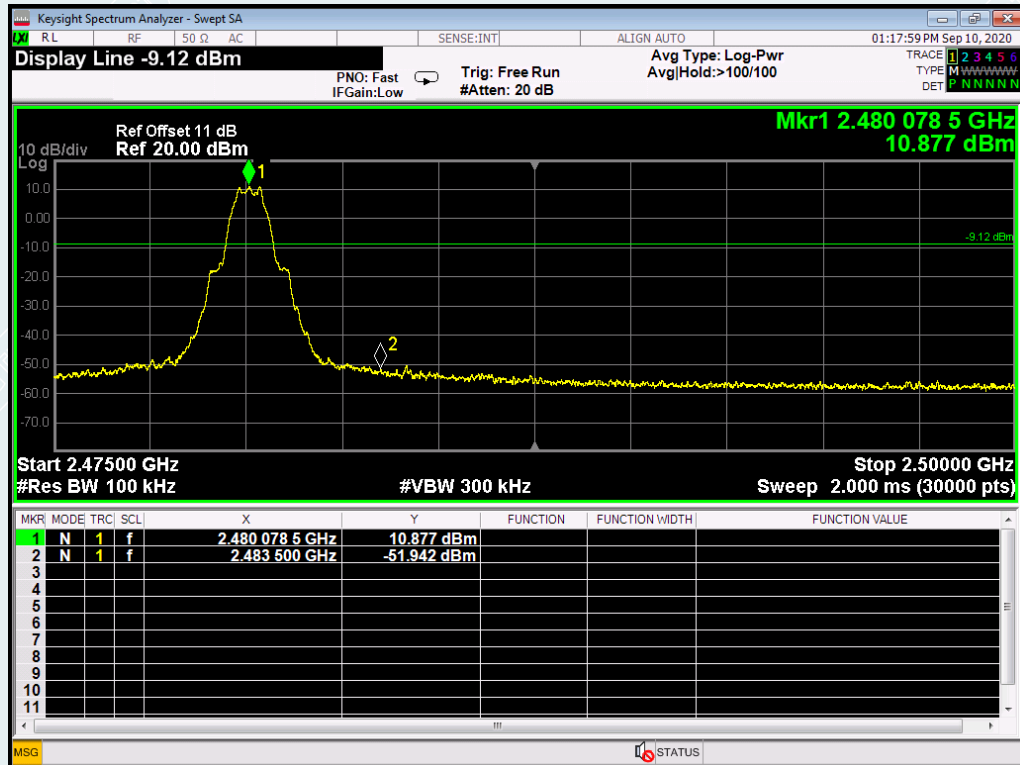
Middle channel (2440 MHz)
0.03GHz-26.5GHz



Highest channel (2480MHz)
0.03GHz-26.5GHz



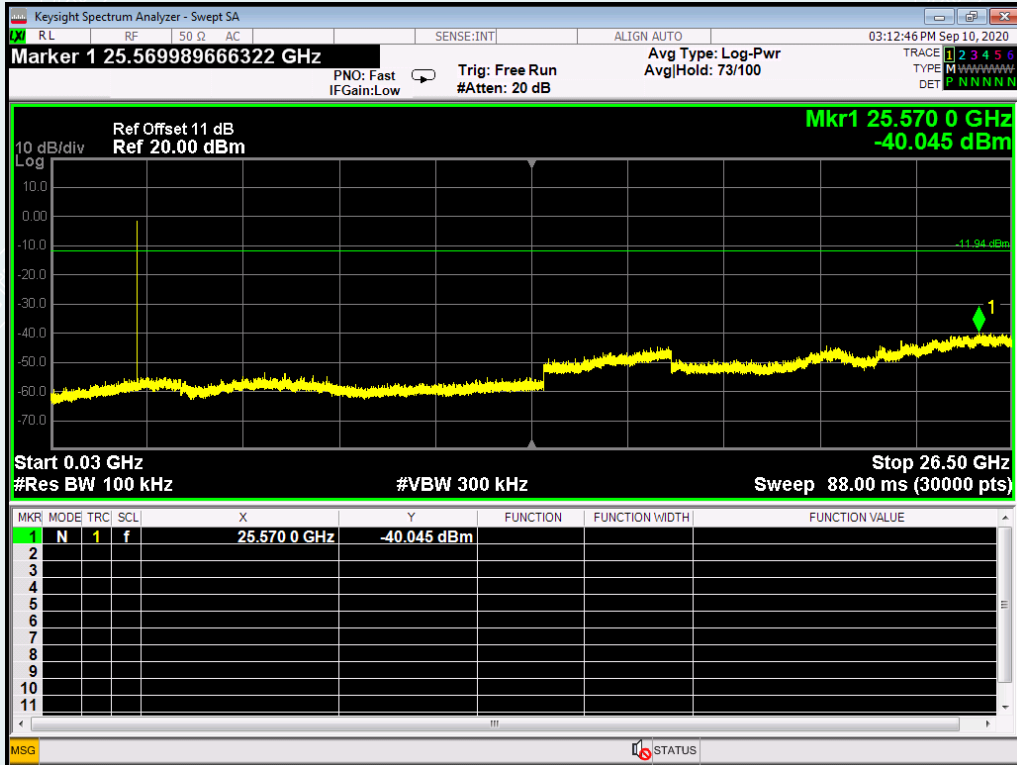
2.475GHz-2.5GHz



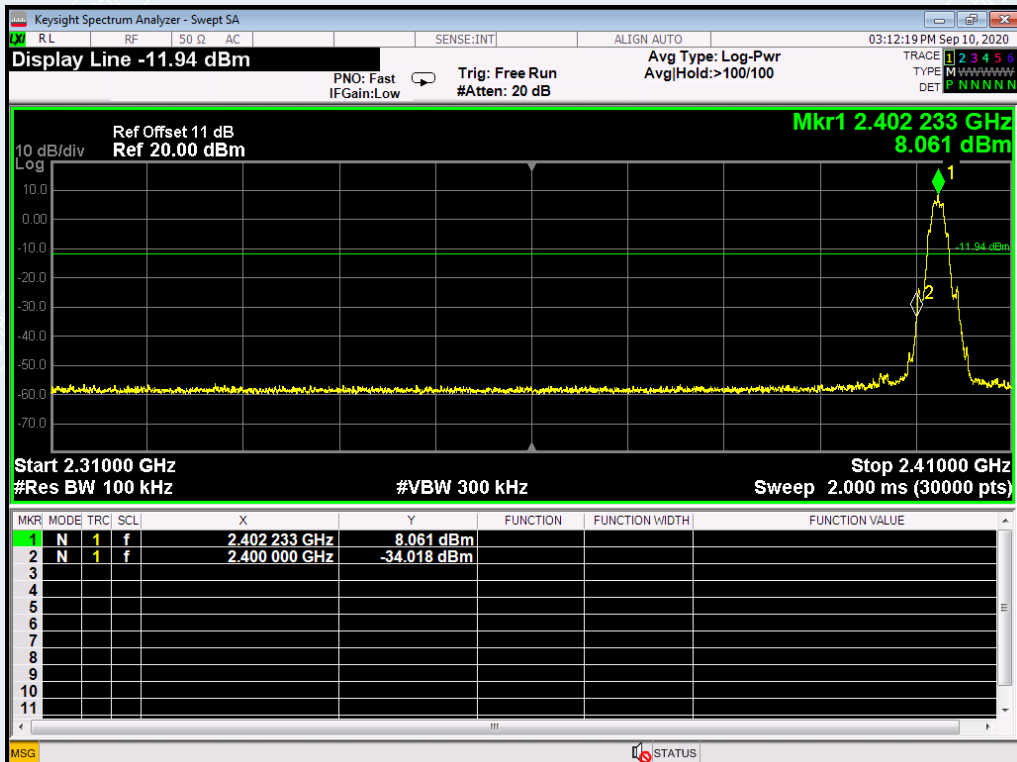
For 2Mbps

Lowest channel (2402MHz)

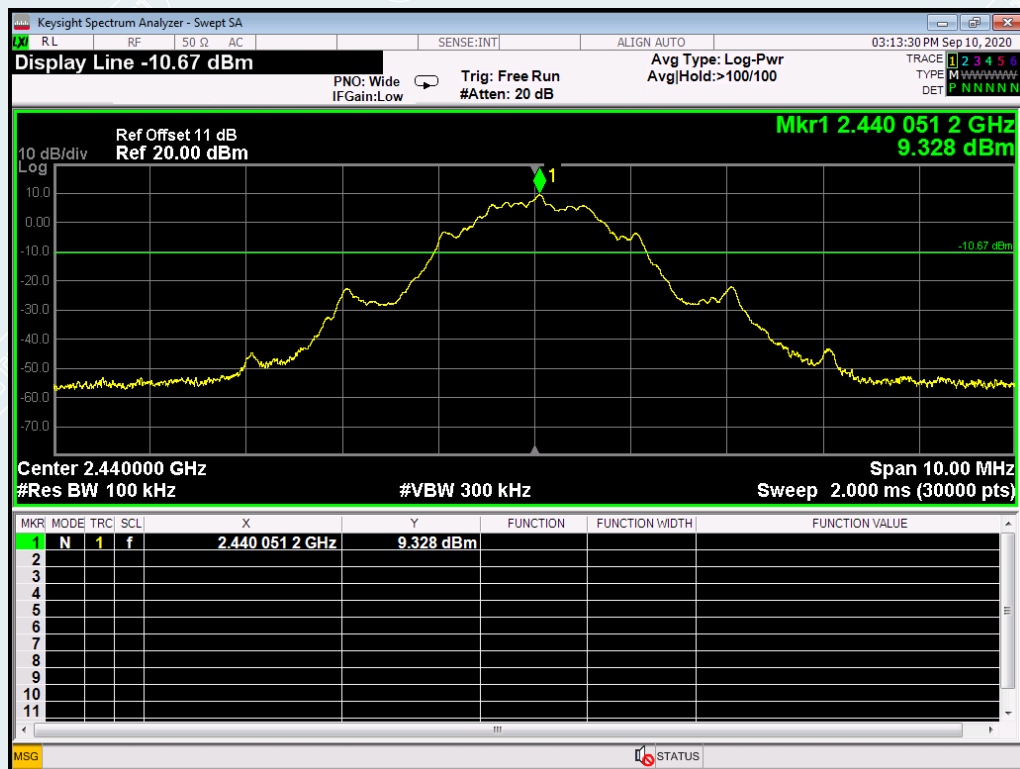
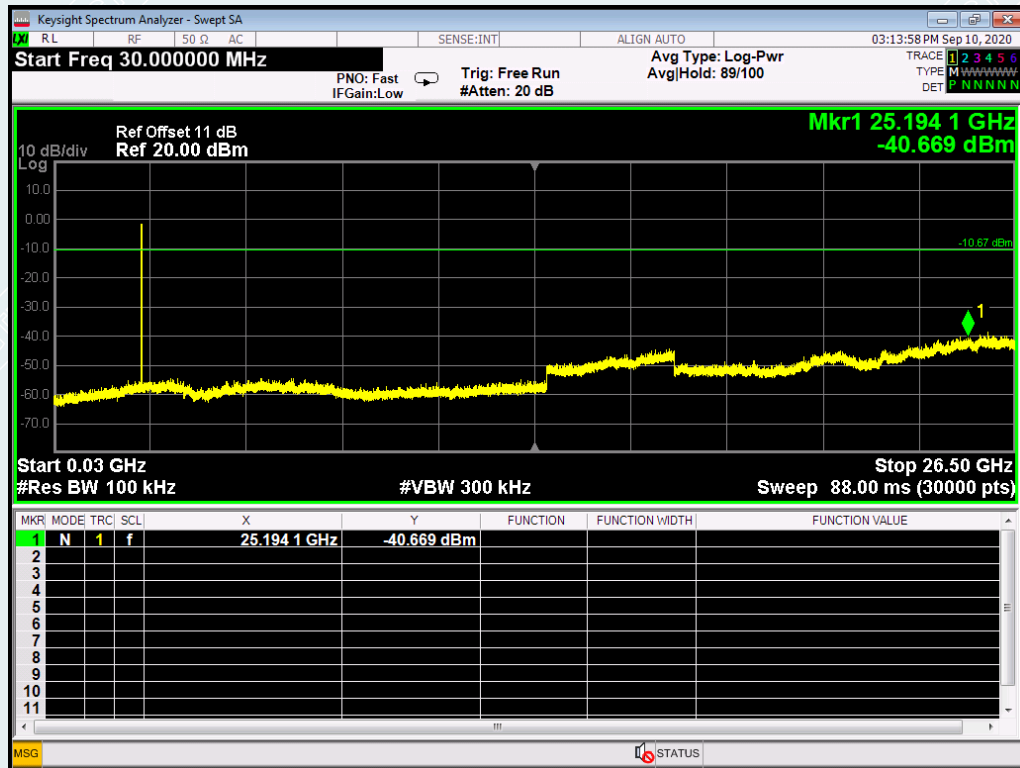
0.03GHz-26.5GHz



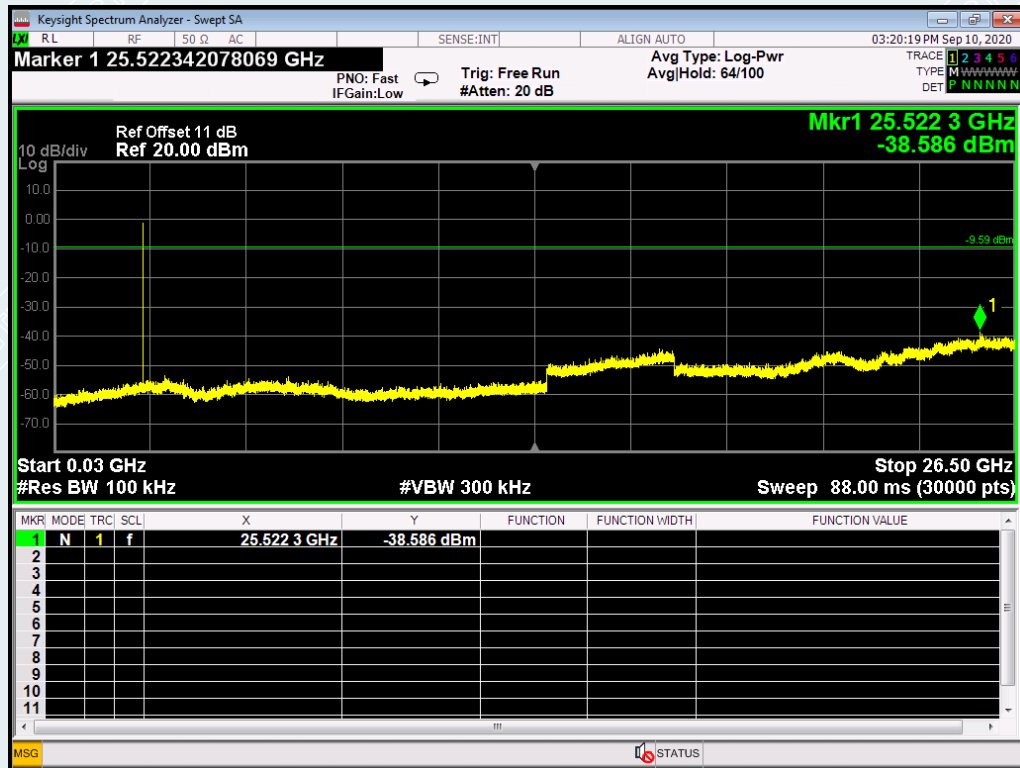
2.31GHz-2.41GHz



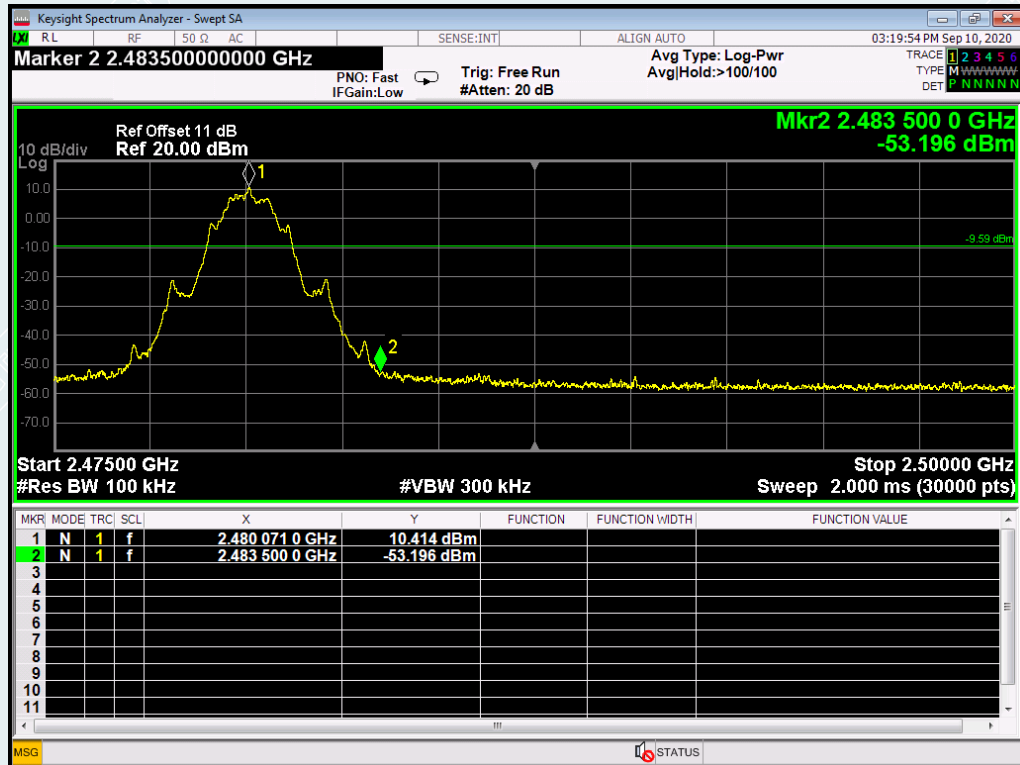
Middle channel (2440 MHz)
0.03GHz-26.5GHz



Highest channel (2480MHz)
0.03GHz-26.5GHz



2.475GHz-2.5GHz



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)).

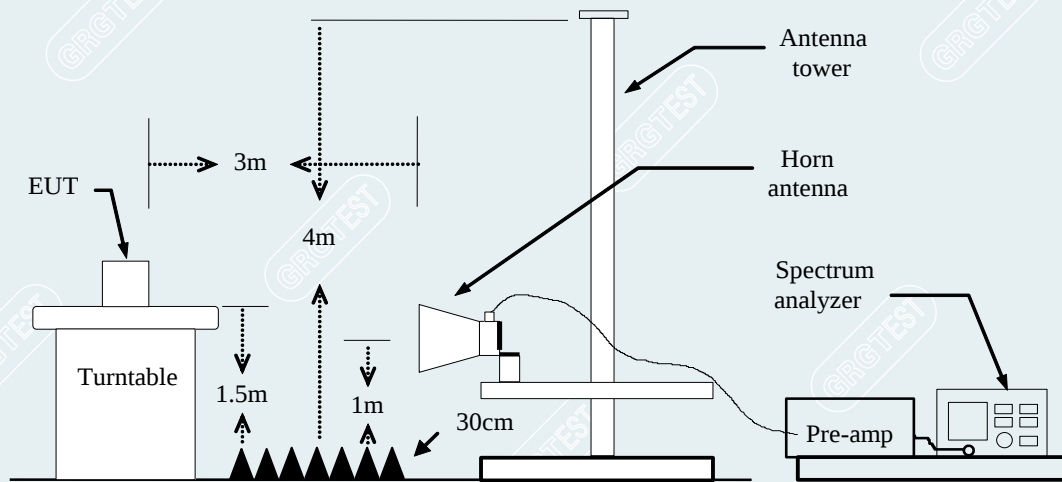
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 -	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.69525	960 - 1240	7.25 - 7.75
4.125 - 4.128	16.80425 -	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	16.80475	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	25.5 - 25.67	1645.5 - 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

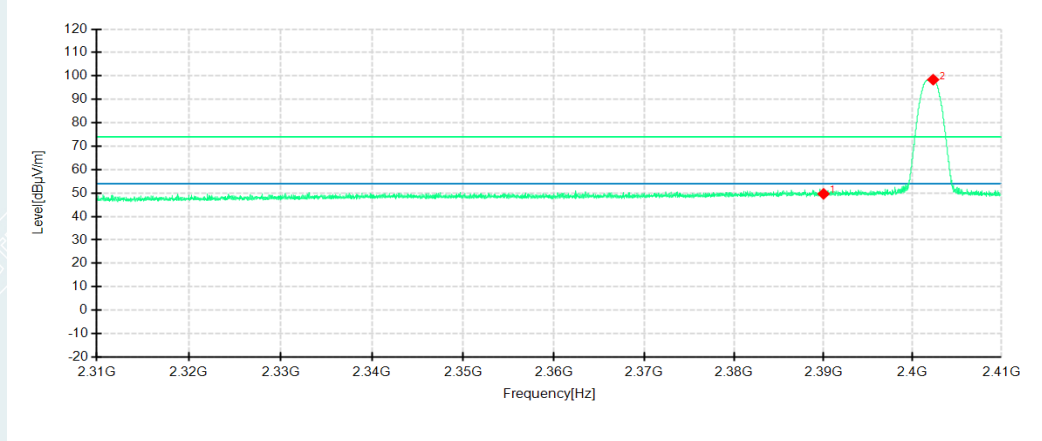
For 1Mbps

Lowest Channel

Channel 2402MHz

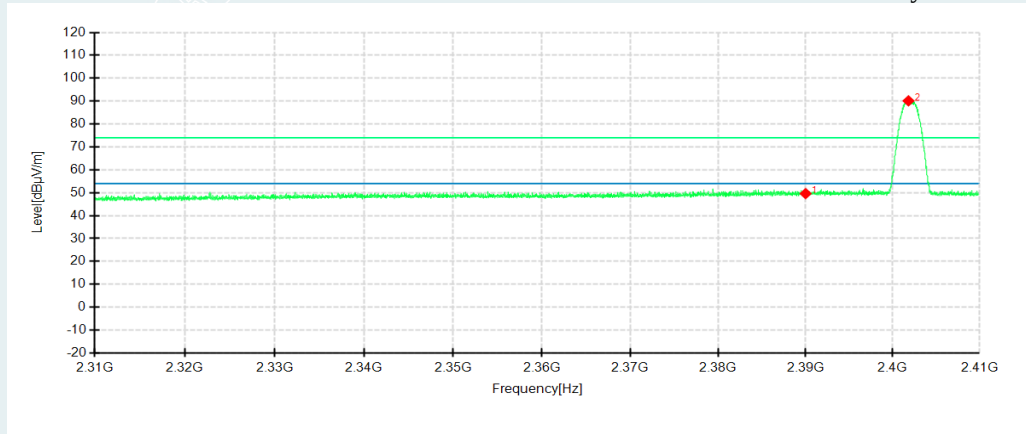
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



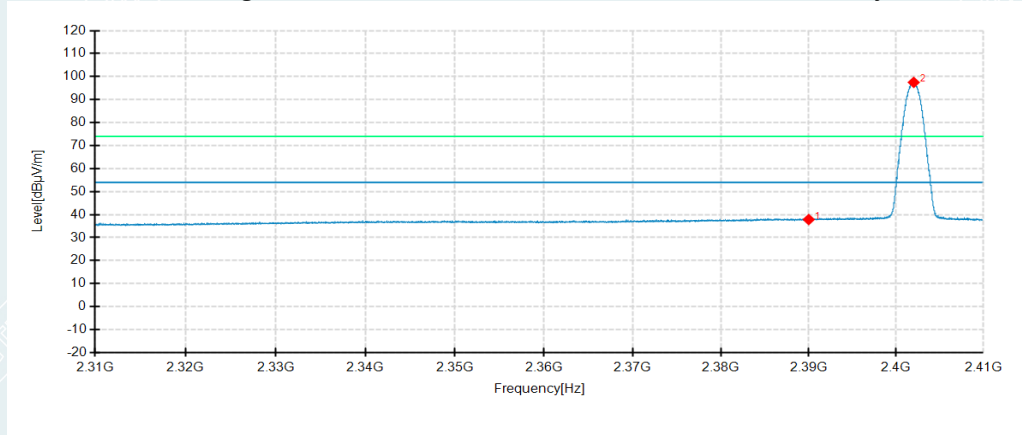
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2390.0133	42.81	49.66	6.85	74.00	24.34	150	58	Horizontal
2	2402.3154	91.38	98.40	7.02	74.00	-24.40	150	3	Horizontal
1	2390.0133	42.76	49.61	6.85	74.00	24.39	150	112	Vertical
2	2401.8153	83.11	90.14	7.03	74.00	-16.14	150	146	Vertical

Lowest Channel

Channel 2402MHz

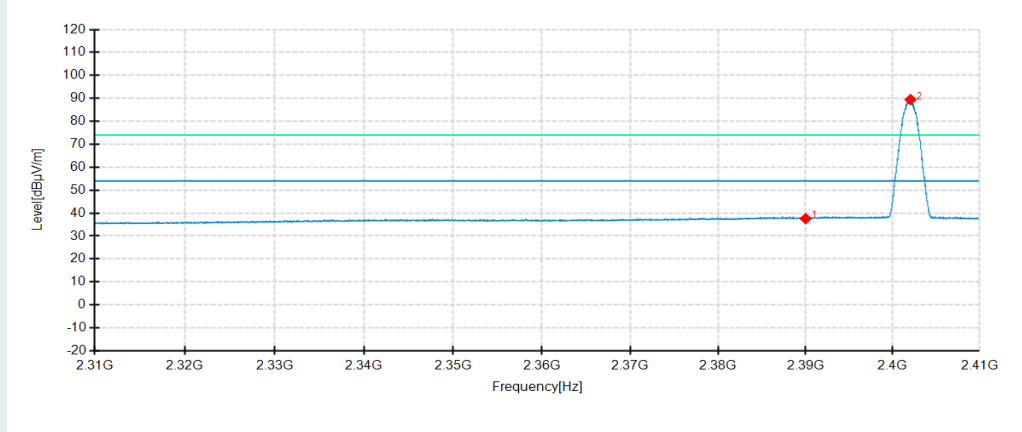
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



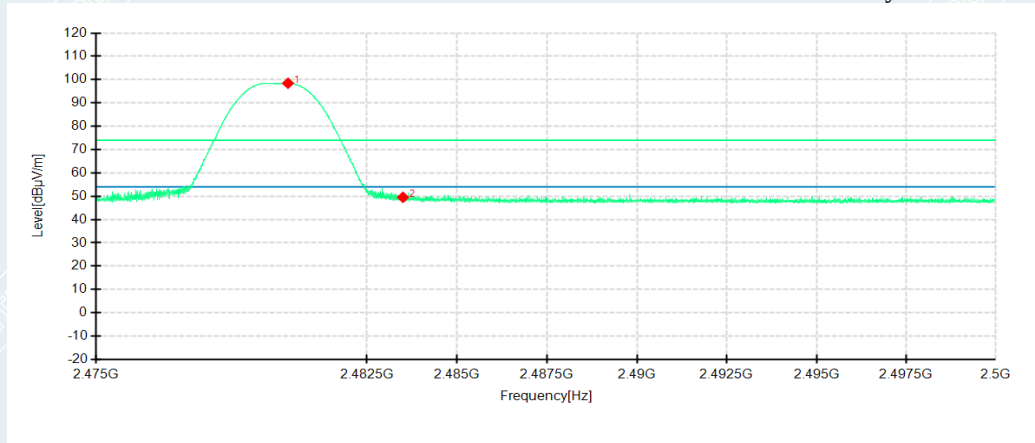
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2390.0133	31.00	37.85	6.85	54.00	16.15	150	232	Horizontal
2	2402.0153	90.45	97.47	7.02	54.00	-43.47	150	192	Horizontal
1	2390.0133	30.74	37.59	6.85	54.00	16.41	150	255	Vertical
2	2402.0487	82.43	89.45	7.02	54.00	-35.45	150	149	Vertical

Highest Channel

Channel 2480MHz

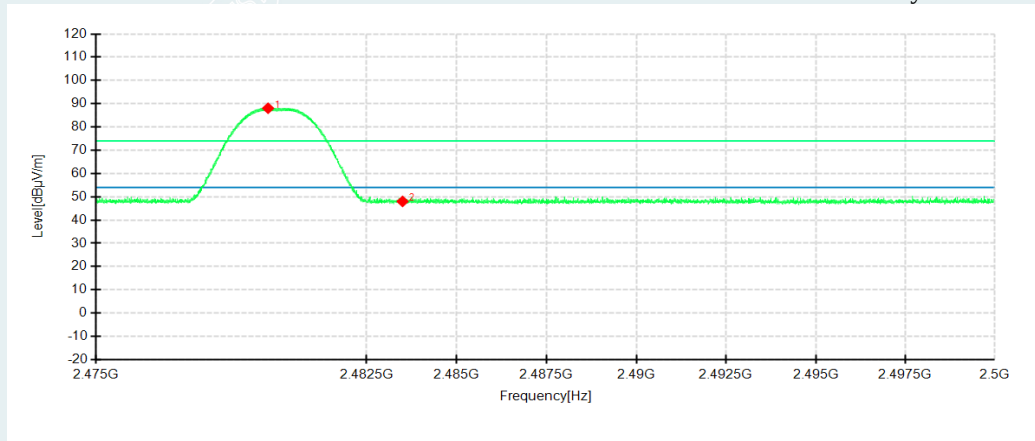
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



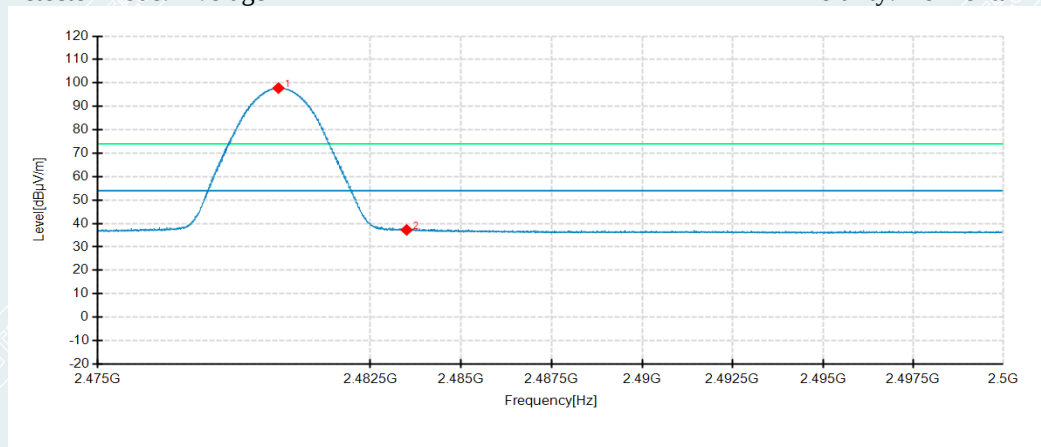
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2480.3134	92.83	98.44	5.61	74.00	-24.44	150	228	Horizontal
2	2483.5014	43.96	49.52	5.56	74.00	24.48	150	219	Horizontal
1	2479.7675	82.43	88.05	5.62	74.00	-14.05	150	16	Vertical
2	2483.5014	42.44	48.00	5.56	74.00	26.00	150	86	Vertical

Highest Channel

Channel 2480MHz

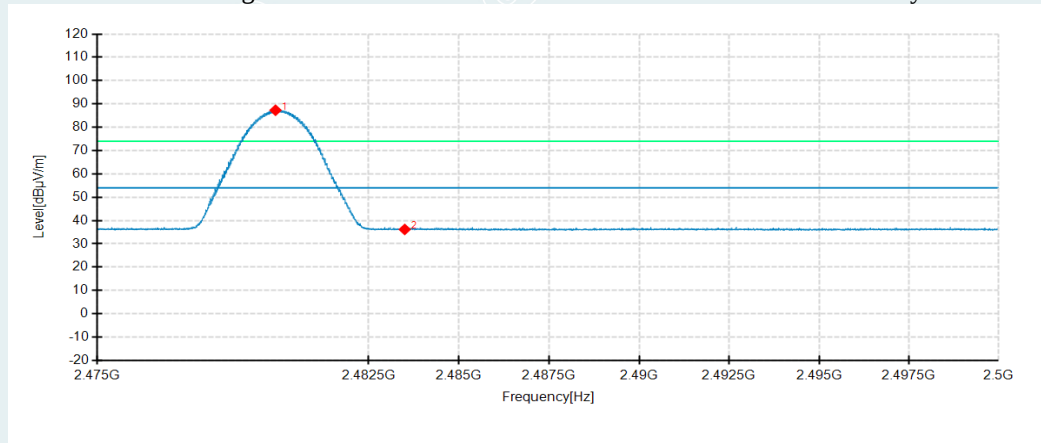
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



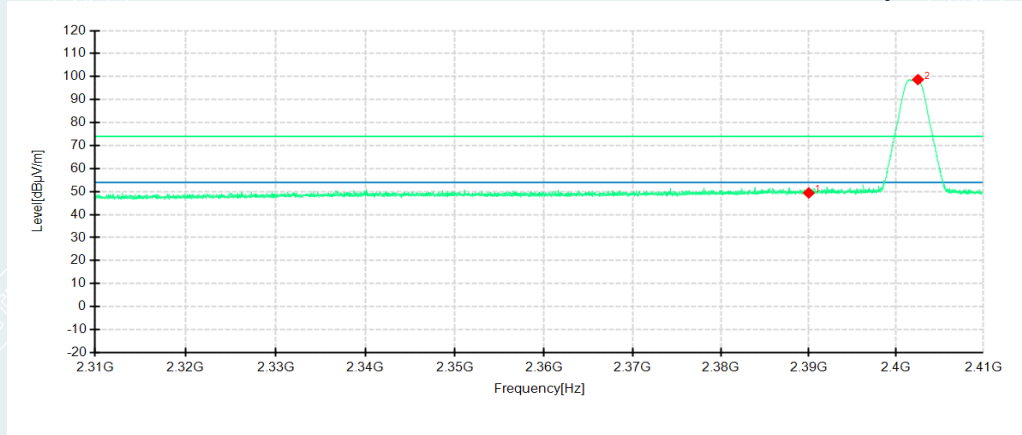
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2479.9717	92.18	97.80	5.62	54.00	-43.80	150	222	Horizontal
2	2483.5014	31.69	37.25	5.56	54.00	16.75	150	227	Horizontal
1	2479.9258	81.67	87.29	5.62	54.00	-33.29	150	23	Vertical
2	2483.5014	30.62	36.18	5.56	54.00	17.82	150	145	Vertical

For 2Mbps**Lowest Channel**

Channel 2402MHz

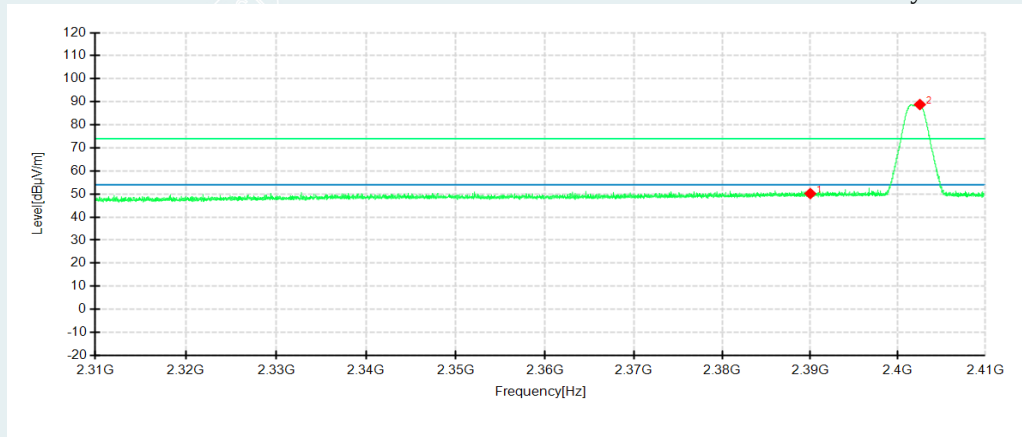
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



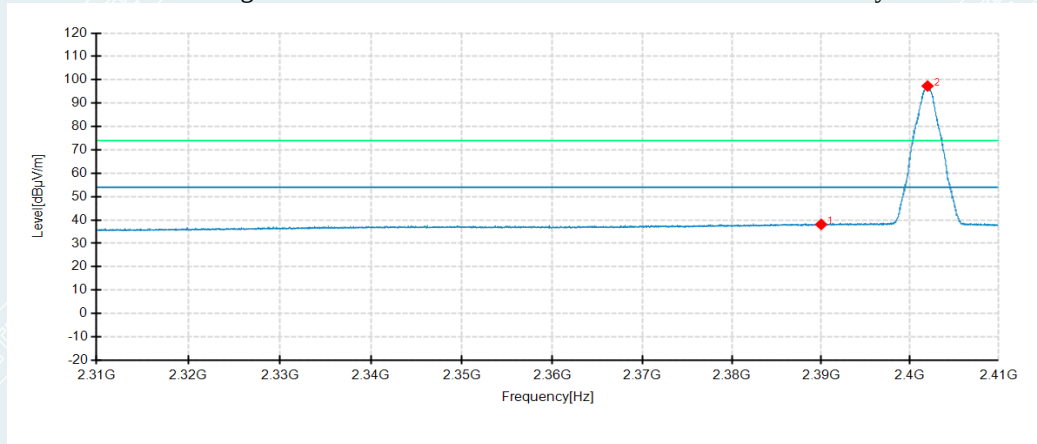
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2390.0133	42.56	49.41	6.85	74.00	24.59	150	66	Horizontal
2	2402.4988	91.66	98.68	7.02	74.00	-24.68	150	227	Horizontal
1	2390.0133	43.34	50.19	6.85	74.00	23.81	150	298	Vertical
2	2402.5154	81.81	88.82	7.01	74.00	-14.82	150	224	Vertical

Lowest Channel

Channel 2402MHz

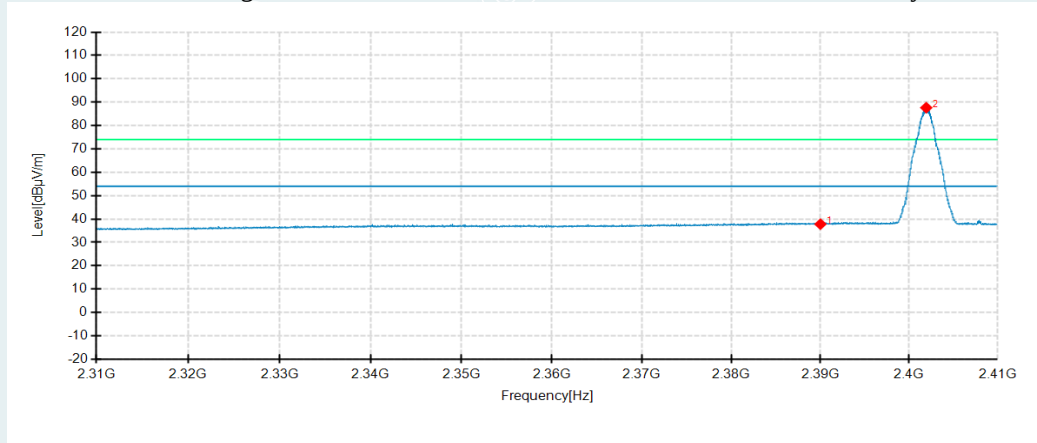
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



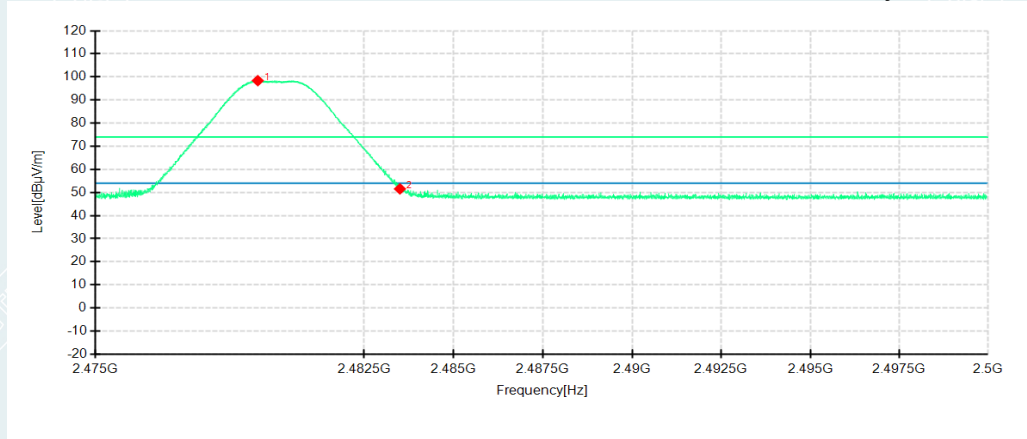
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2390.0133	31.26	38.11	6.85	54.00	15.89	150	43	Horizontal
2	2401.9820	90.32	97.34	7.02	54.00	-43.34	150	235	Horizontal
1	2390.0133	30.94	37.79	6.85	54.00	16.21	150	206	Vertical
2	2401.9320	80.58	87.61	7.03	54.00	-33.61	150	221	Vertical

Highest Channel

Channel 2480MHz

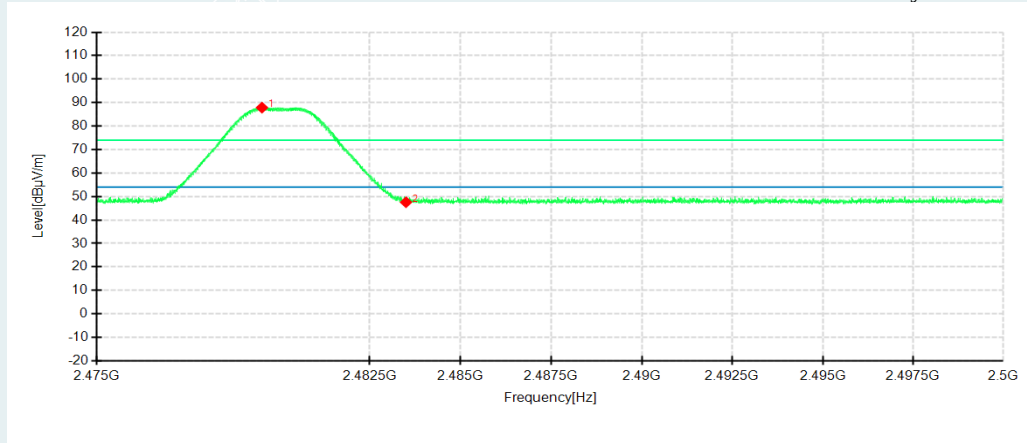
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



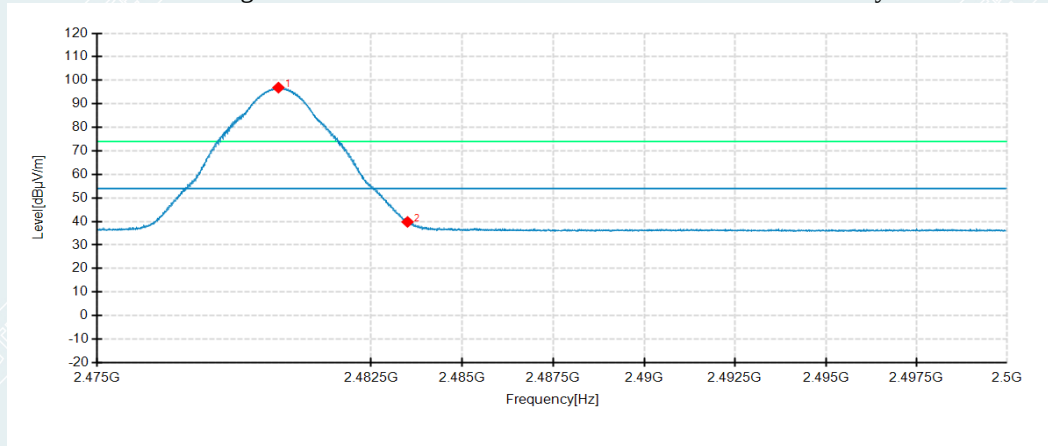
No.	Frequency MHz	Reading dBμV/m	Level dBμV/ m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole
1	2479.5299	92.75	98.38	5.63	74.00	-24.38	150	29	Horizontal
2	2483.5014	45.98	51.54	5.56	74.00	22.46	150	224	Horizontal
1	2479.5383	82.23	87.86	5.63	74.00	-13.86	150	357	Vertical
2	2483.5014	41.99	47.55	5.56	74.00	26.45	150	316	Vertical

Highest Channel

Channel 2480MHz

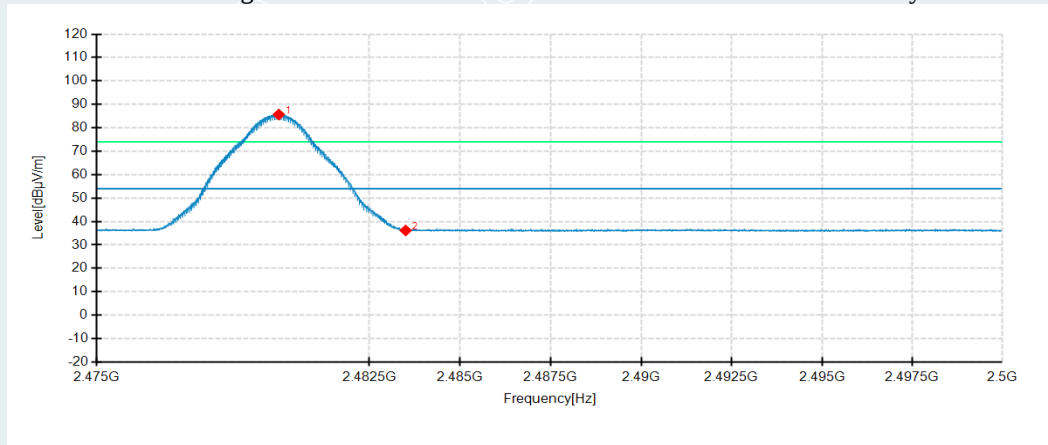
Detector mode: Average

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
1	2479.9633	91.26	96.88	5.62	54.00	-42.88	150	22	Horizontal
2	2483.5014	34.25	39.81	5.56	54.00	14.19	150	212	Horizontal
1	2480.0092	80.05	85.67	5.62	54.00	-31.67	150	23	Vertical
2	2483.5014	30.60	36.16	5.56	54.00	17.84	150	148	Vertical

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

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