

NCC RADIO TEST REPORT

Product name	Wavo Pro
Applicant	VITEC IMAGING SOLUTIONS SPA
Manufacture	VITEC IMAGING SOLUTIONS SPA
Rating(s)	DC3.7V from battery or DC 5V from adapter
Trademark	JOBY
Model and/or type reference	JB01715-BWW
Standard	LP0002: 2020
Test Result	Pass

Date of receipt : 03-29-2021

Signature :

Date of Issue : 06-02-2021



NCC RADIO TEST REPORT**Report Reference No.** M210513N5

Compiled by (+ signature) Kevin Bothmann

Approved by (+ signature) Jay Gandhi

Date of issue 06-02-2021


**Applicant's name** VITEC IMAGING SOLUTIONS SPA

Address VIA VALSUGANA 100-36022 CASSOLA (VI)-ITALY

Manufacture's Name VITEC IMAGING SOLUTIONS SPA

Address VIA VALSUGANA 100-36022 CASSOLA (VI)-ITALY

Test specification:

Standard LP0002: 2020

Test procedure EIA 603、ANSI、FCC/47 CFR/2.1046、2.1047、2.1049、2.1051、2.1053
and 2.1055

Non-standard test method... N/A

Test item description

Product name Wavo Pro

Trademark JOBY

Model and/or type reference JB01715-BWW

Rating(s) DC3.7V from battery or DC 5V from adapter

Testing Laboratory information

Testing Laboratory Name Electro Magnetic Test, Inc.

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Testing

Date of receipt of test item..... Mar. 29, 2021

Date (s) of performance of tests Mar. 29~ Jun. 02, 2021

Date of Issue Jun. 02, 2021

Test Result..... **Pass**

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Electro Magnetic Test, Inc., which is an independent testing and consulting firm. The test report is based on testing performed Electro Magnetic Test, Inc. personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government.

Electro Magnetic Test, Inc. is recognized by the following agencies for performing EMI/EMC testing:

COUNTRY	AGENCY	IDENTIFYING #
USA	Federal Communications Commission (FCC) (EMT's test site is recognized by the FCC)	Registration Number: 90576
USA, Canada, Taiwan, Australia/New Zealand, European Community	National Voluntary Lab Accreditation Program (NVLAP) (EMT is accredited by NVLAP. A copy of the NVLAP Scope Of Accreditation is available upon request.)	Lab Code: 200147-0
Canada	Industry Canada	File No.: IC 2804
Japan	Voluntary Control Council For Interference (VCCI)	See Below
	Open Field Test Site "A"	R-589
	Mains Conducted Emissions Test Site "A"	C-604
	Telecom Conducted Emissions Test Site "A"	T-1655
	3 Meter Semi-Anechoic Chamber Site "E"	R-3227
	3 Meter Semi-Anechoic Chamber Site "E" (1GHz – 6GHz)	G-219
	Mains Conducted Emissions Test Site "E"	C-35793
	Telecom Conducted Emissions Test Site "E"	T-1715
Korea	Ministry of Information and Communication's Radio Research Laboratory (RRL) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (A copy of the Scope Of Accreditation is available upon request)	US0036
Taiwan	Bureau Of Standards, Metrology and Inspection (BSMI)	Reference Number: SL2-IN-E-1024
Australia / New Zealand	Australian Communications Authority (AUSTEL)	*

***THESE AGENCIES DO NOT ISSUE AN IDENTIFYING NUMBER TO TEST LABS.**

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Low Power 0002 (LP0002) 1 July, 2020			
Standard Section	Test Item	Judgment	Remark
3.3	Conducted Emission	PASS	None
4.10.1.5/3.5/3.6	Radiated Spurious Emission	PASS	None
4.10.1.2/4.10.1.6	Peak Output Power	PASS	None
4.10.1.6	Occupied Bandwidth	PASS	None
4.10.1.6	Hopping Channel Separation	PASS	None
4.10.1.6	Number of Hopping Frequency	PASS	None
4.10.1.6	Dwell Time	PASS	None
4.10.1.5/3.5/3.6	Restricted Bands	PASS	None
4.10.1.3/4.10.1.4	Antenna Requirement	PASS	None

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	1.38dB
2	Radiated Emission Test	3.17dB
3	RF power,conducted	0.16dB
4	Spurious emissions,conducted	0.21dB
5	All emissions,radiated(<1G)	4.68dB
6	All emissions,radiated(>1G)	4.89dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wavo Pro	
Trade Name	JOBY	
Model Name	JB01715-BWW	
Serial Model Name	N/A	
Model Difference	N/A	
Product Description	The EUT is a Wavo Pro.	
	Operation Frequency:	2402~2480 MHz
	Modulation Type:	GFSK(1Mbps) []/4 DQPSK(2Mbps) 8QPSKA(3Mbps)
	Bluetooth version:	5.0
	Number Of Channel	79 CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak)	0dBi
	Output Power:	1Mbps Mode: 3.60dBm (Max.) 3Mbps Mode: 2.75 dBm(Max.)
Channel List	Please refer to the Note 2.	
Power Rating	DC3.7V from battery or DC5V from adapter	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	
EUT Modification(s)	N/A	
Model difference	N/A	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3.

Table for Filed Antenna

	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	Siretta Ltd	Tango 28	External antenna	N/A	0 dBi	N/A

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	1Mbps
Mode 2	2Mbps
Mode 3	3Mbps
Mode 4	RX
Mode 5	WORKING

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH00 /CH39 /CH78
Mode 5	WORKING

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00 /CH39 /CH78
Mode 3	CH00 /CH39 /CH78
Mode 4	RX
Mode 5	WORKING

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

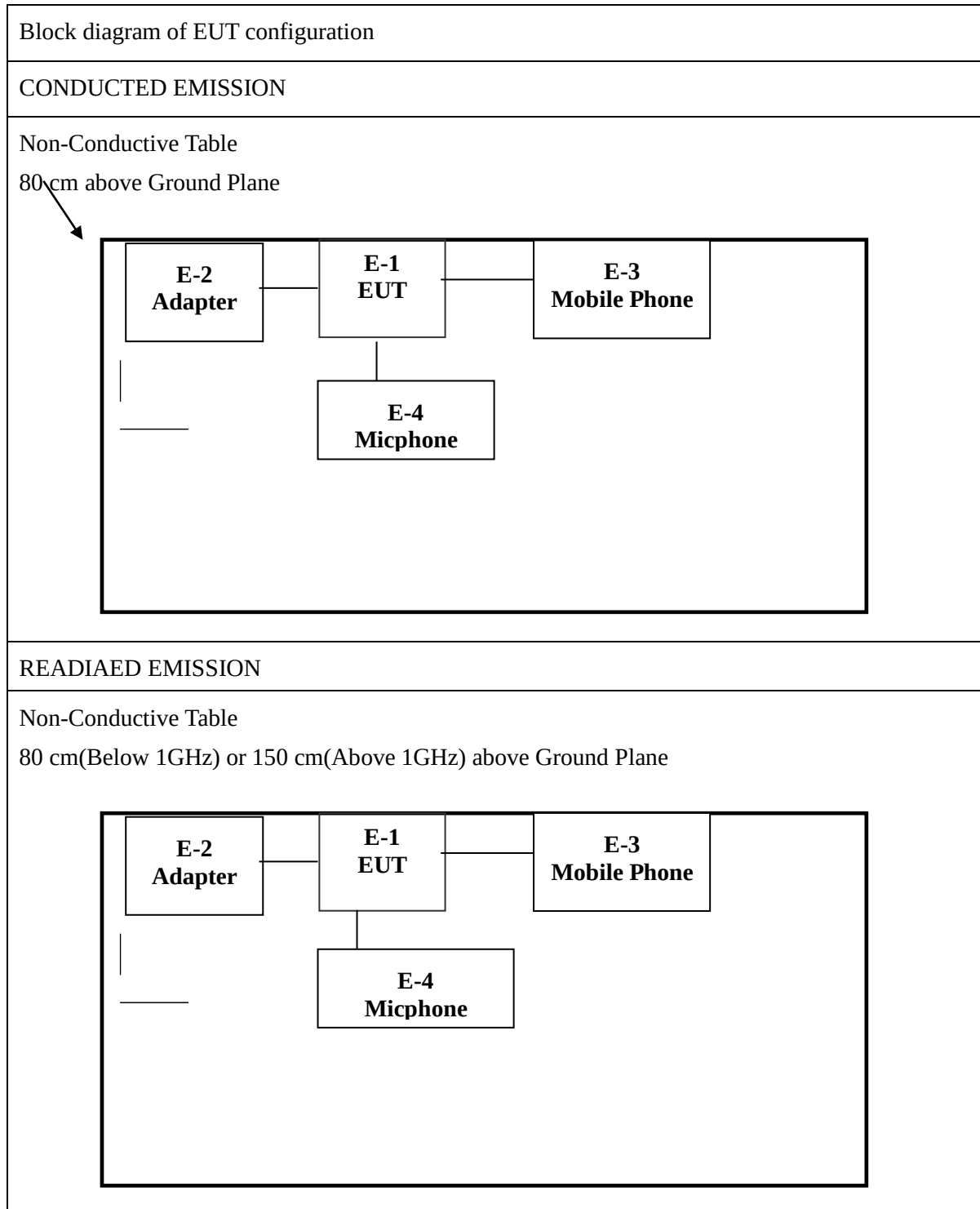
2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

Using the notebook to display and control the transmitting frequency and other test mode(the test program has been installed). After finishing the test setting, start measurements.

Test software Version	Test program: bluesuite		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	Default	Default	Default
Parameters(2Mbps)	Default	Default	Default
Parameters(3Mbps)	Default	Default	Default

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



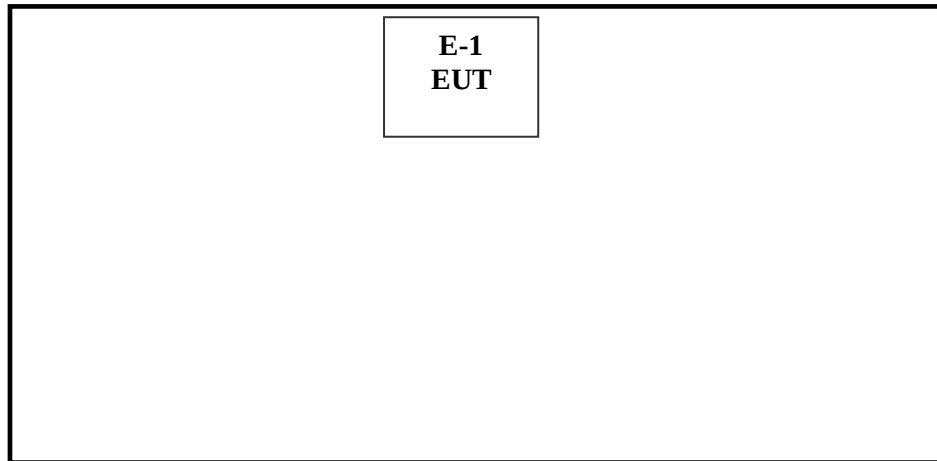
Block diagram of EUT configuration

RADIATED EMISSION

Test mode: mode 1, 2, 3 ,4

Non-Conductive Table

80 cm(Below 1GHz) or 150 cm(Above 1GHz) above Ground Plane



2.5 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	Wavo Pro	JOBY	JB01715-BWW	N/A	N/A	EUT
E-2	Adapter	NOKIA	AD-10WU	N/A	N/A	Test Accessory*
E-3	Mobile Phone	Huawei	G620-L75	N/A	N/A	Test Accessory*
E-4	Micphone	CHANGFENG	SR-HM4C	N/A	N/A	Test Accessory*

Item	Equipment	Mfr/Brand	Model/Type No.	Note
1	USB Cable	JOBY	JB01715-BWW	EUT
2	Audio Cable	JOBY	JB01715-BWW	EUT

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” or “with ferrite core”; “NO” means “unshielded” or “without ferrite core”
- (4) “*”: In this report, the applicant did not provide the accompanying accessories with the equipment. The accessories were provided by the laboratory (or the applicant) and inspected simultaneously.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Rohde & Schwarz	FSV40	11470	August 29, 2020	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	April 29, 2021	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	April 29, 2021	1 Year
Preamplifier	Com Power	PA-102	1482	April 29, 2021	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 8, 2020	1 Year
LISN	Com Power	LI-200	12012	September 10, 2020	1 Year
LISN	Com Power	LI-200	12214	September 10, 2020	1 Year
LISN	Com Power	LI-200	1767	September 10, 2020	1 Year
LISN	Com Power	LI-200	1768	September 10, 2020	1 Year
Biconical Antenna	Com Power	AB-100	01557	December 29, 2020	1 Year
Log Periodic Antenna	Com Power	AL-100	16037	December 22, 2020	1 Year
Horn Antenna	Com Power	AHA-118	711054	December 22, 2020	1 Year
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Dell, Inc.	DHS	DNSV641	N/A	N/A

EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	June 12, 2020	1 Year
BiConiLog Antenna	ETS-Lindgren	3142D	00102183	August 14, 2020	1 Year
Horn Antenna	ETS-Lindgren	3117	00109294	May 6, 2021	1 Year
Preamplifier	Rohde & Schwarz	TS-PR18	100056	June 12, 2020	1 Year
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	BBHA9170367	August 29, 2020	1 Year
Preamplifier	Agilent	83050A	MY39501358	August 29, 2020	1 Year
Antenna Mast	ETS-Lindgren	2175	00095727	N/A	N/A
Turntable	ETS-Lindgren	2187-3.0	00118231	N/A	N/A
Computer	Acer	Aspire 8930	85100050123	N/A	N/A
Multi-Function Controller	ETS-Lindgren	2090	00102270	N/A	N/A
Loop Antenna	ARA	PLA-1030/B	1029	May 19, 2021	1 Year

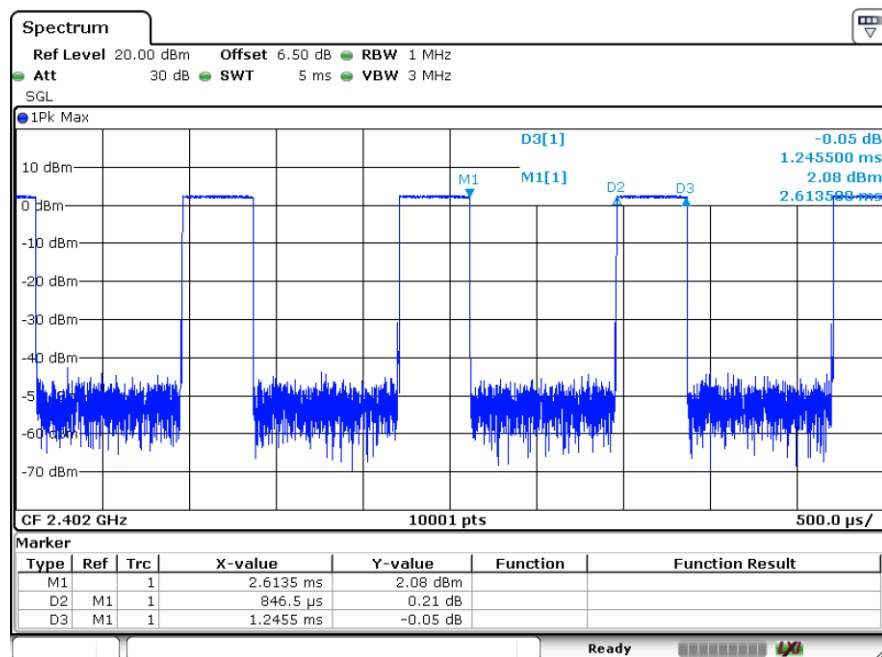
3. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

3.1 LIMITS

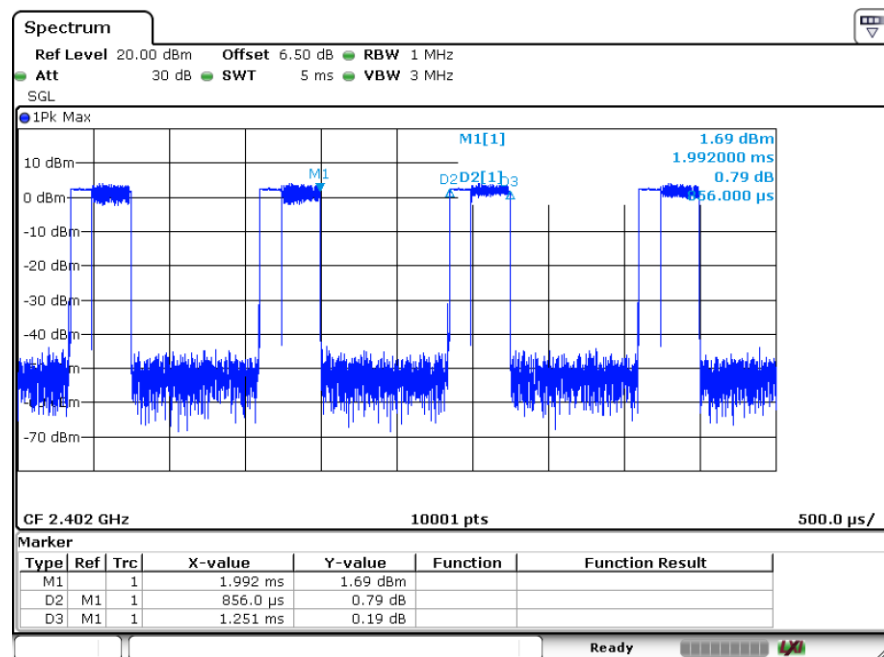
None; for reporting purposes only.

3.2 ON TIME AND DUTY CYCLE RESULTS

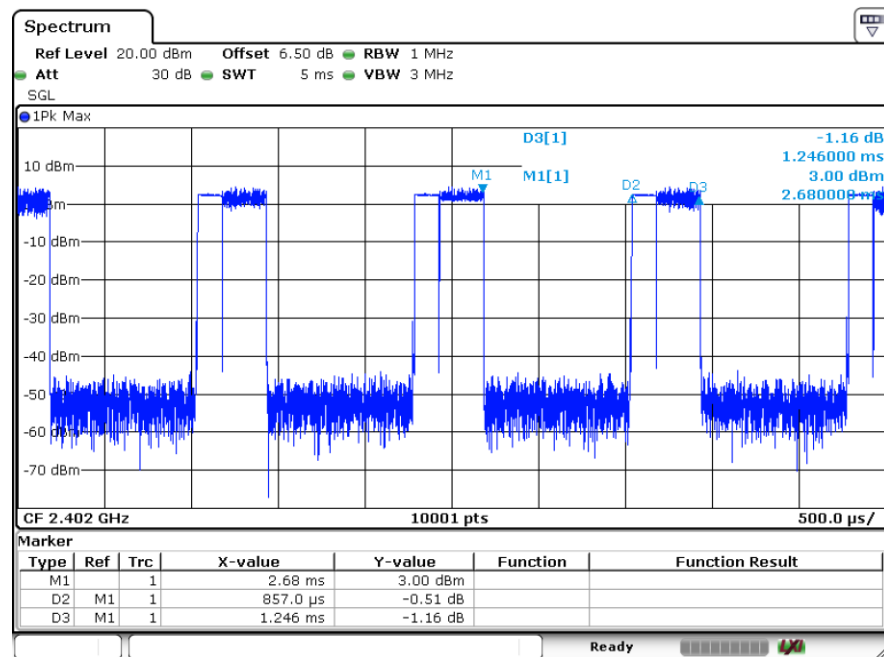
Mode	ON Time T (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	10log(1/x)Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
GFSK(1Mbps)	0.3995	1.2455	0.3208	32.08%	4.94	2.50



Mode	ON Time T (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	10log(1/x)Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
$\Pi/4$ DQPSK(2Mbps)	0.395	1.251	0.3157	31.57%	5.00	2.532



Mode	ON Time T (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	10log(1/x)Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
8QPSKA(3Mbps)	0.389	1.246	0.3122	31.22%	5.06	2.571



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP0002
0.50 -5.0			56.00	46.00	LP0002
5.0 -30.0			60.00	50.00	LP0002

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

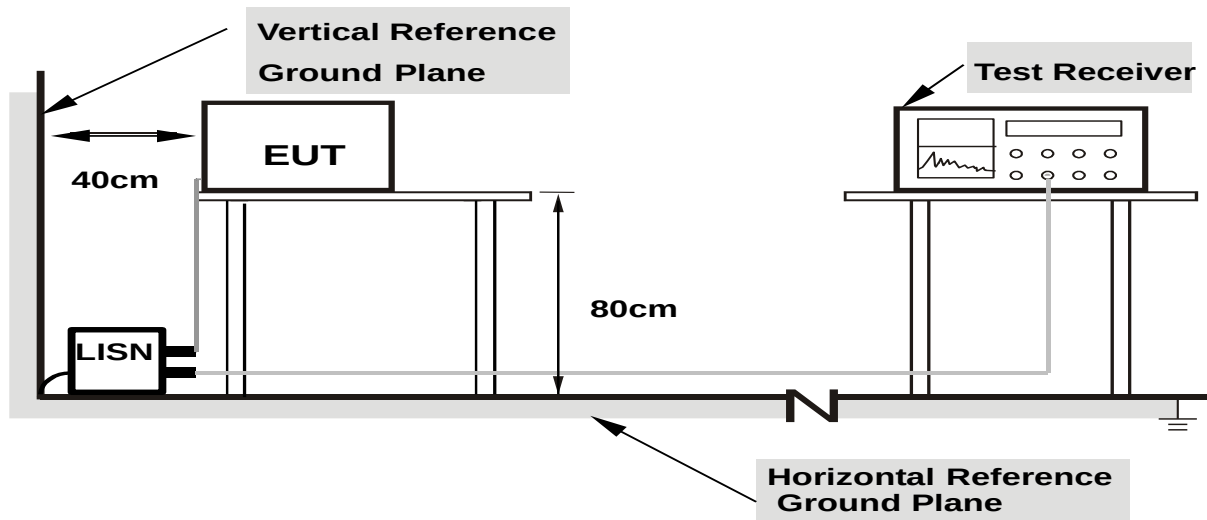
4.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 TEST SETUP

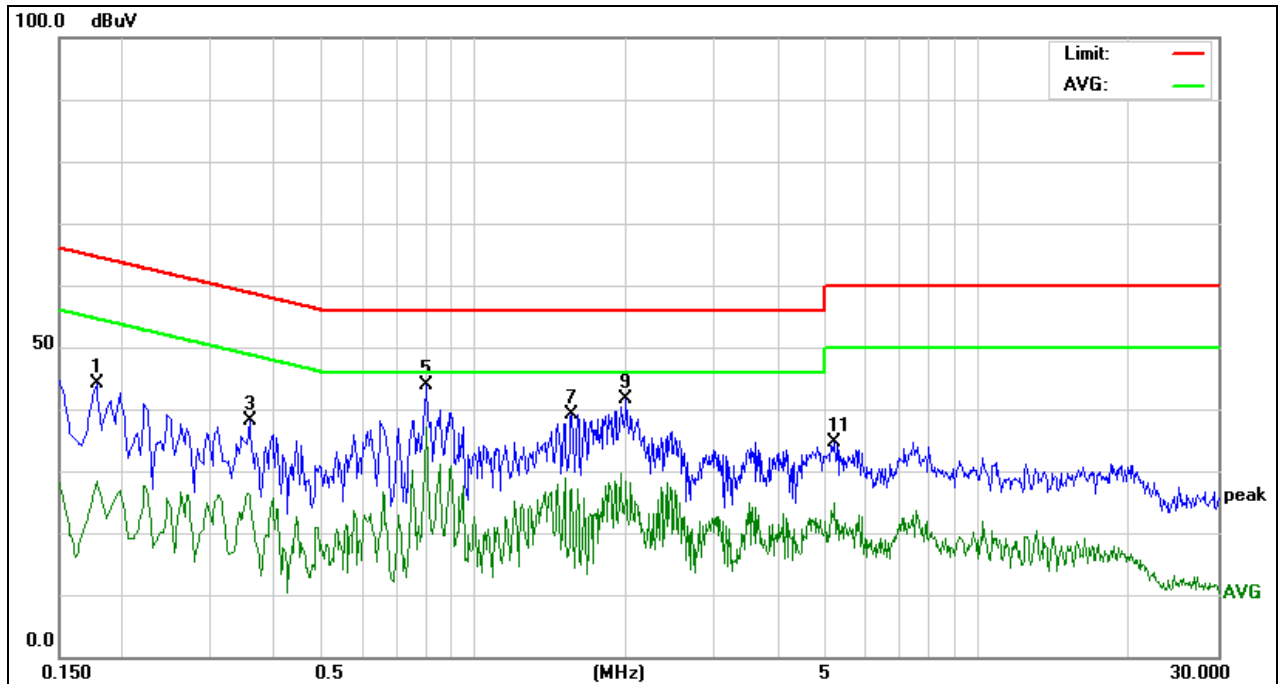


Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.5 TEST RESULTS

EUT :	Wavo Pro	Model Name. :	JB01715-BWW
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Phase :	L
Test Voltage :	AC 110V/60Hz for Adapter		

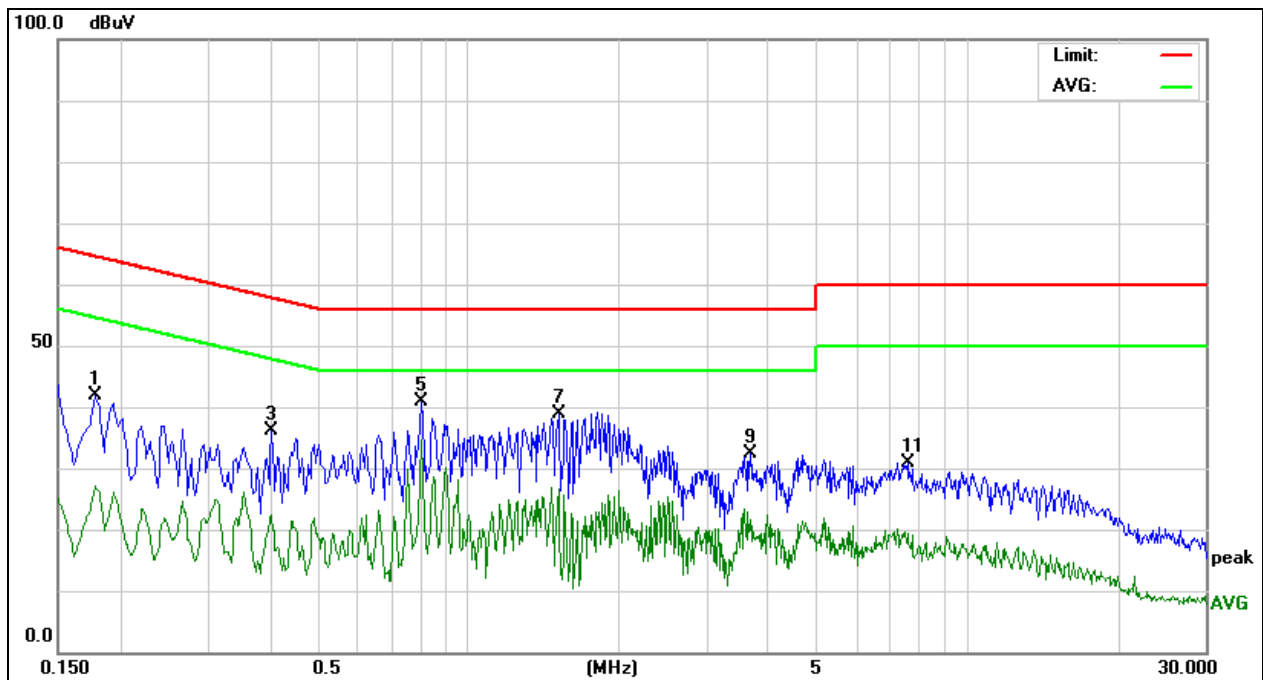


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1	0.1780	32.60	11.41	44.01	64.57	-20.56	peak
2	0.1780	16.89	11.41	28.30	54.57	-26.27	AVG
3	0.3580	27.90	10.16	38.06	58.77	-20.71	peak
4	0.3580	16.23	10.16	26.39	48.77	-22.38	AVG
5	0.8059	33.80	9.96	43.76	56.00	-12.24	peak
6 *	0.8059	27.21	9.96	37.17	46.00	-8.83	AVG
7	1.5620	29.26	9.97	39.23	56.00	-16.77	peak
8	1.5620	18.82	9.97	28.79	46.00	-17.21	AVG
9	2.0059	31.54	9.99	41.53	56.00	-14.47	peak
10	2.0059	19.58	9.99	29.57	46.00	-16.43	AVG
11	5.1698	24.43	10.11	34.54	60.00	-25.46	peak
12	5.1698	14.84	10.11	24.95	50.00	-25.05	AVG

EUT :	Wavo Pro	Model Name. :	JB01715-BWW
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Phase :	N
Test Voltage :	AC 110V/60Hz for Adapter		

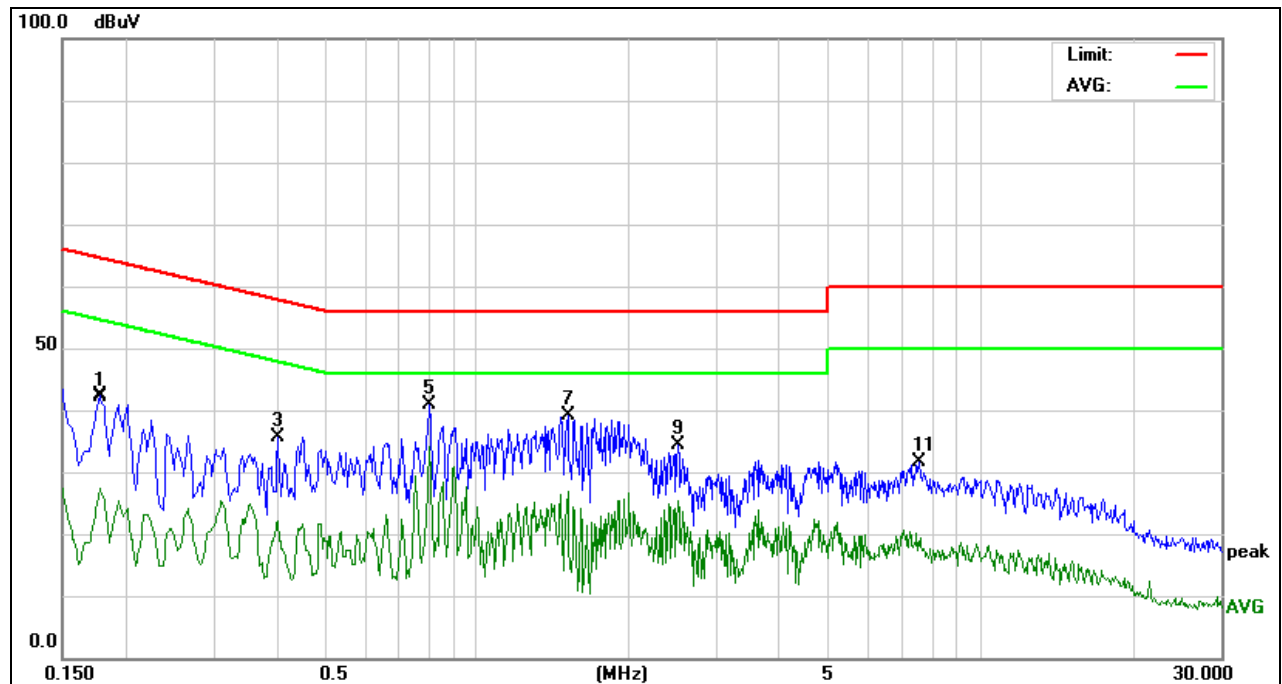


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1780	30.48	11.41	41.89	64.57	-22.68	peak
2		0.1780	15.62	11.41	27.03	54.57	-27.54	AVG
3		0.4020	26.09	10.12	36.21	57.81	-21.60	peak
4		0.4020	12.59	10.12	22.71	47.81	-25.10	AVG
5		0.8059	30.89	9.96	40.85	56.00	-15.15	peak
6	*	0.8059	24.73	9.96	34.69	46.00	-11.31	AVG
7		1.5140	28.80	9.97	38.77	56.00	-17.23	peak
8		1.5140	16.91	9.97	26.88	46.00	-19.12	AVG
9		3.6620	22.44	10.04	32.48	56.00	-23.52	peak
10		3.6620	13.32	10.04	23.36	46.00	-22.64	AVG
11		7.5779	20.81	10.18	30.99	60.00	-29.01	peak
12		7.5779	9.96	10.18	20.14	50.00	-29.86	AVG

EUT :	Wavo Pro	Model Name. :	JB01715-BWW
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-04-04
Test Mode :	Mode 5	Phase :	L
Test Voltage :	AC 110V/60Hz for Adapter		

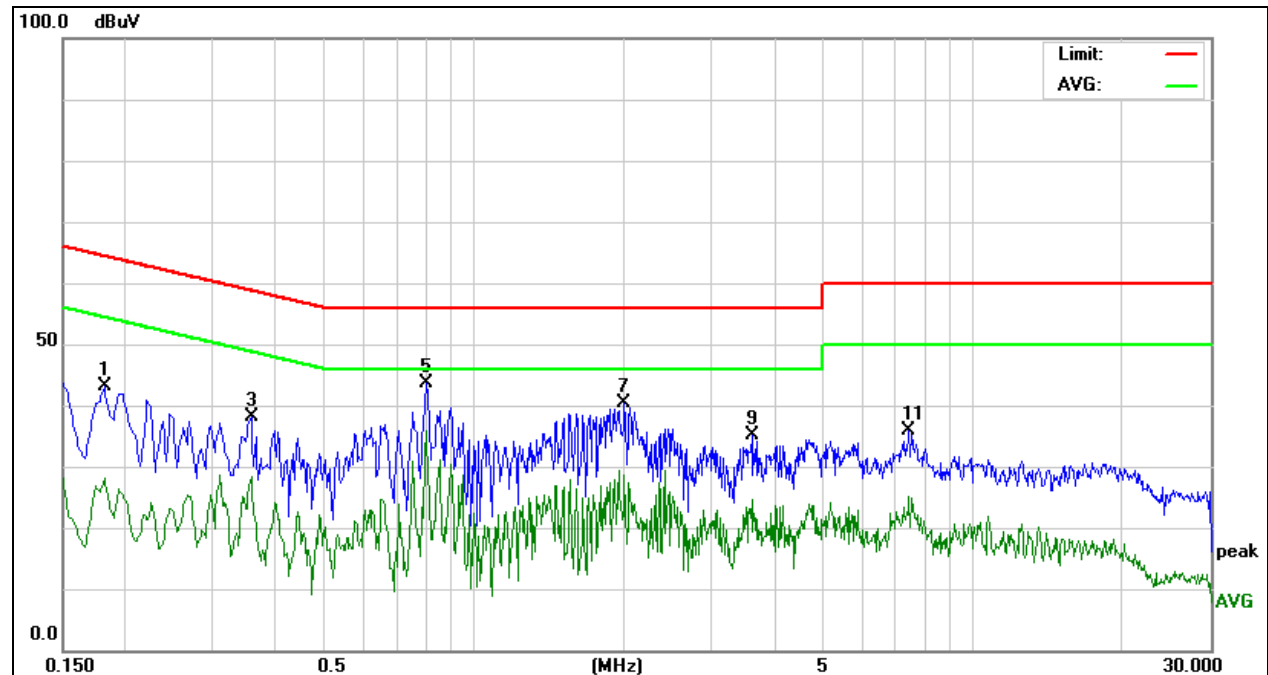


Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector
1		0.1780	30.84	11.41	42.25	64.57	-22.32	peak
2		0.1780	15.98	11.41	27.39	54.57	-27.18	AVG
3		0.4020	25.52	10.12	35.64	57.81	-22.17	peak
4		0.4020	14.84	10.12	24.96	47.81	-22.85	AVG
5		0.8059	30.95	9.96	40.91	56.00	-15.09	peak
6	*	0.8059	24.06	9.96	34.02	46.00	-11.98	AVG
7		1.5140	29.16	9.97	39.13	56.00	-16.87	peak
8		1.5140	17.03	9.97	27.00	46.00	-19.00	AVG
9		2.5100	24.45	10.01	34.46	56.00	-21.54	peak
10		2.5100	15.25	10.01	25.26	46.00	-20.74	AVG
11		7.5259	21.43	10.18	31.61	60.00	-28.39	peak
12		7.5259	9.88	10.18	20.06	50.00	-29.94	AVG

EUT :	Wavo Pro	Model Name. :	JB01715-BWW
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-04-04
Test Mode :	Mode 5	Phase :	N
Test Voltage :	AC 110V/60Hz for Adapter		



Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss + Pulse limit.
3. '*' means the worst case

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1819	31.68	11.36	43.04	64.39	-21.35	peak
2		0.1819	16.66	11.36	28.02	54.39	-26.37	AVG
3		0.3580	28.00	10.16	38.16	58.77	-20.61	peak
4		0.3580	18.43	10.16	28.59	48.77	-20.18	AVG
5		0.8059	33.71	9.96	43.67	56.00	-12.33	peak
6	*	0.8059	25.93	9.96	35.89	46.00	-10.11	AVG
7		2.0100	30.33	9.99	40.32	56.00	-15.68	peak
8		2.0100	19.43	9.99	29.42	46.00	-16.58	AVG
9		3.6140	25.01	10.04	35.05	56.00	-20.95	peak
10		3.6140	14.64	10.04	24.68	46.00	-21.32	AVG
11		7.4778	25.71	10.18	35.89	60.00	-24.11	peak
12		7.4778	14.92	10.18	25.10	50.00	-24.90	AVG

Test result: The unit does meet the NCC requirements.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 2.7, then the 2.8 limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to LP0002.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

6.14 FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

1 The spectrum shall be measured from the lowest radio frequency signal generated in the device (without going below 9 kHz), and the upper limit of the measurement range shall be decided according to the maximum operating frequency.

1.1 Maximum operating frequency less than 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

1.2 Maximum operating frequency between 10 GHz~30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

1.3 Maximum operating frequency over 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower.

2 Particular attention should be paid to harmonics and subharmonics of the carrier frequency as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked.

Spectrum Parameter		Setting	
Attenuation		Auto	
Start Frequency		1000 MHz	
Stop Frequency		10th carrier harmonic	
Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3MHz
AV	$\geq 98\%$	1MHz	10Hz
	$< 98\%$	1MHz	$\geq 1/T$
Where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.			

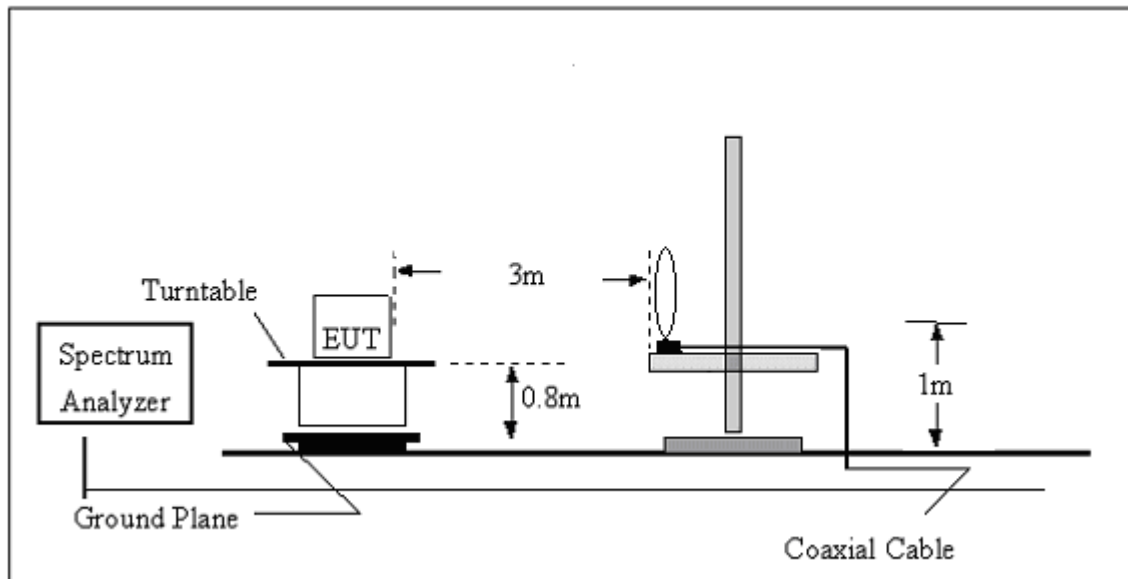
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2.2 TEST PROCEDURE

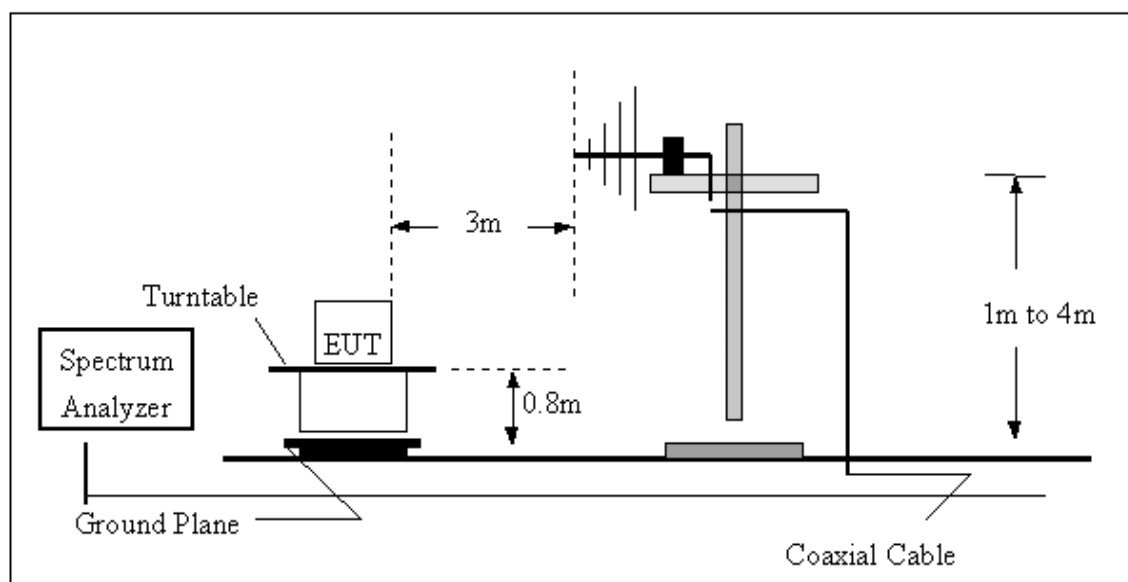
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters (For frequencies above 1GHz, table 1.5 meters) above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 TEST SETUP

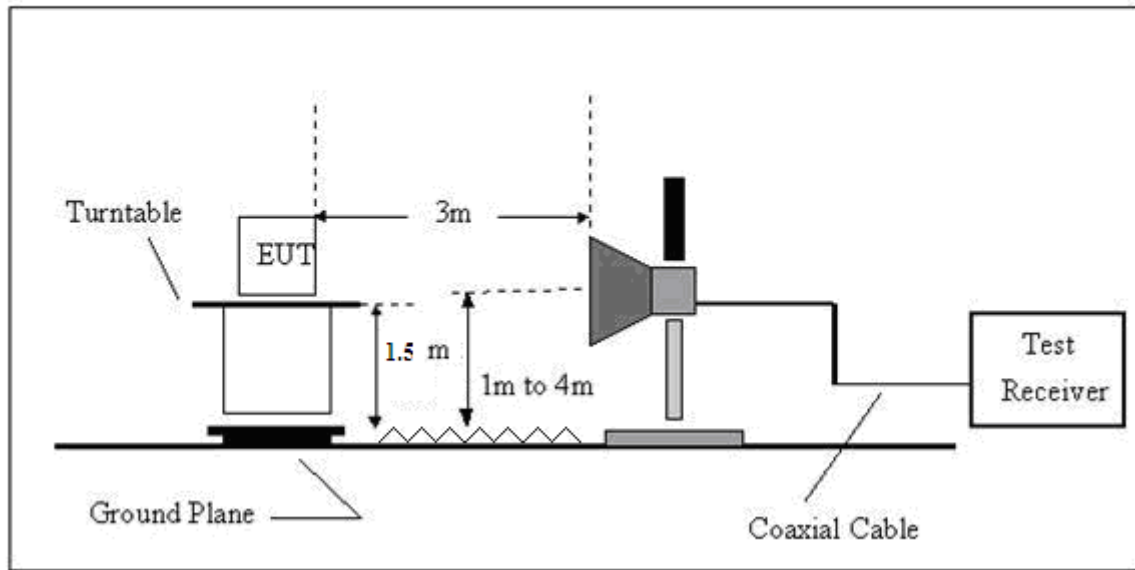
(A) Radiated Emission Test Set-Up, Frequency 9kHz-30 MHz



(B) Radiated Emission Test Set-Up Frequency 30MHz-1 GHz



(C) Radiated Emission Test Set-Up Frequency Above 1 GHz

**4.2.4 EUT OPERATING CONDITIONS**

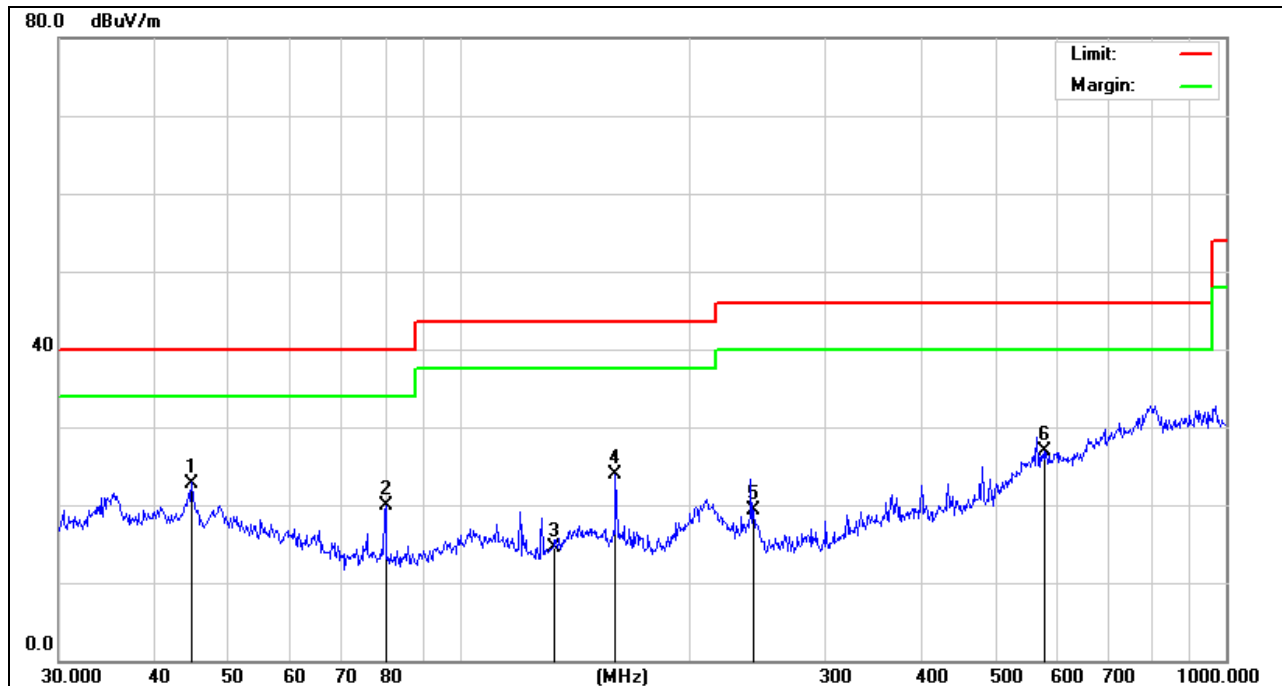
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.5 TEST RESULTS (BLOW 30 MHZ)

There is no detected blow 30MHz

4.2.6 TEST RESULTS (BETWEEN30 – 1000 MHZ)

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

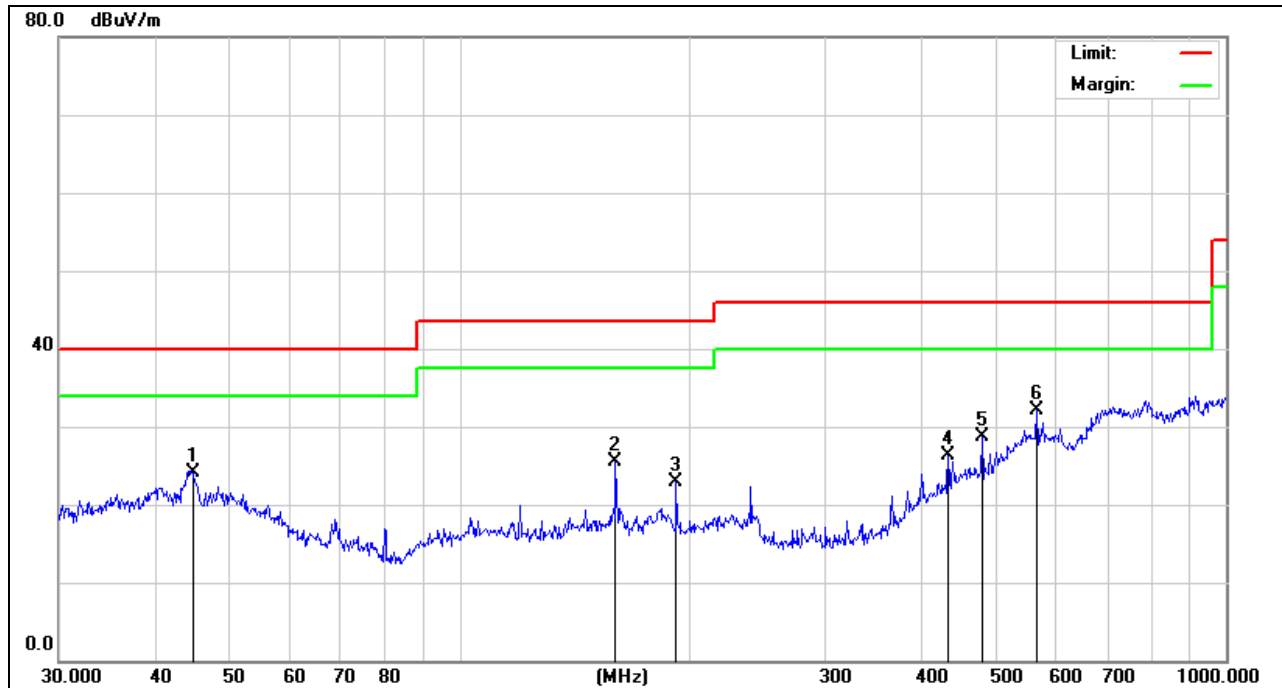


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	44.7433	27.32	-4.52	22.80	40.00	-17.20	peak
2		80.0806	31.08	-11.21	19.87	40.00	-20.13	peak
3		132.2206	23.84	-9.29	14.55	43.50	-28.95	peak
4		159.7844	32.54	-8.61	23.93	43.50	-19.57	peak
5		241.6763	25.74	-6.51	19.23	46.00	-26.77	peak
6		578.6699	24.81	2.10	26.91	46.00	-19.09	peak

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

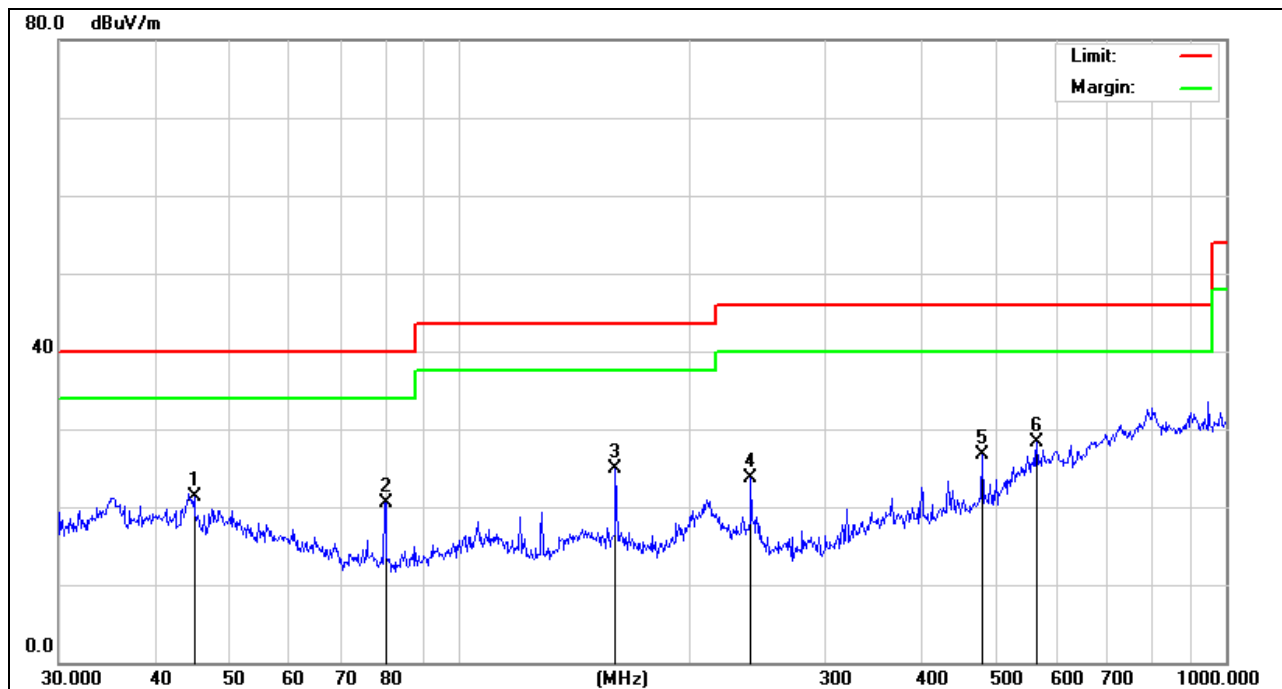


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		44.9006	26.42	-2.28	24.14	40.00	-15.86	peak
2		159.7844	32.14	-6.54	25.60	43.50	-17.90	peak
3		191.7450	30.35	-7.49	22.86	43.50	-20.64	peak
4		434.0651	27.26	-0.95	26.31	46.00	-19.69	peak
5		480.5276	28.14	0.56	28.70	46.00	-17.30	peak
6	*	566.6223	27.76	4.33	32.09	46.00	-13.91	peak

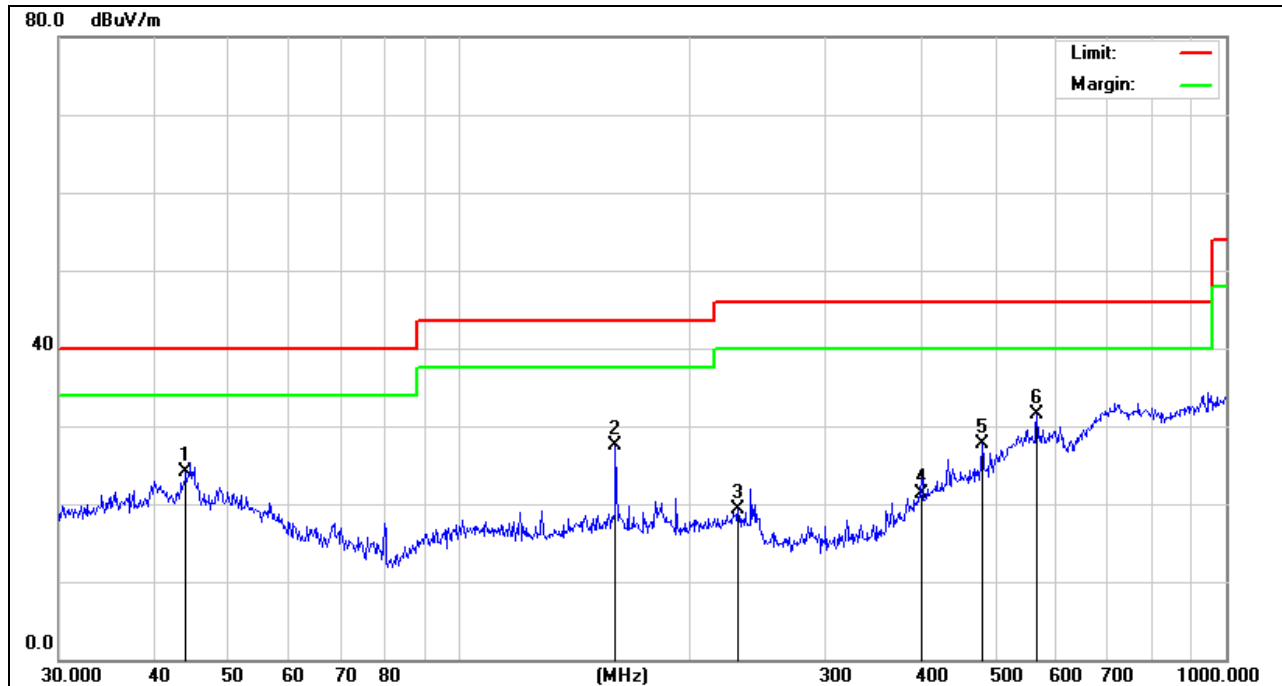
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX	Polarization :	Vertical
Test Power :	DC3.7V from battery		



Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		45.0583	25.85	-4.56	21.29	40.00	-18.71	peak
2		80.0806	31.74	-11.21	20.53	40.00	-19.47	peak
3		159.7844	33.58	-8.61	24.97	43.50	-18.53	peak
4		239.9874	30.27	-6.52	23.75	46.00	-22.25	peak
5		480.5276	29.29	-2.54	26.75	46.00	-19.25	peak
6	*	566.6223	26.59	1.80	28.39	46.00	-17.61	peak

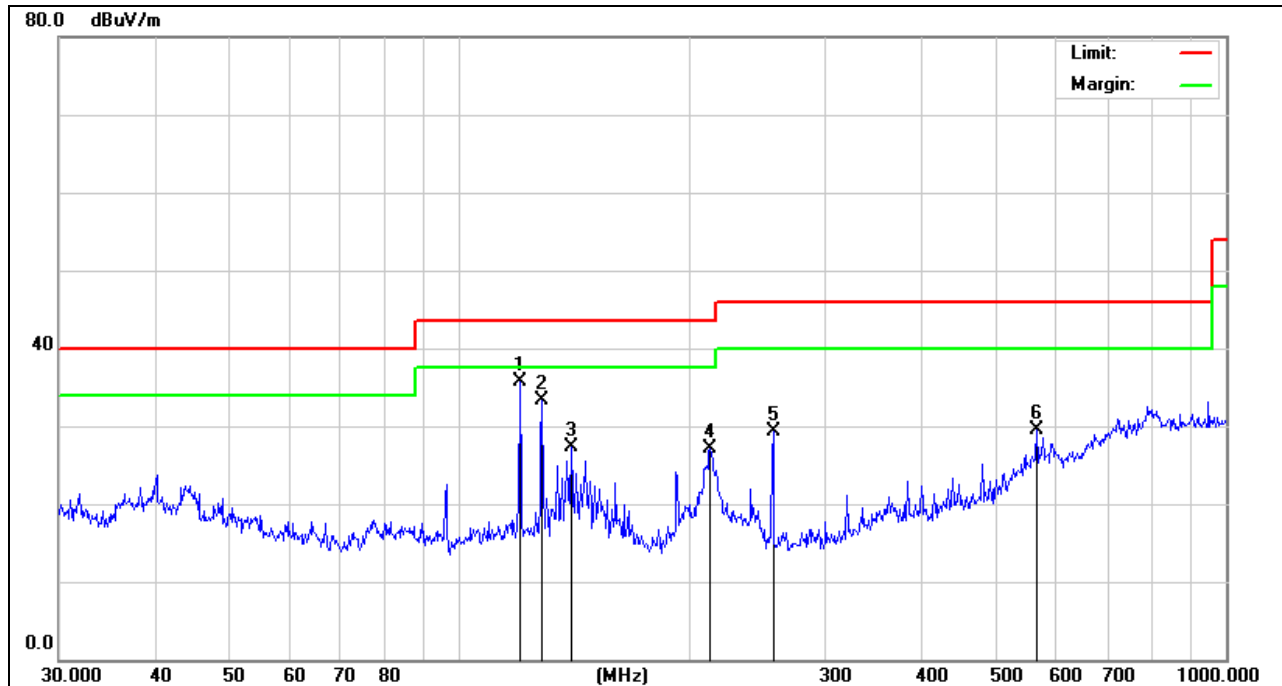
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX	Polarization :	Horizontal
Test Power :	DC3.7V from battery		



Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		43.9658	26.22	-2.14	24.08	40.00	-15.92	peak
2		159.7844	34.05	-6.54	27.51	43.50	-15.99	peak
3		230.9068	25.93	-6.55	19.38	46.00	-26.62	peak
4		399.0302	24.20	-2.94	21.26	46.00	-24.74	peak
5		480.5276	27.11	0.56	27.67	46.00	-18.33	peak
6	*	566.6223	27.25	4.33	31.58	46.00	-14.42	peak

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	Mode5	Polarization :	Vertical
Test Power :	DC5V from adapter		

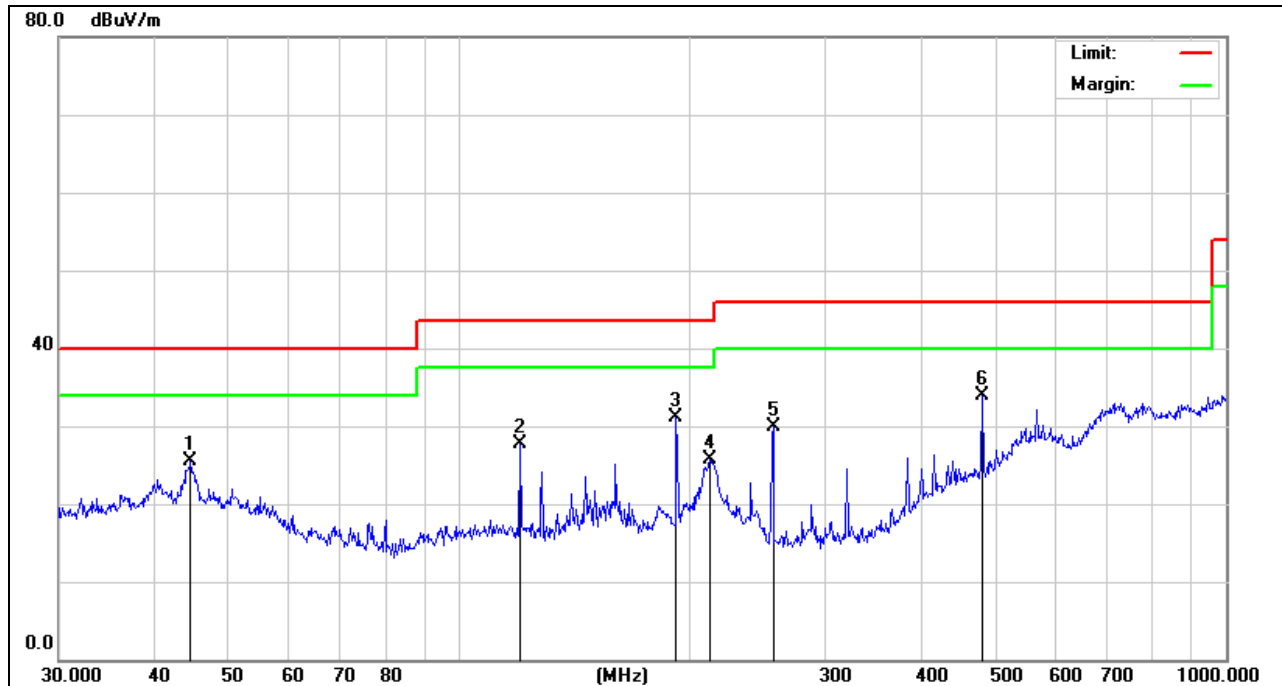


Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	119.8556	44.71	-9.03	35.68	43.50	-7.82	peak
2		128.1130	42.96	-9.75	33.21	43.50	-10.29	peak
3		139.8508	35.01	-7.63	27.38	43.50	-16.12	peak
4		212.2695	31.59	-4.40	27.19	43.50	-16.31	peak
5		256.5211	38.13	-8.90	29.23	46.00	-16.77	peak
6		566.6223	27.70	1.80	29.50	46.00	-16.50	peak

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	Mode5	Polarization :	Horizontal
Test Power :	DC5V from adapter		



Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		44.5868	27.71	-2.23	25.48	40.00	-14.52	peak
2		119.8556	35.46	-7.74	27.72	43.50	-15.78	peak
3		191.7450	38.50	-7.49	31.01	43.50	-12.49	peak
4		212.2695	32.80	-7.03	25.77	43.50	-17.73	peak
5		256.5211	38.71	-8.90	29.81	46.00	-16.19	peak
6	*	480.5276	33.35	0.56	33.91	46.00	-12.09	peak

Test result: The unit does meet the NCC requirements.

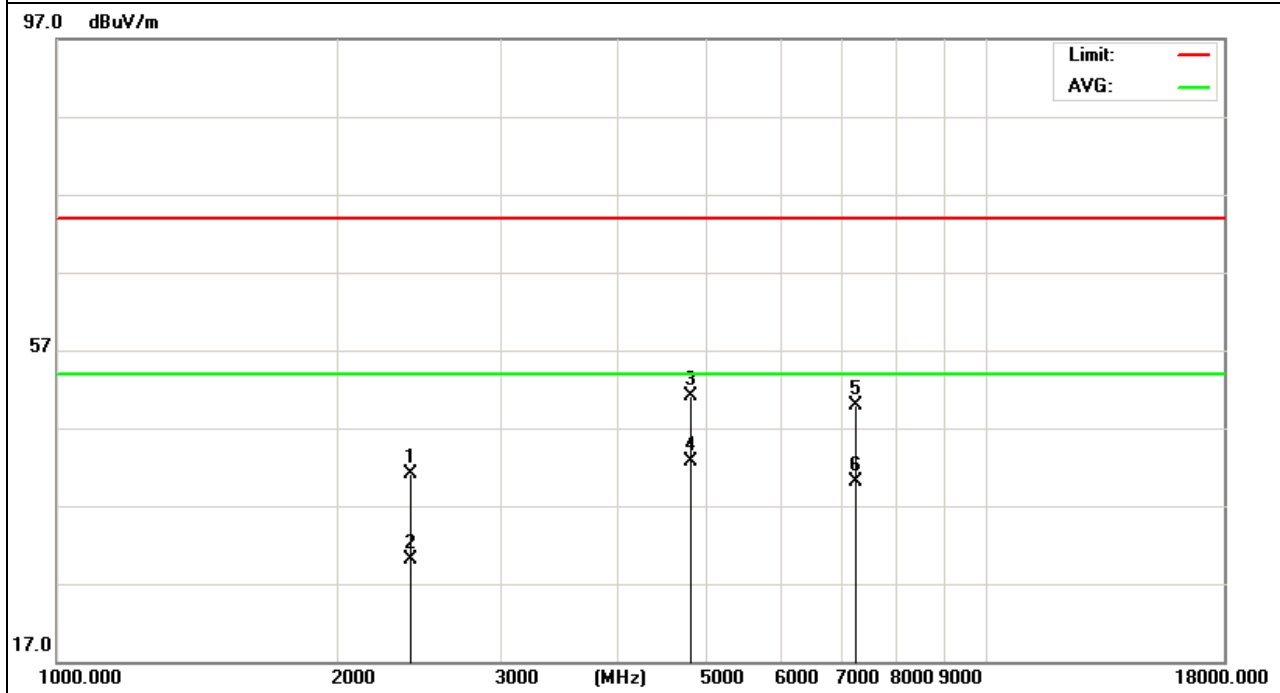
4.2.7 TEST RESULTS (FRENQUENCY RANGE 1000-25000 MHZ)

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	46.88	-5.70	41.18	74.00	-32.82	peak
2400.000	35.79	-5.70	30.09	54.00	-23.91	AVG
4804.000	46.14	5.06	51.20	74.00	-22.80	peak
4804.000	37.63	5.06	42.69	54.00	-11.31	AVG
7206.000	42.87	7.03	49.90	74.00	-24.10	peak
7206.000	32.99	7.03	40.02	54.00	-13.98	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

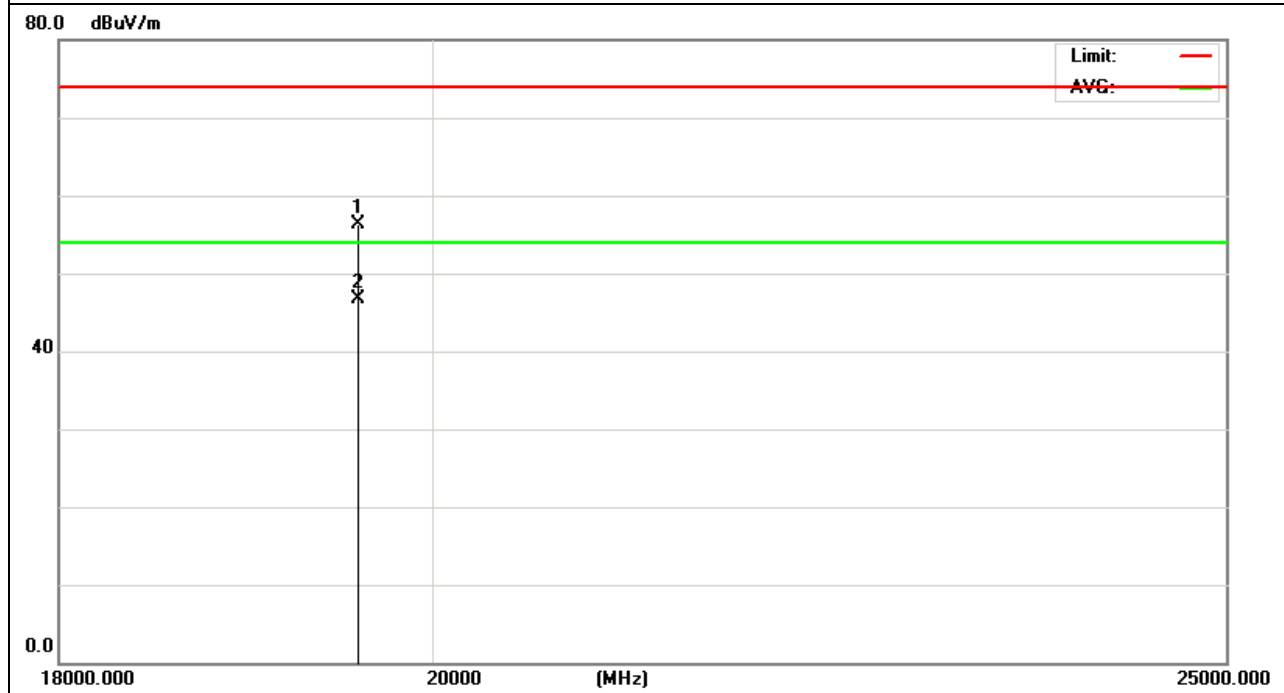


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
19586.000	39.74	16.52	56.26	74.00	-17.74	peak
19586.000	30.14	16.52	46.66	54.00	-7.34	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

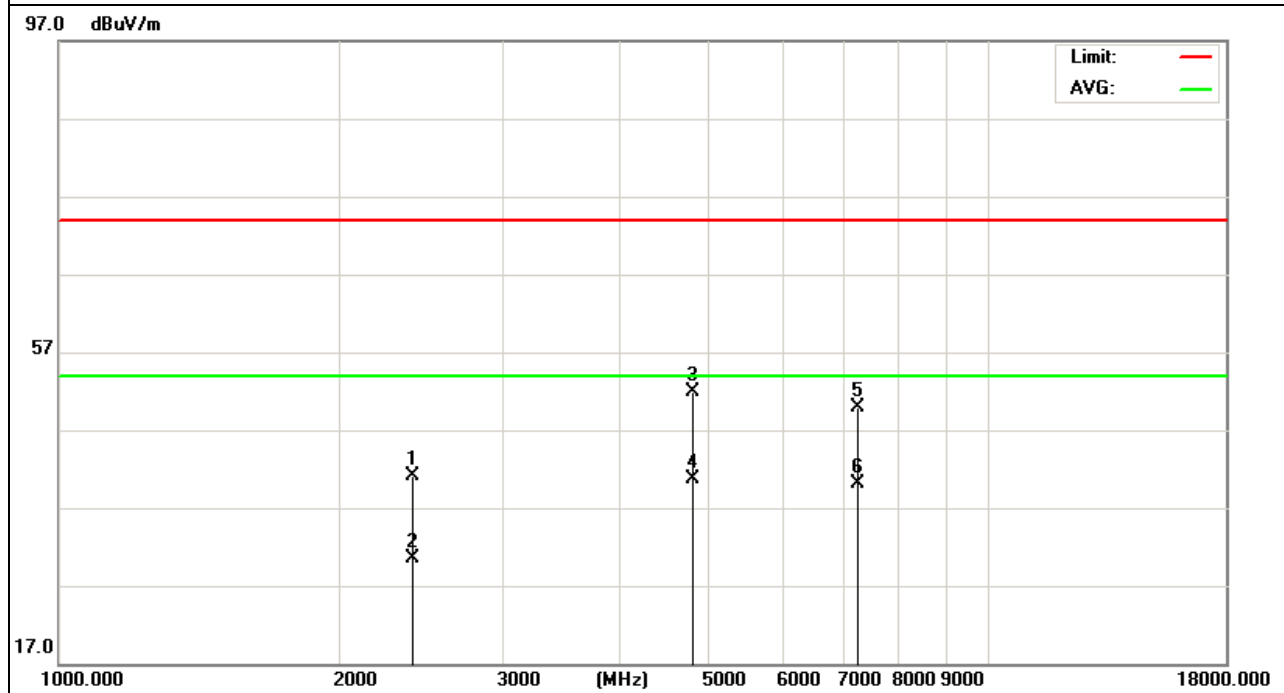


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	46.89	-5.70	41.19	74.00	-32.81	peak
2400.000	36.28	-5.70	30.58	54.00	-23.42	AVG
4804.000	46.79	5.06	51.85	74.00	-22.15	peak
4804.000	35.62	5.06	40.68	54.00	-13.32	AVG
7206.000	42.96	7.03	49.99	74.00	-24.01	peak
7206.000	33.15	7.03	40.18	54.00	-13.82	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

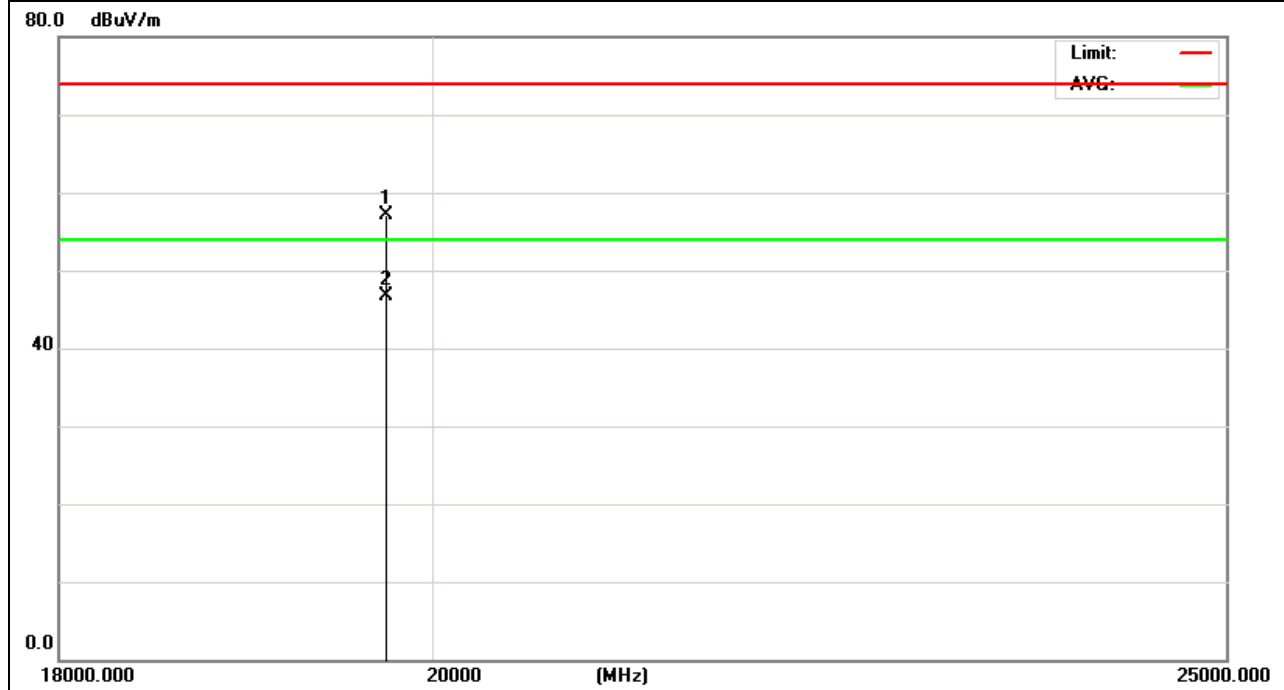


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
19735.000	40.46	16.55	57.01	74.00	-16.99	peak
19735.000	30.19	16.55	46.74	54.00	-7.26	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

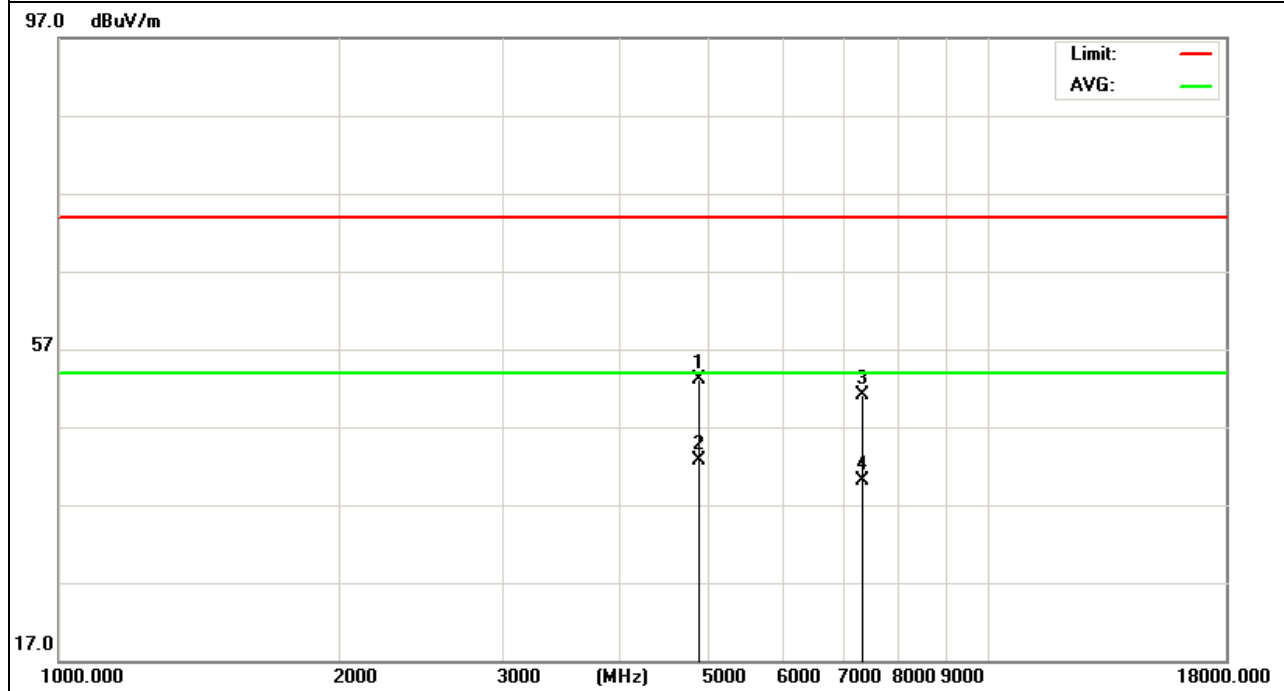


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4882.000	47.89	5.14	53.03	74.00	-20.97	peak
4882.000	37.56	5.14	42.70	54.00	-11.30	AVG
7323.000	43.57	7.54	51.11	74.00	-22.89	peak
7323.000	32.64	7.54	40.18	54.00	-13.82	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

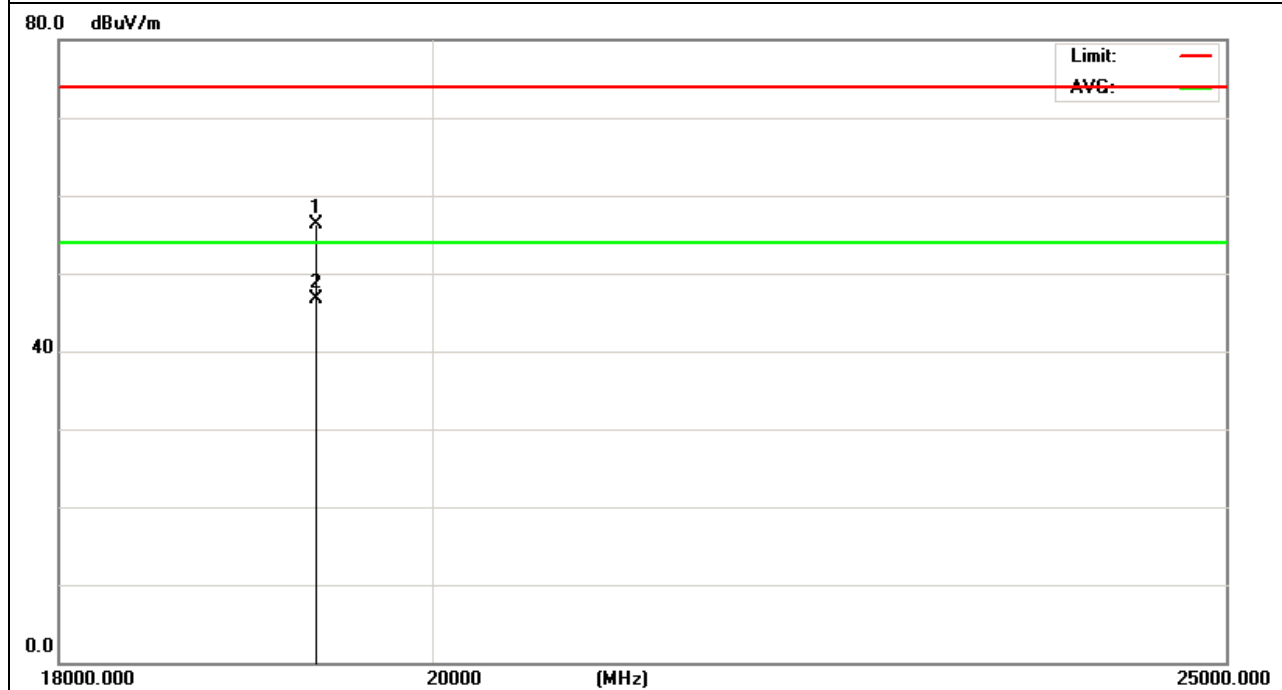


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19347.000	39.74	16.47	56.21	74.00	-17.79	peak
19347.000	30.15	16.47	46.62	54.00	-7.38	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

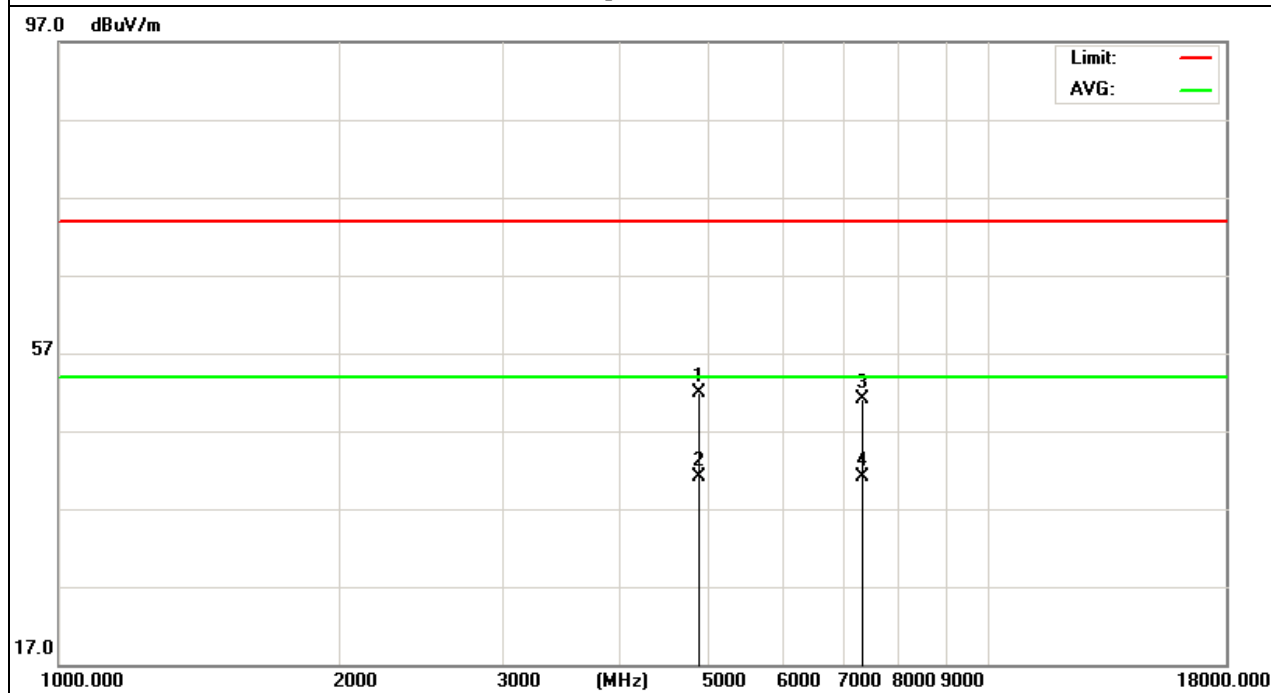


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4882.000	46.69	5.14	51.83	74.00	-22.17	peak
4882.000	35.89	5.14	41.03	54.00	-12.97	AVG
7323.000	43.47	7.54	51.01	74.00	-22.99	peak
7323.000	33.52	7.54	41.06	54.00	-12.94	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

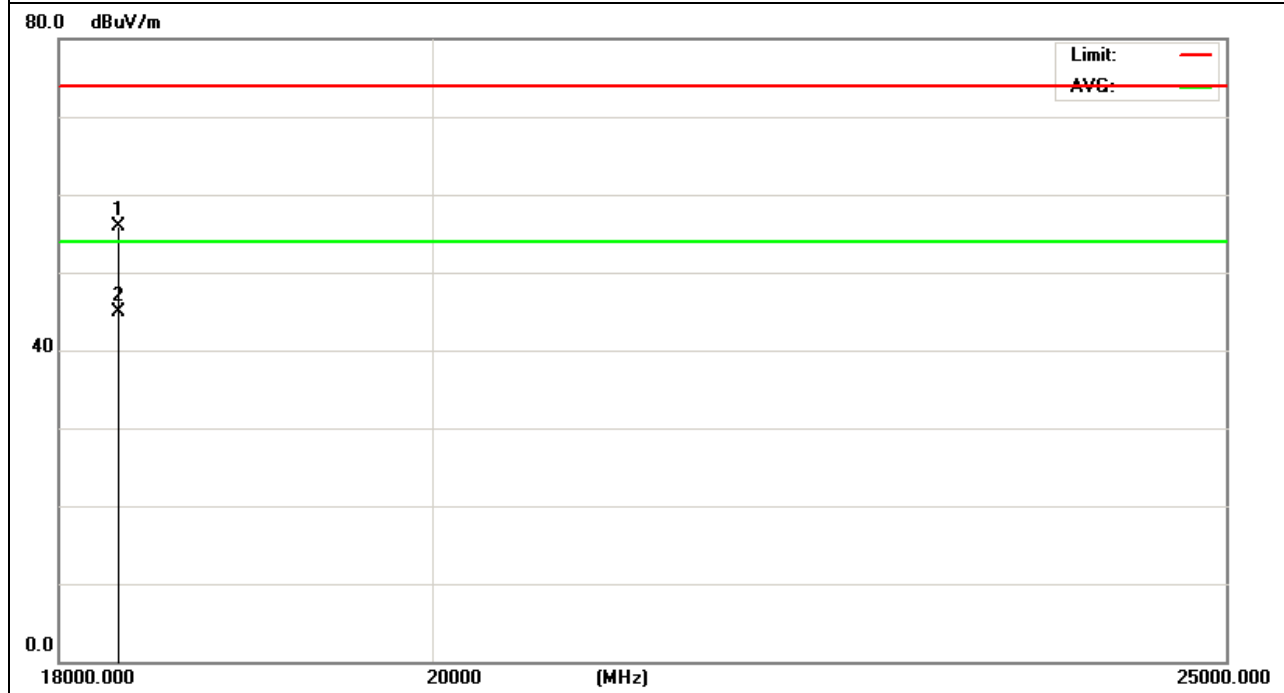


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
18302.000	40.25	15.69	55.94	74.00	-18.06	peak
18302.000	29.31	15.69	45.00	54.00	-9.00	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

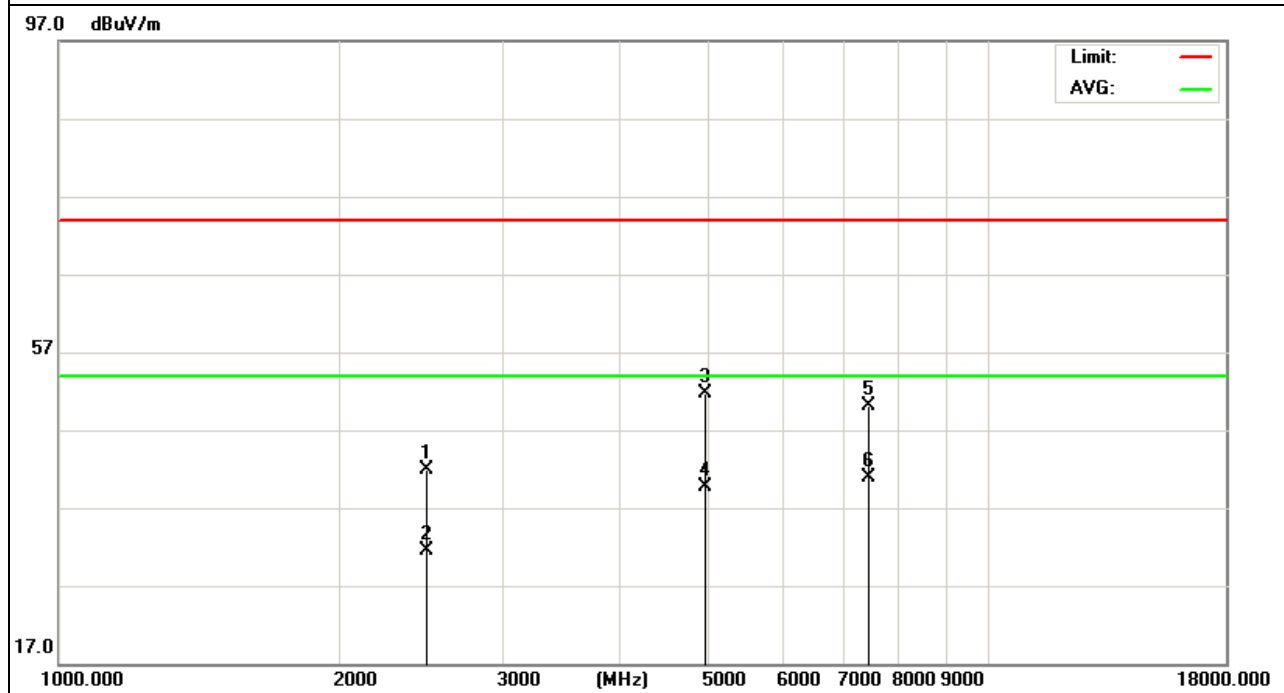


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	46.97	-4.98	41.99	74.00	-32.01	peak
2483.500	36.44	-4.98	31.46	54.00	-22.54	AVG
4960.000	46.52	5.22	51.74	74.00	-22.26	peak
4960.000	34.41	5.22	39.63	54.00	-14.37	AVG
7440.000	42.06	8.06	50.12	74.00	-23.88	peak
7440.000	32.87	8.06	40.93	54.00	-13.07	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

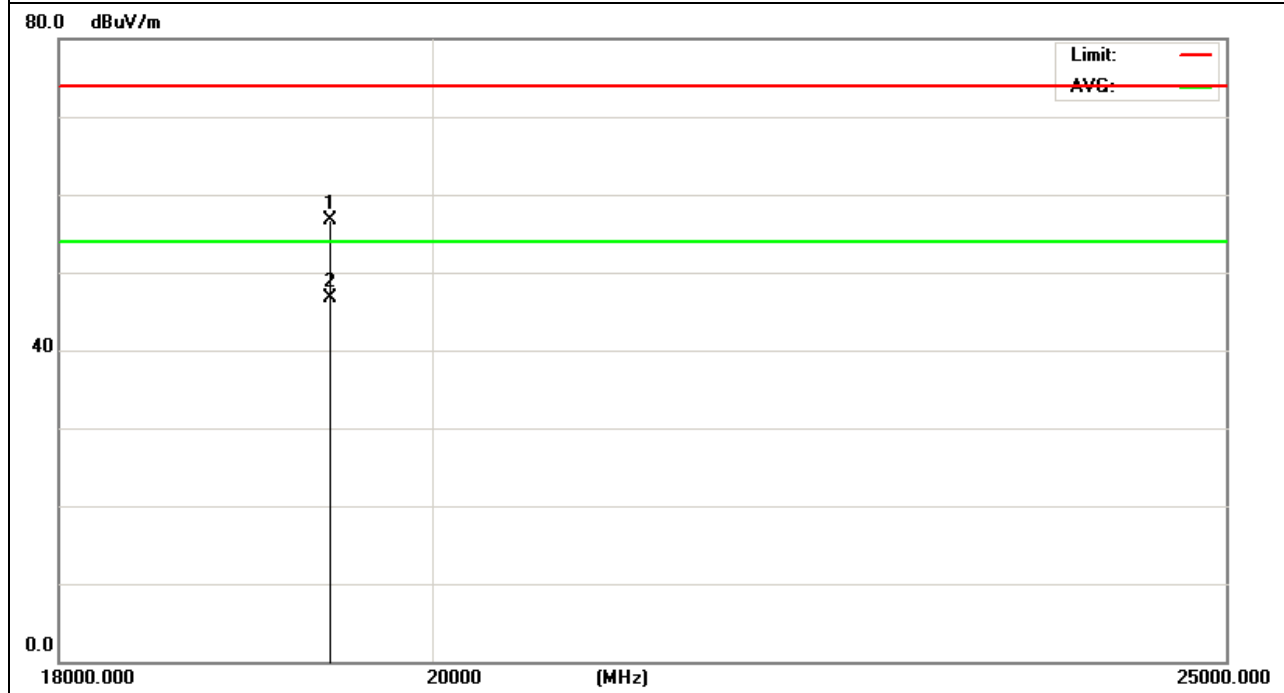


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19424.000	40.29	16.49	56.78	74.00	-17.22	peak
19424.000	30.13	16.49	46.62	54.00	-7.38	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

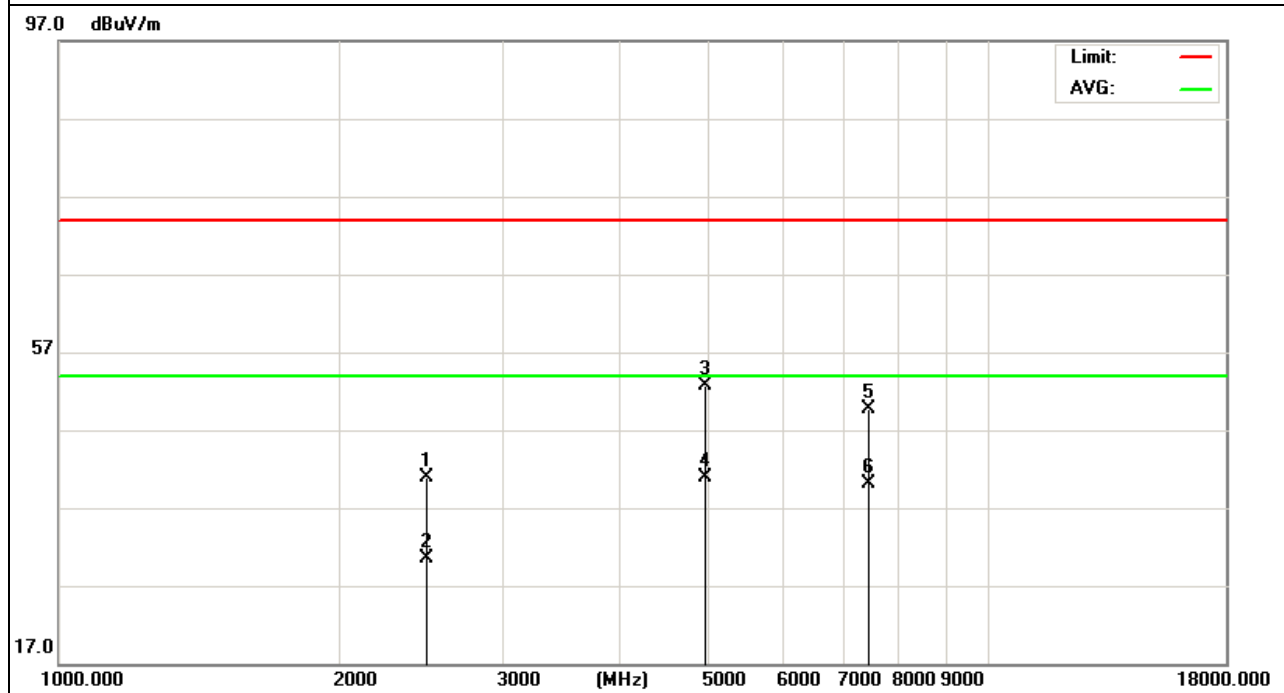


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	45.97	-4.98	40.99	74.00	-33.01	peak
2483.500	35.52	-4.98	30.54	54.00	-23.46	AVG
4960.000	47.46	5.22	52.68	74.00	-21.32	peak
4960.000	35.72	5.22	40.94	54.00	-13.06	AVG
7440.000	41.63	8.06	49.69	74.00	-24.31	peak
7440.000	31.98	8.06	40.04	54.00	-13.96	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

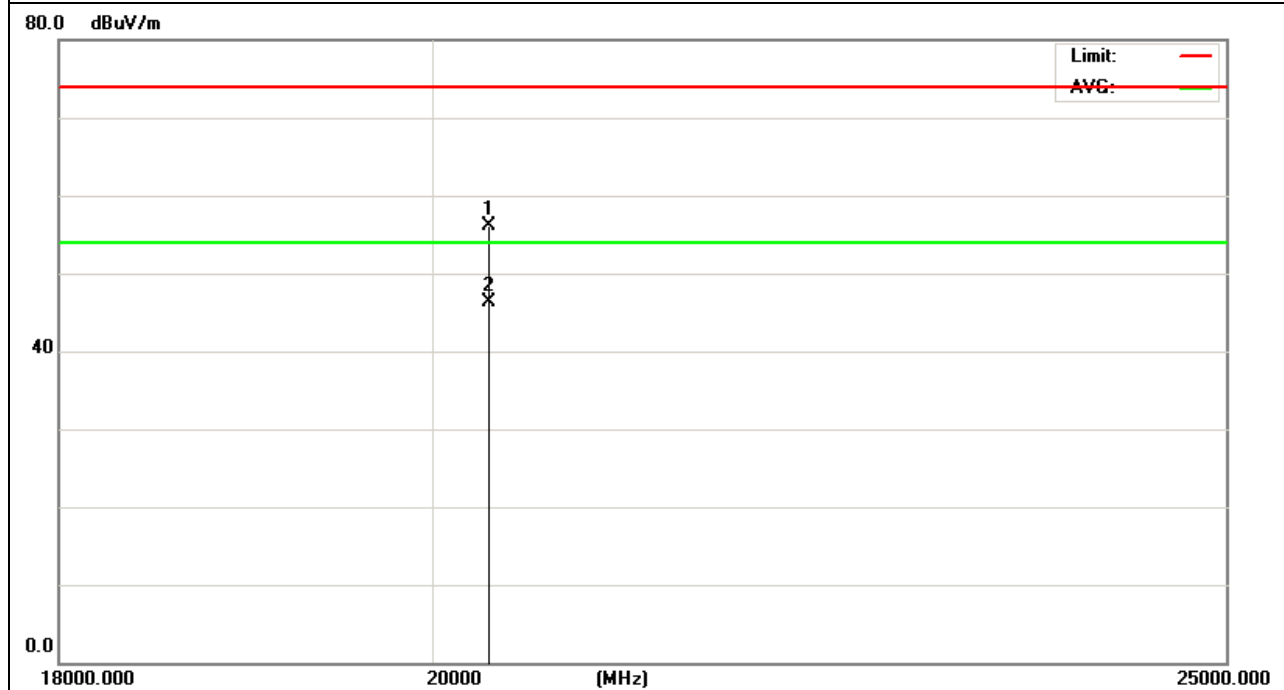


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
20311.000	39.47	16.67	56.14	74.00	-17.86	
20311.000	29.63	16.67	46.30	54.00	-7.70	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

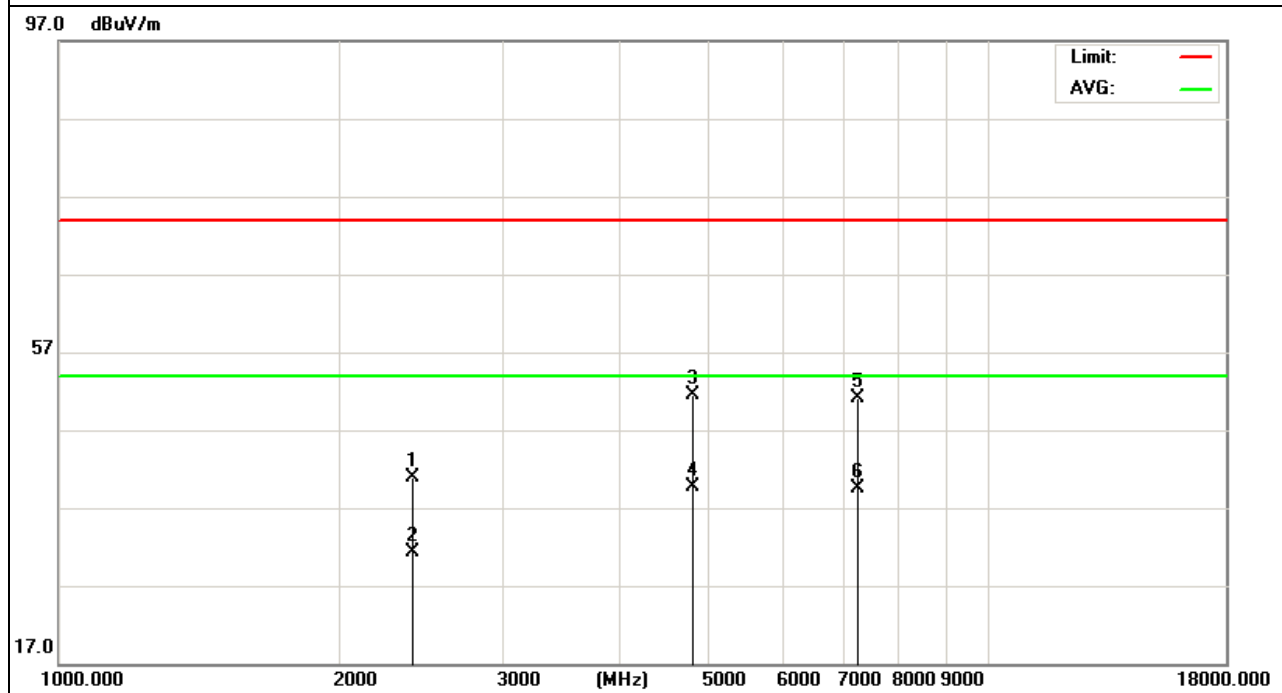


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	46.54	-5.70	40.84	74.00	-33.16	peak
2400.000	36.97	-5.70	31.27	54.00	-22.73	AVG
4804.000	46.52	5.06	51.58	74.00	-22.42	peak
4804.000	34.63	5.06	39.69	54.00	-14.31	AVG
7206.000	43.98	7.03	51.01	74.00	-22.99	peak
7206.000	32.41	7.03	39.44	54.00	-14.56	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

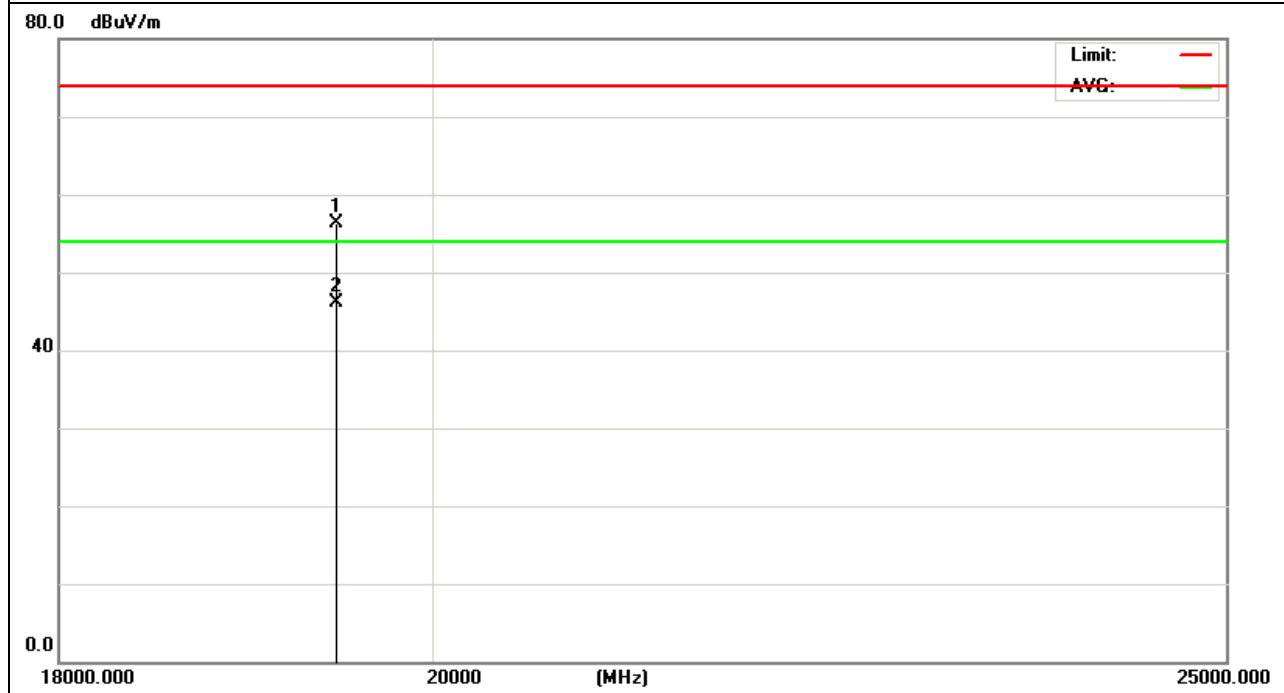


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19466.000	39.87	16.50	56.37	74.00	-17.63	
19466.000	29.63	16.50	46.13	54.00	-7.87	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

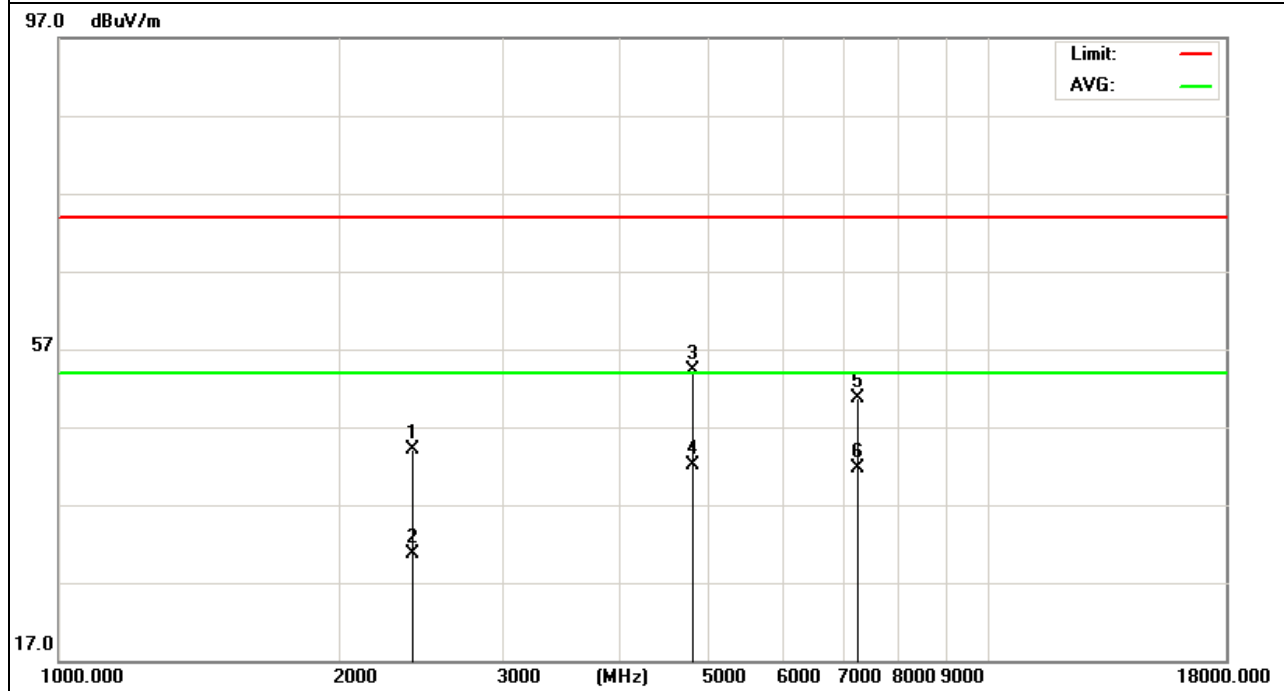


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	49.73	-5.70	44.03	74.00	-29.97	peak
2400.000	36.41	-5.70	30.71	54.00	-23.29	AVG
4804.000	49.25	5.06	54.31	74.00	-19.69	peak
4804.00	36.98	5.06	42.04	54.00	-11.96	AVG
7206.000	43.65	7.03	50.68	74.00	-23.32	peak
7206.000	34.58	7.03	41.61	54.00	-12.39	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

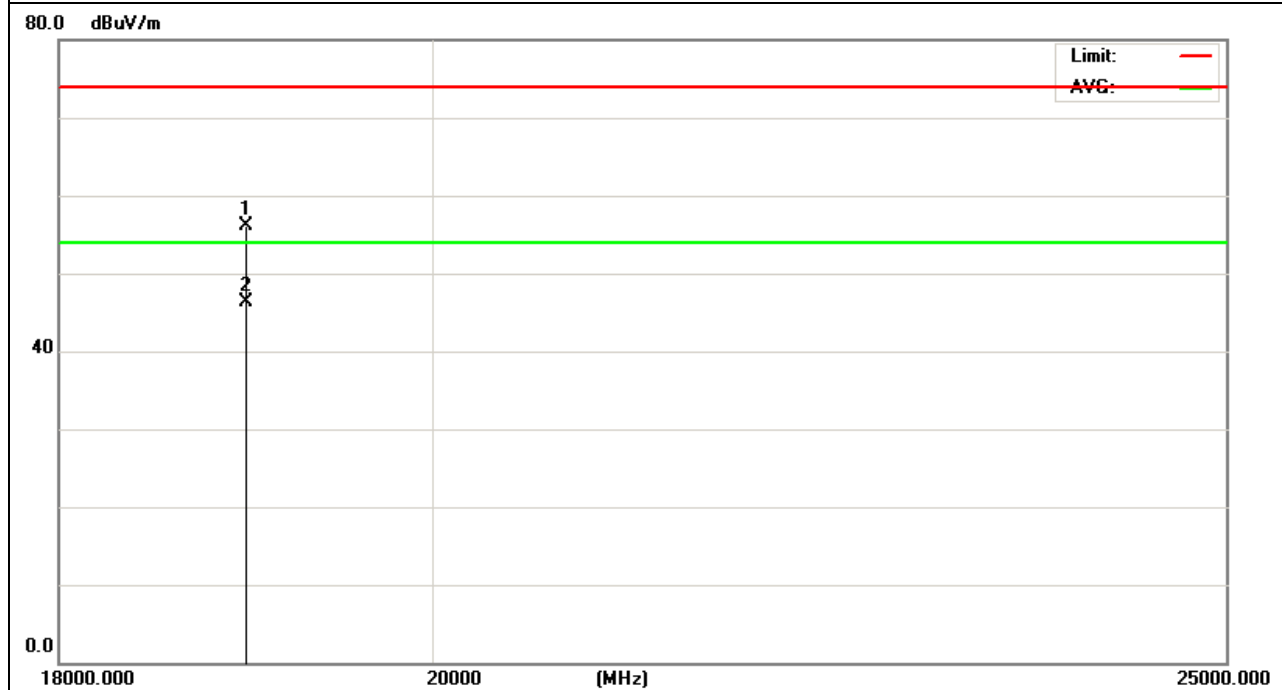


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
18975.000	39.64	16.39	56.03	74.00	-17.97	
18975.000	29.87	16.39	46.26	54.00	-7.74	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

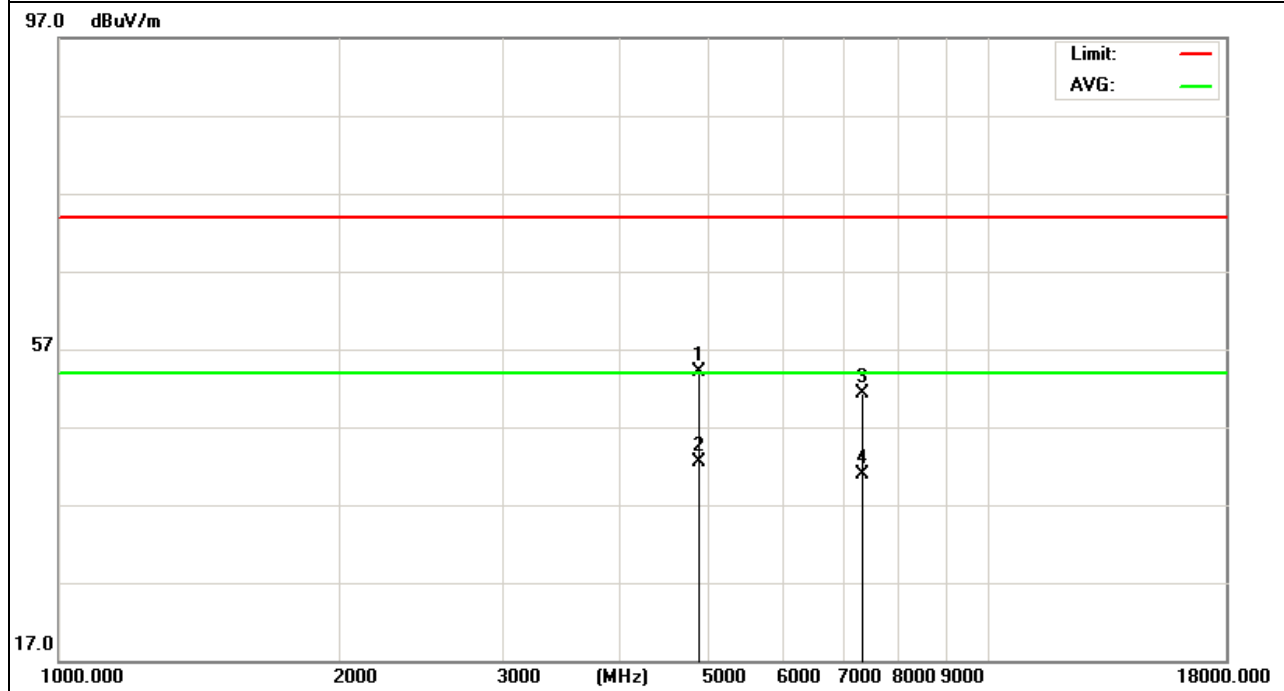


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4882.000	48.98	5.14	54.12	74.00	-19.88	peak
4882.000	37.41	5.14	42.55	54.00	-11.45	AVG
7323.000	43.69	7.54	51.23	74.00	-22.77	peak
7323.000	33.36	7.54	40.90	54.00	-13.10	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

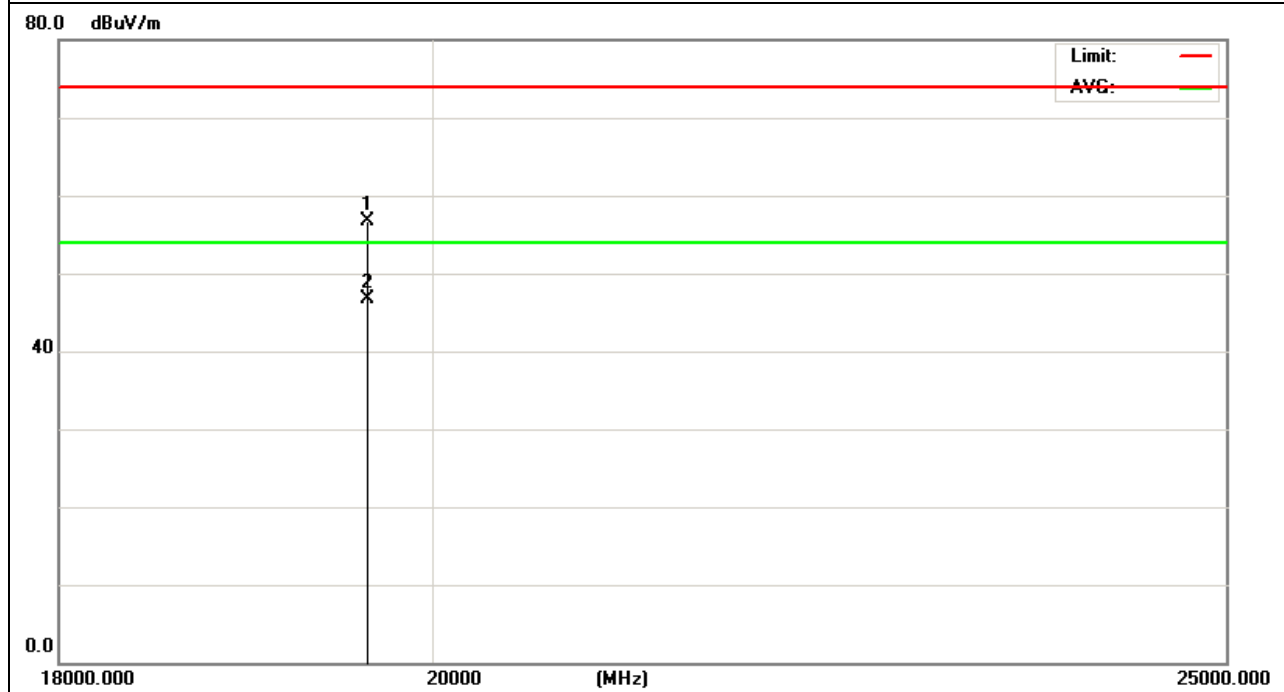


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19632.000	40.16	16.53	56.69	74.00	-17.31	
19632.000	30.19	16.53	46.72	54.00	-7.28	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

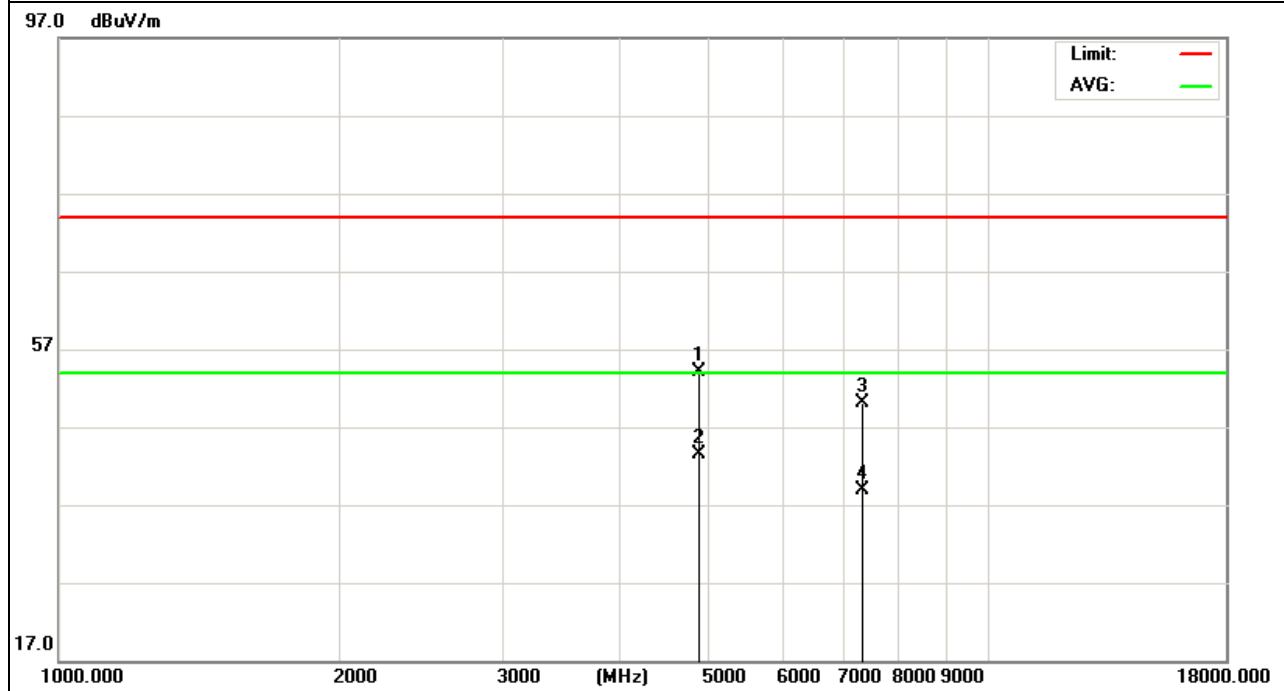


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4882.000	48.97	5.14	54.11	74.00	-19.89	peak
4882.000	38.41	5.14	43.55	54.00	-10.45	AVG
7323.000	42.63	7.54	50.17	74.00	-23.83	peak
7323.000	31.44	7.54	38.98	54.00	-15.02	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

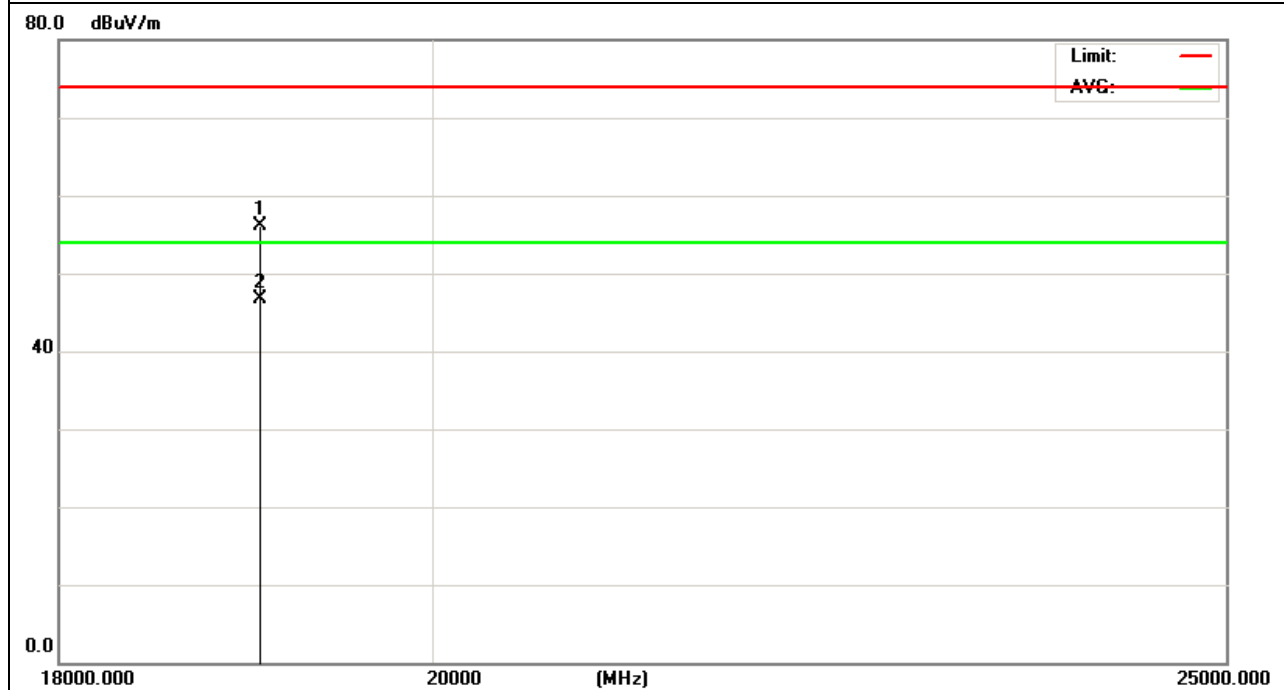


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19047.000	39.75	16.42	56.17	74.00	-17.83	
19047.000	30.34	16.42	46.76	54.00	-7.24	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

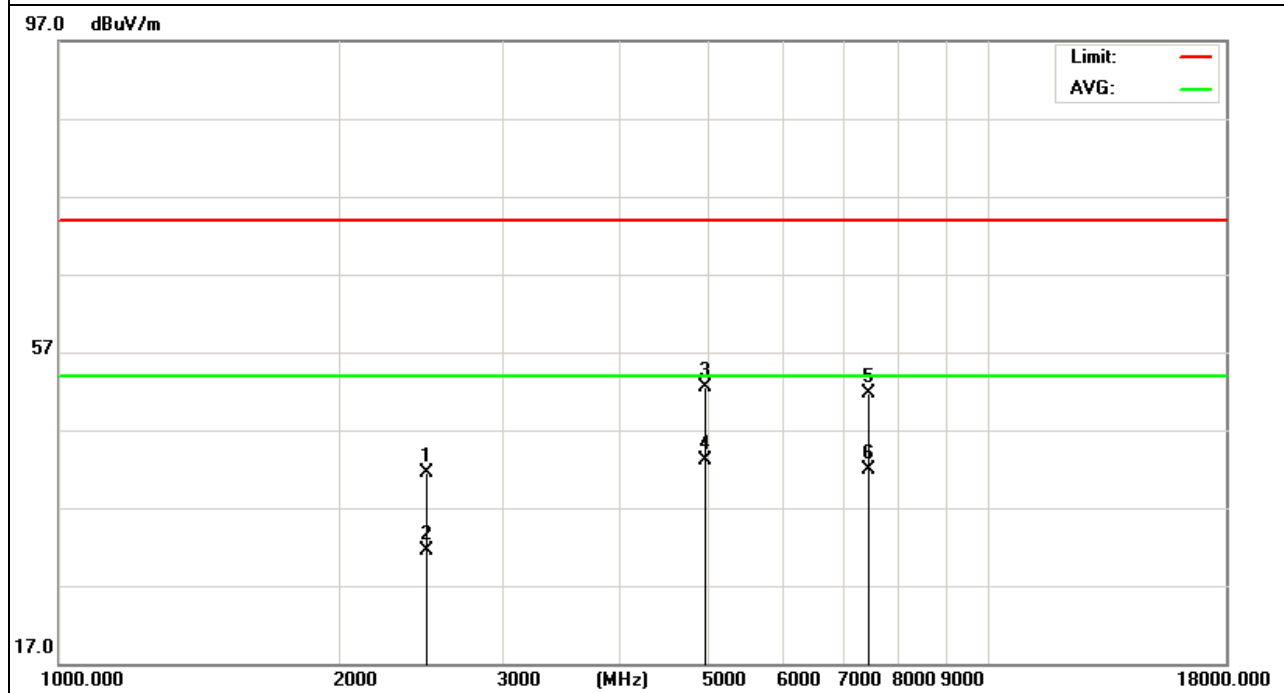


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	46.52	-4.98	41.54	74.00	-32.46	peak
2483.500	36.49	-4.98	31.51	54.00	-22.49	AVG
4960.000	47.38	5.22	52.60	74.00	-21.40	peak
4960.000	37.95	5.22	43.17	54.00	-10.83	AVG
7440.000	43.69	8.06	51.75	74.00	-22.25	peak
7440.000	33.77	8.06	41.83	54.00	-12.17	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

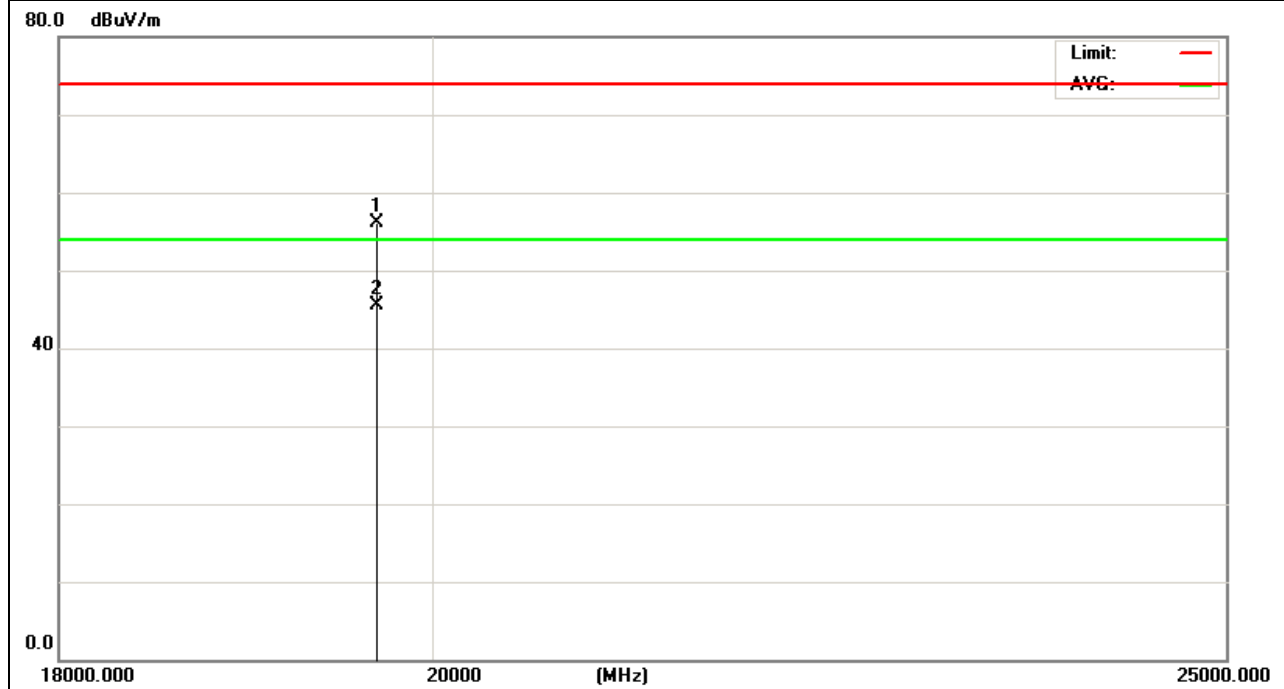


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19685.000	39.64	16.53	56.17	74.00	-17.83	
19685.000	28.93	16.53	45.46	54.00	-8.54	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

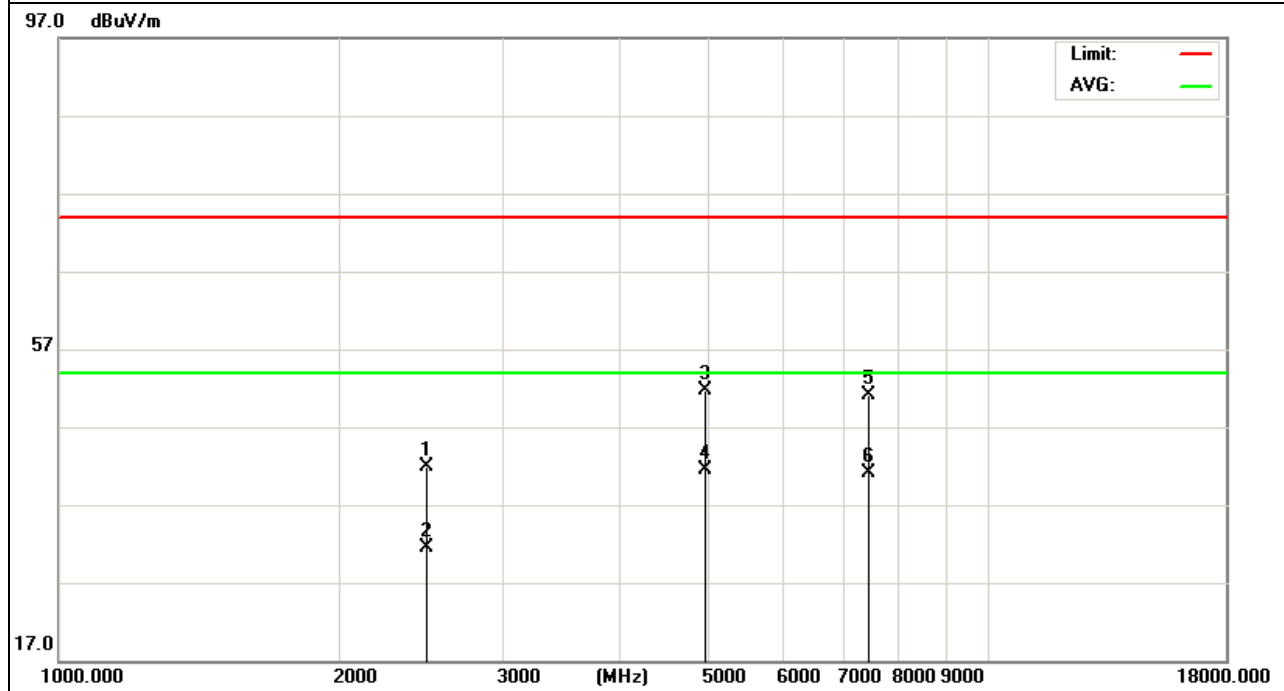


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	46.79	-4.98	41.81	74.00	-32.19	peak
2483.500	36.53	-4.98	31.55	54.00	-22.45	AVG
4960.000	46.58	5.22	51.80	74.00	-22.20	peak
4960.000	36.24	5.22	41.46	54.00	-12.54	AVG
7440.000	42.98	8.06	51.04	74.00	-22.96	peak
7440.000	32.99	8.06	41.05	54.00	-12.95	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

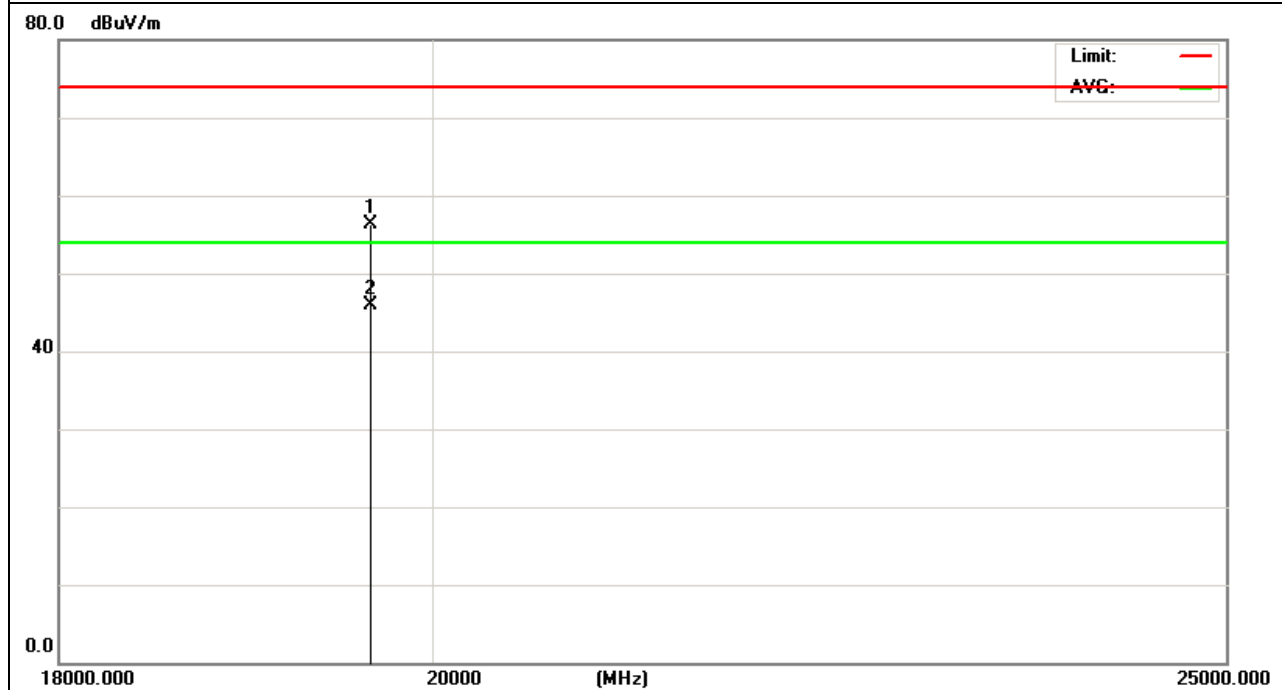


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19652.000	39.87	16.53	56.40	74.00	-17.60	
19652.000	29.46	16.53	45.99	54.00	-8.01	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Remark:

All the modes had been tested, but only the worst data recorded in the report.

In frequency ranges 1~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report.

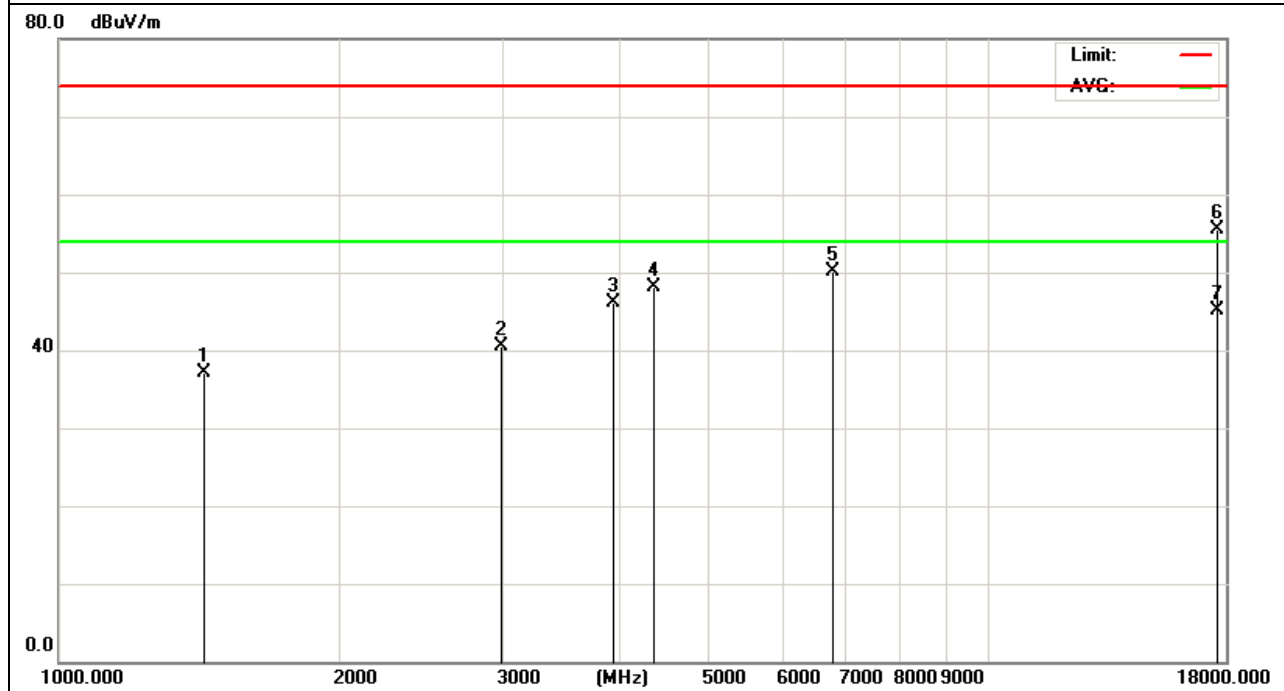
Test result: The unit does meet the NCC requirements.

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX (worst case)	Polarization :	Horizontal
Measurement Distance	3 m	Frenqucy Range	1GHz to 18GHz
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1432.158	47.33	-10.15	37.18	74.00	-36.82	peak
2983.669	42.36	-1.78	40.58	74.00	-33.42	peak
3942.135	42.61	3.42	46.03	74.00	-27.97	peak
4364.987	43.57	4.46	48.03	74.00	-25.97	peak
6791.166	43.98	6.04	50.02	74.00	-23.98	peak
17614.039	30.64	24.95	55.59	74.00	-18.41	peak
17614.039	20.20	24.95	45.15	54.00	-8.85	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

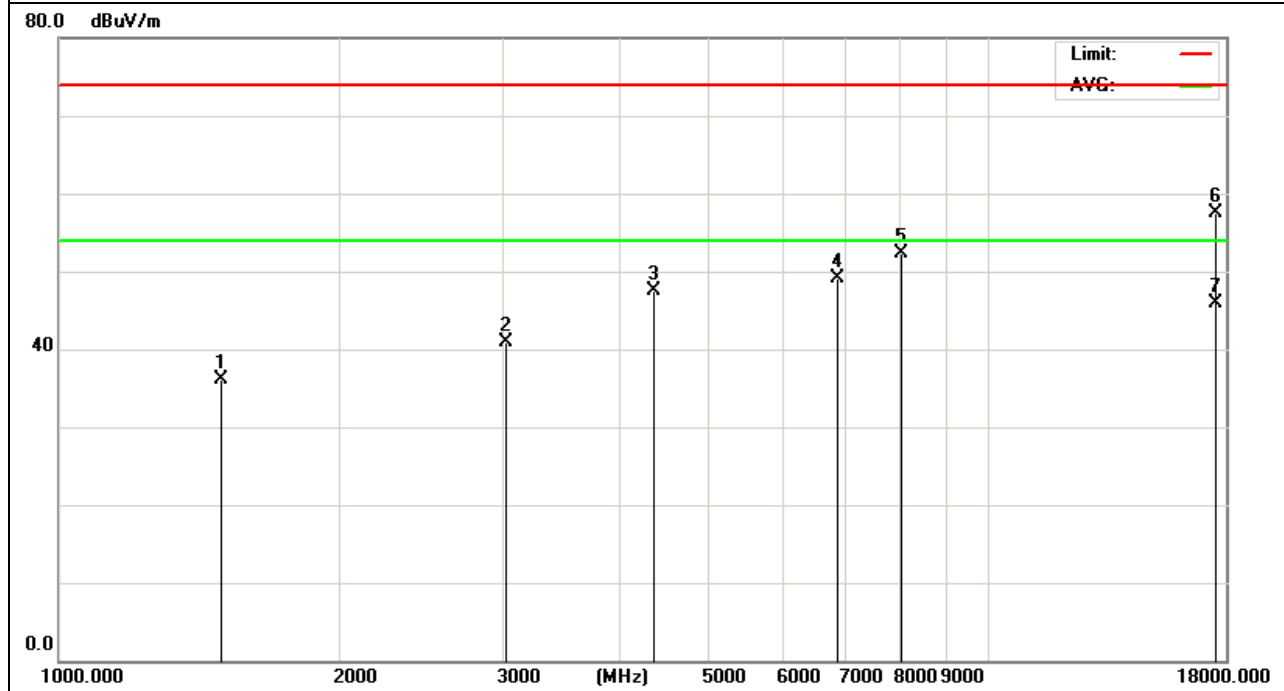


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX (worst case)	Polarization :	Vertical
Measurement Distance	3 m	Frenqucy Range	1GHz to 18GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1493.633	46.03	-9.88	36.15	74.00	-37.85	peak
3020.157	42.47	-1.63	40.84	74.00	-33.16	peak
4365.659	43.11	4.46	47.57	74.00	-26.43	peak
6874.773	43.02	6.11	49.13	74.00	-24.87	peak
8042.253	41.86	10.43	52.29	74.00	-21.71	peak
17523.375	32.41	25.02	57.43	74.00	-16.57	peak
17523.375	20.98	25.02	46.00	54.00	-8.00	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

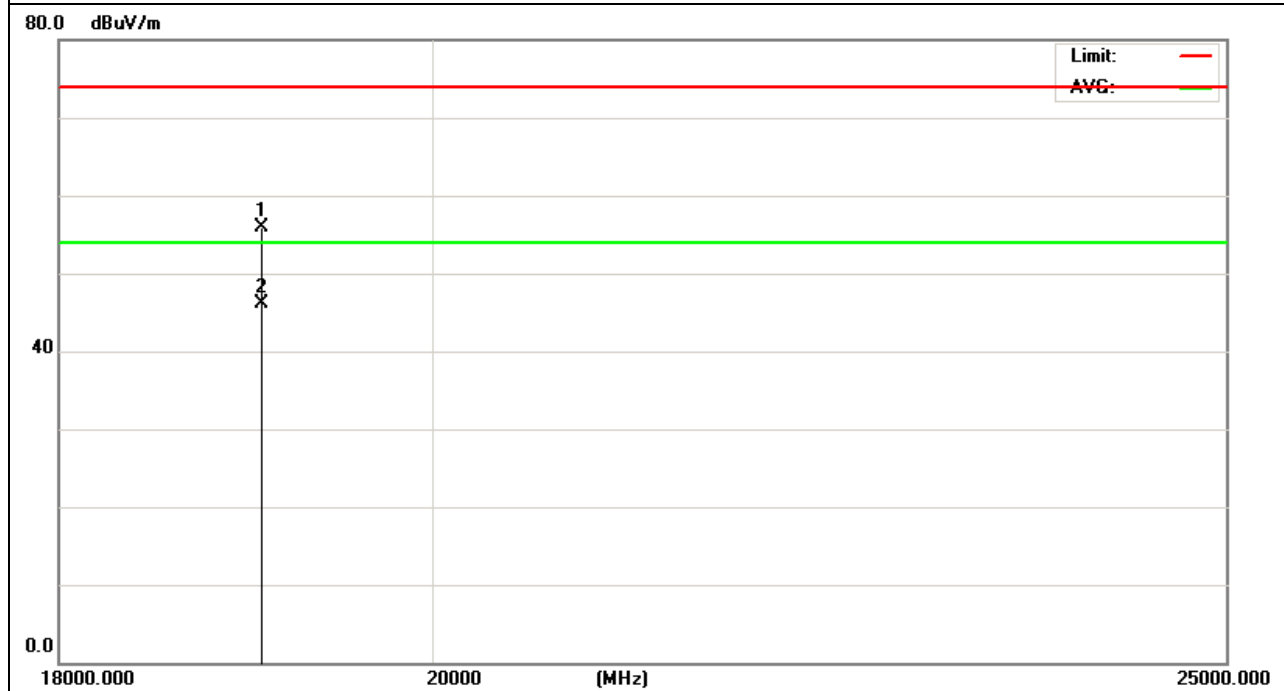


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX (worst case)	Polarization :	Horizontal
Measurement Distance	3 m	Frenqucy Range	18GHz to 25GHz
Test Power :	DC3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
19058.000	39.41	16.42	55.83	74.00	-18.17	
19058.000	29.63	16.42	46.05	54.00	-7.95	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

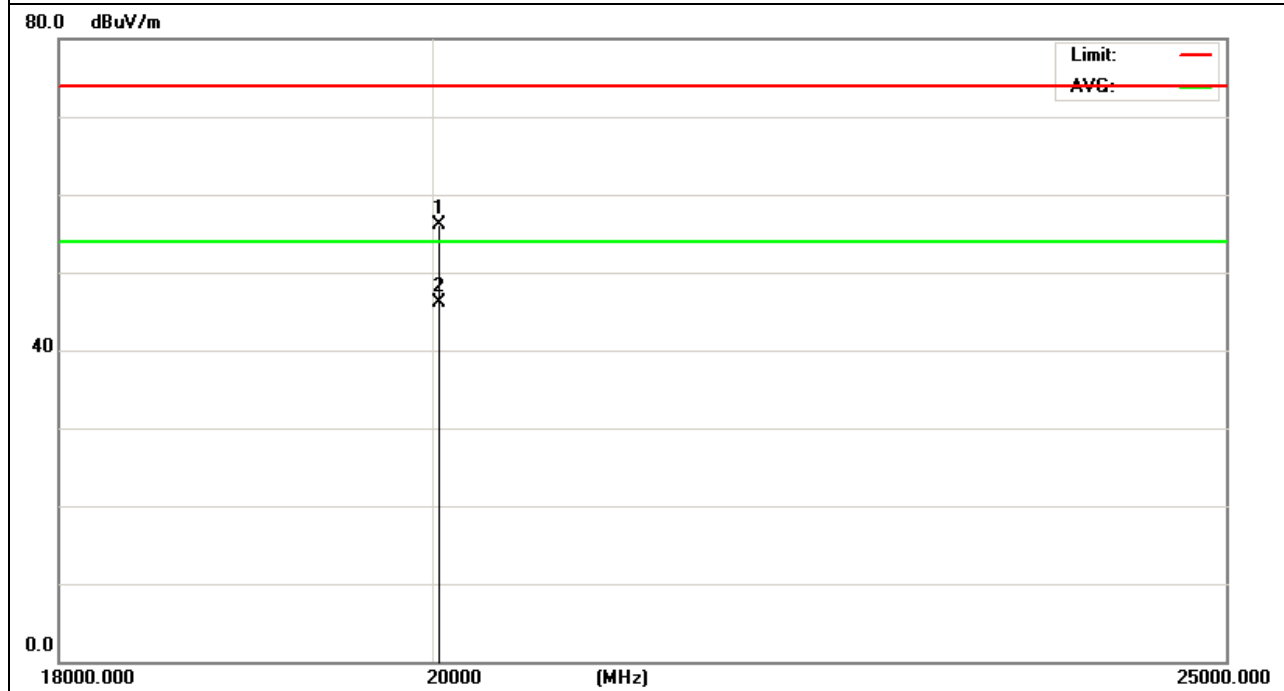


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-04-04
Test Mode :	RX (worst case)	Polarization :	Vertical
Measurement Distance	3 m	Frenqucy Range	18GHz to 25GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
20036.000	39.41	16.61	56.02	74.00	-17.98	peak
20036.000	29.47	16.61	46.08	54.00	-7.92	AVG

Remark:

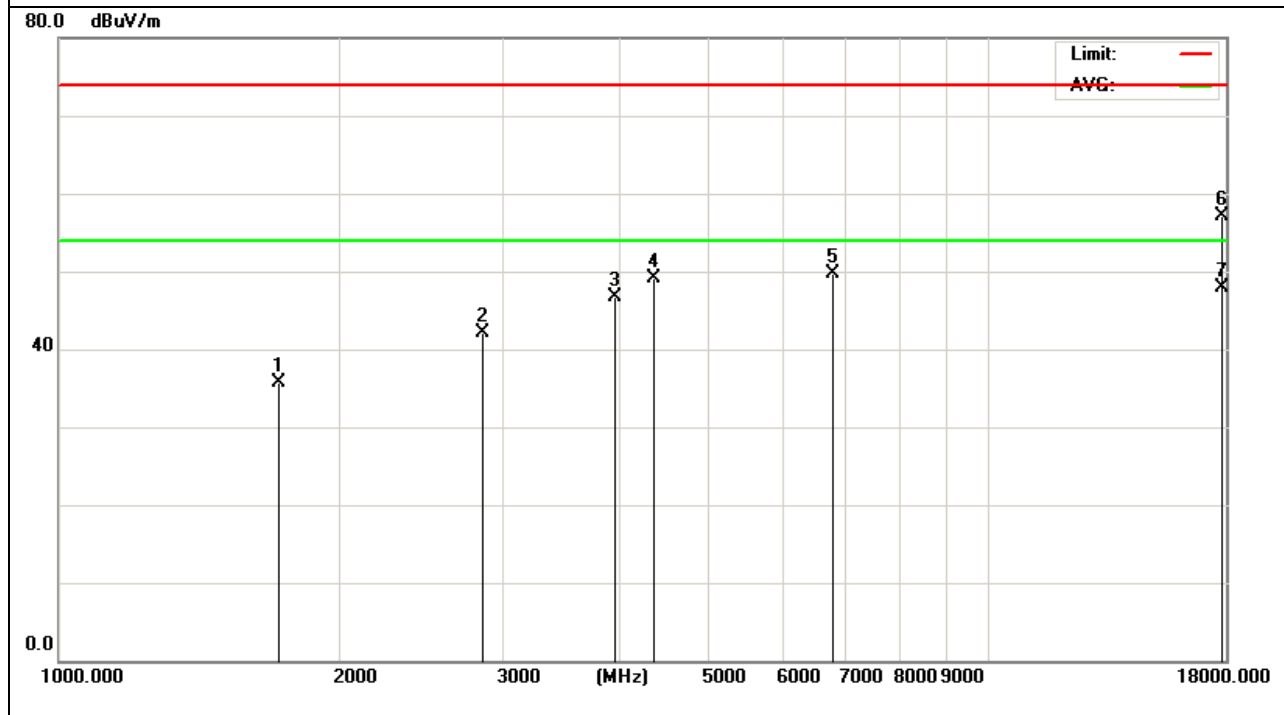
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-06-02
Test Mode :	Mode 5	Polarization :	Horizontal
Measurement Distance	3 m	Frenqucy Range	1GHz to 18GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1726.660	45.32	-9.55	35.77	74.00	-38.23	peak
2850.225	44.66	-2.61	42.05	74.00	-31.95	peak
3953.320	43.23	3.50	46.73	74.00	-27.27	peak
4365.595	44.55	4.46	49.01	74.00	-24.99	peak
6780.211	43.68	6.04	49.72	74.00	-24.28	peak
17755.088	32.18	24.85	57.03	74.00	-16.97	peak
17755.088	22.96	24.85	47.81	54.00	-6.19	AVG

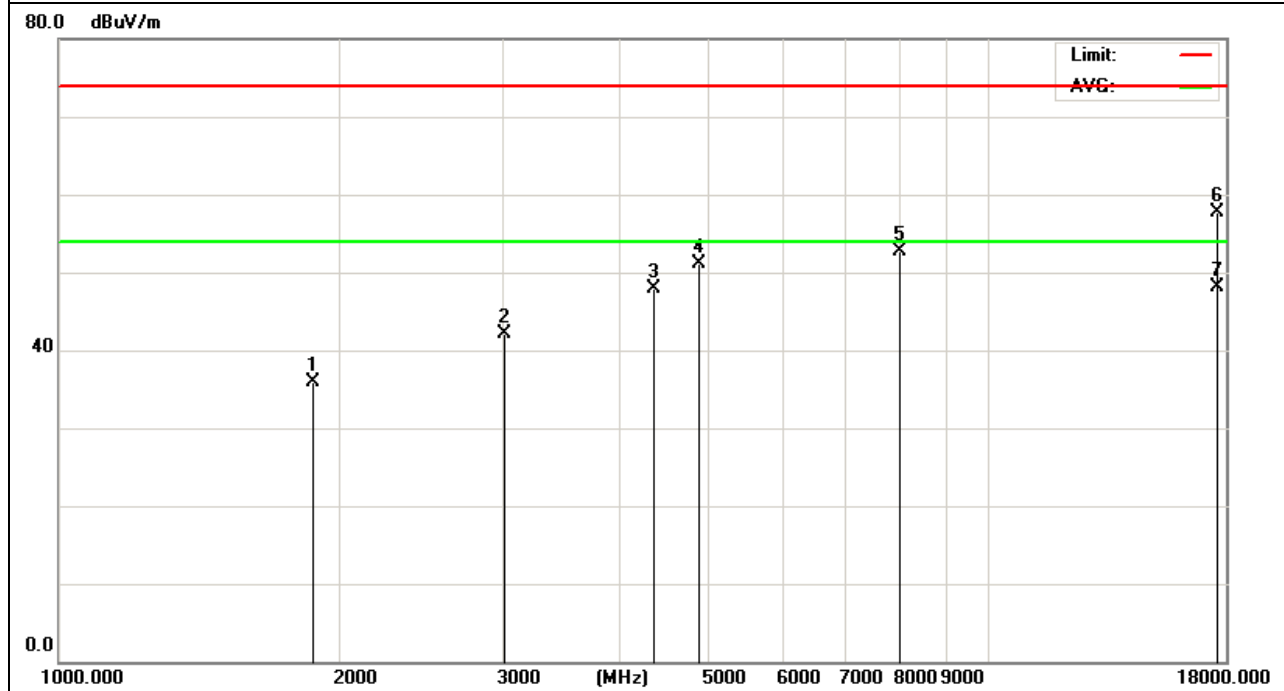
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-06-02
Test Mode :	Mode 5	Polarization :	Vertical
Measurement Distance	3 m	Frenqucy Range	1GHz to 18GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1877.498	45.38	-9.48	35.90	74.00	-38.10	peak
3013.420	43.84	-1.65	42.19	74.00	-31.81	peak
4355.257	43.48	4.45	47.93	74.00	-26.07	peak
4884.123	45.88	5.14	51.02	74.00	-22.98	peak
8024.882	42.39	10.41	52.80	74.00	-21.20	peak
17554.535	32.64	24.99	57.63	74.00	-16.37	peak
17554.535	23.02	24.99	48.01	54.00	-5.99	AVG

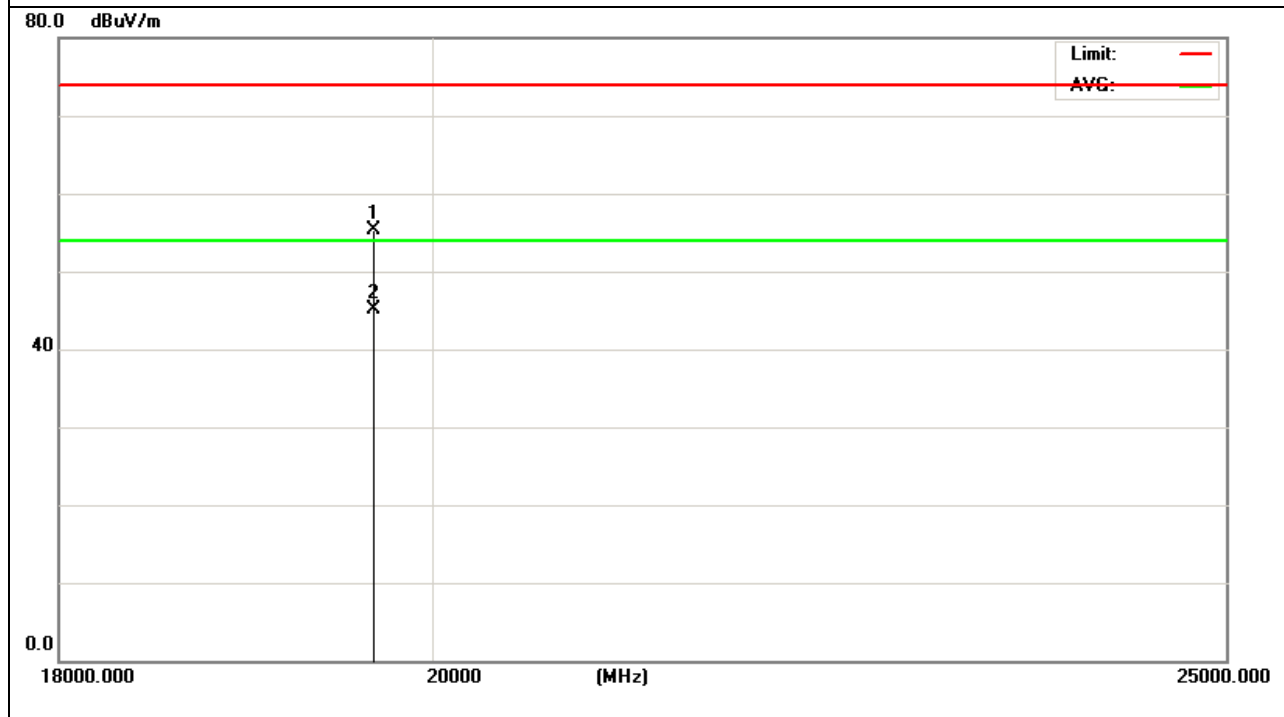
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-06-02
Test Mode :	Mode 5	Polarization :	Horizontal
Measurement Distance	3 m	Frequency Range	18GHz to 25GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
19653.00	38.85	16.53	55.38	74.00	-18.62	peak
19653.00	28.73	16.53	45.26	54.00	-8.74	AVG

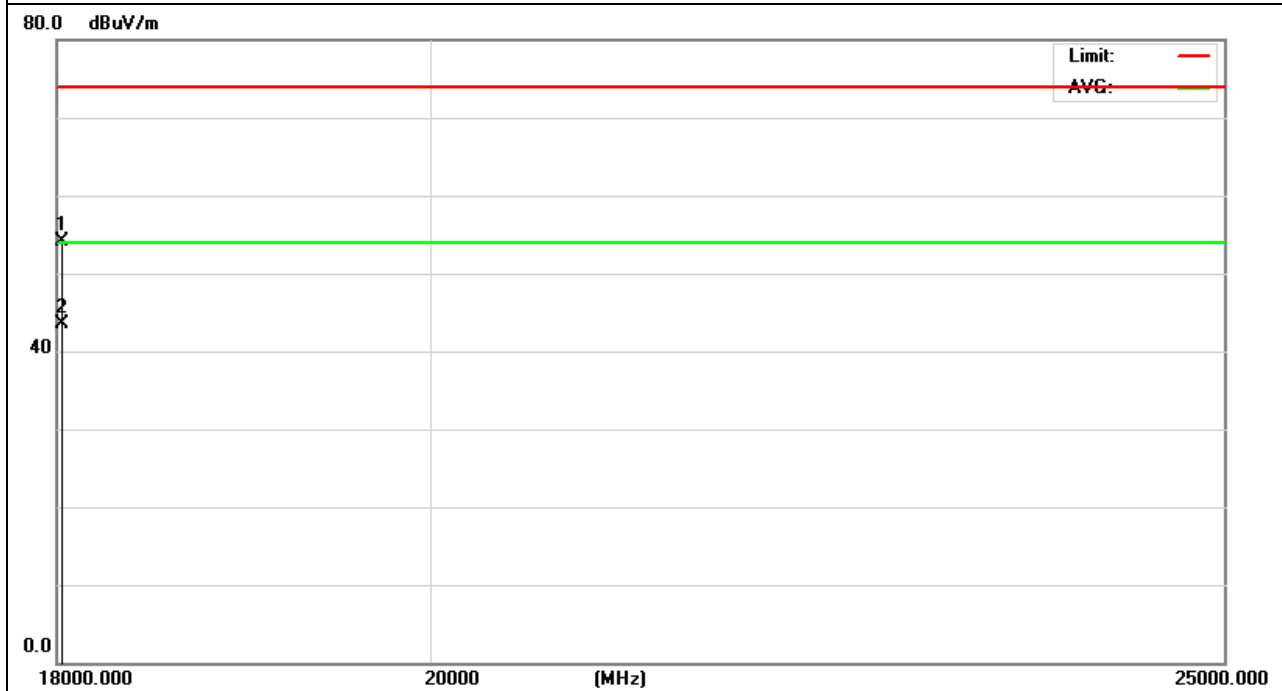
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-06-02
Test Mode :	Mode 5	Polarization :	Vertical
Measurement Distance	3 m	Frenqucy Range	18GHz to 25GHz
Test Power :	DC3.7V from battery		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
18033.00	38.73	15.40	54.13	74.00	-19.87	peak
18033.00	28.04	15.40	43.44	54.00	-10.56	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



Remark:

All the modes had been tested, but only the worst data recorded in the report.

No any other emissions detected which are tested to compliance with the limit. No recording in the test report.

Test result: The unit does meet the NCC requirements.

4.2.8 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

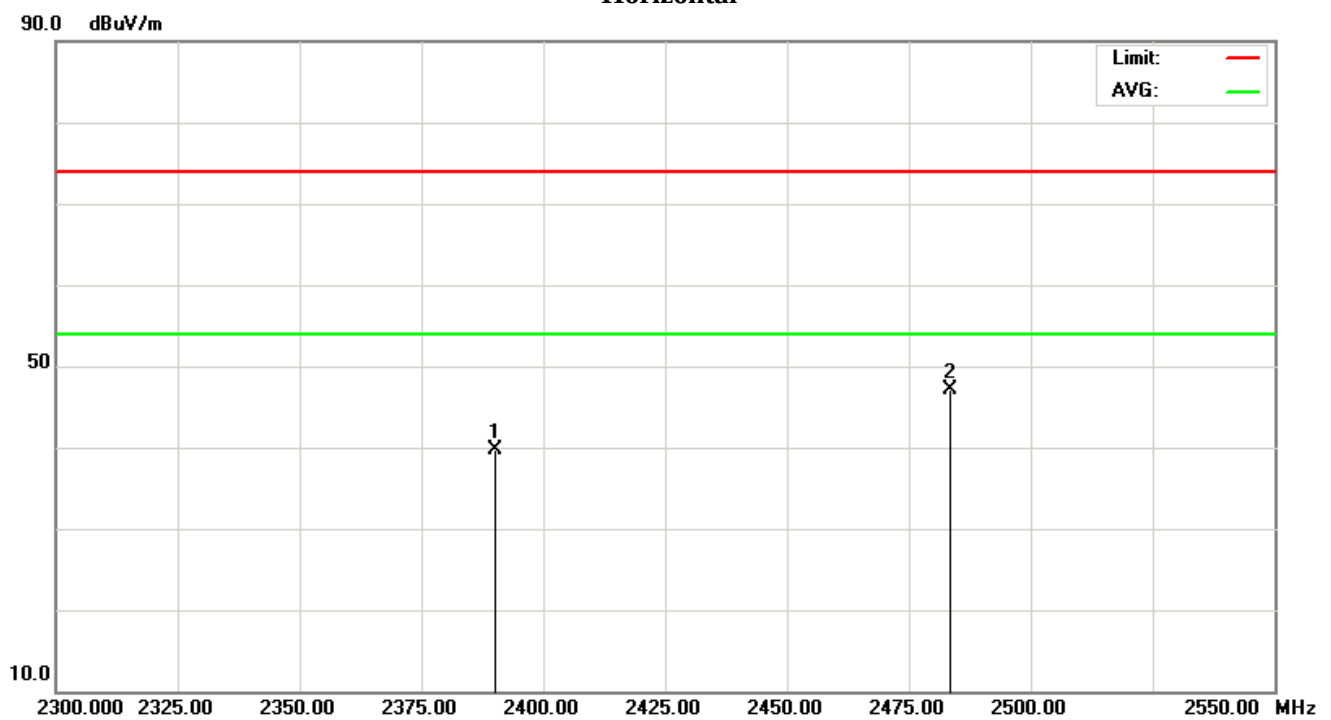
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	TX 2402MHz/2480MHz (1Mbps)		
Test Date :	2021-04-04		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit		Note
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)	
2390.00	H	45.28	--	-5.79	39.49	--	74.00	54.00	CH00
2390.00	V	48.01	--	-5.79	42.22	--	74.00	54.00	CH00
2483.50	H	52.26	--	-4.98	47.28	--	74.00	54.00	CH78
2483.50	V	52.39	--	-4.98	47.41	--	74.00	54.00	CH78

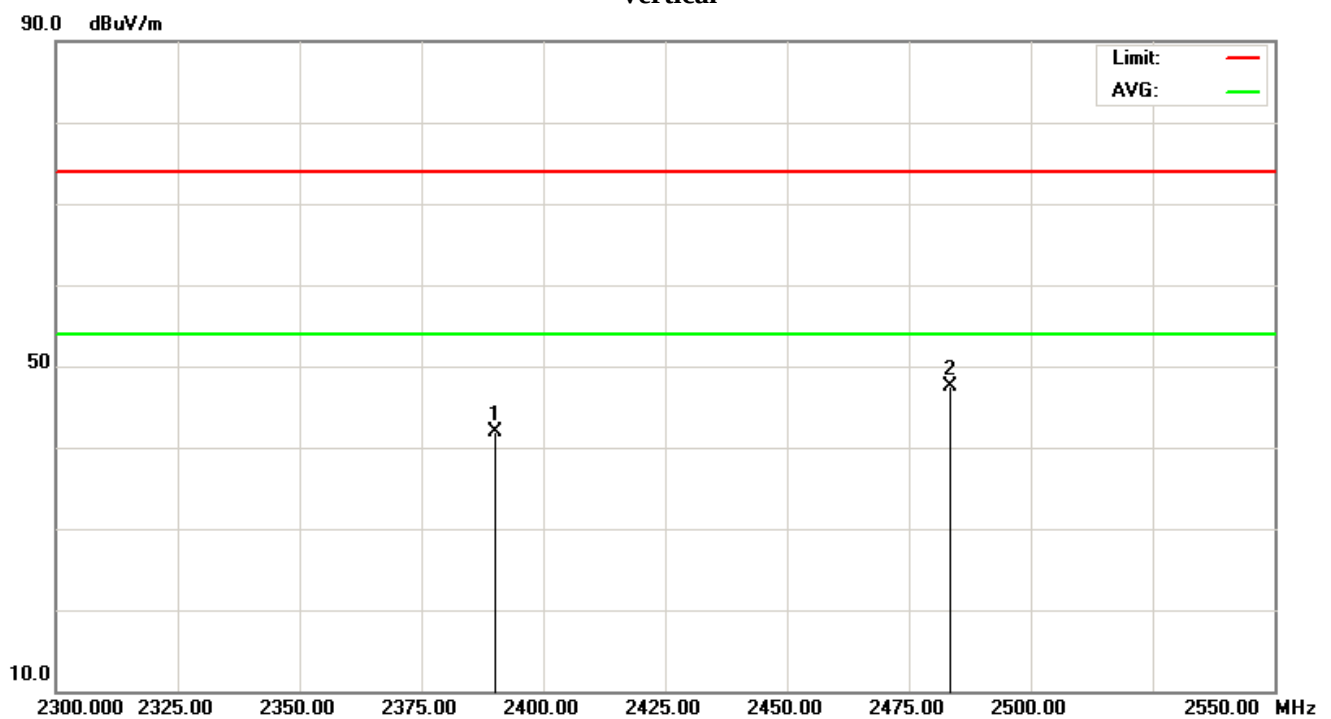
Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (4) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal



Vertical



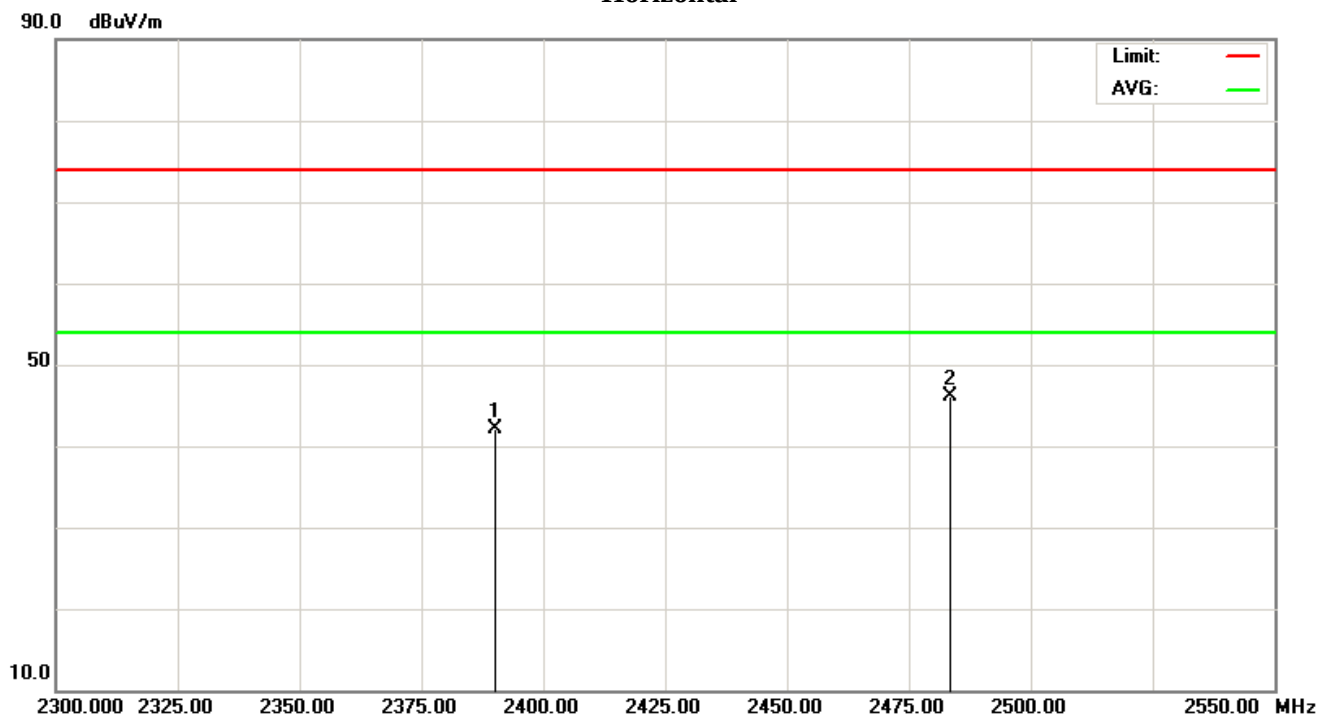
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	24°C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	TX 2402MHz/2480MHz (3Mbps)		
Test Date :	2021-04-04		
Note :	1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant/CF CF(dB)	Act		Limit		Note
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)	
2390.00	H	46.98	--	-5.79	41.19	--	74.00	54.00	CH00
2390.00	V	47.35	--	-5.79	41.56	--	74.00	54.00	CH00
2483.50	H	51.29	--	-4.98	46.31	--	74.00	54.00	CH78
2483.50	V	50.13	--	-4.98	45.15	--	74.00	54.00	CH78

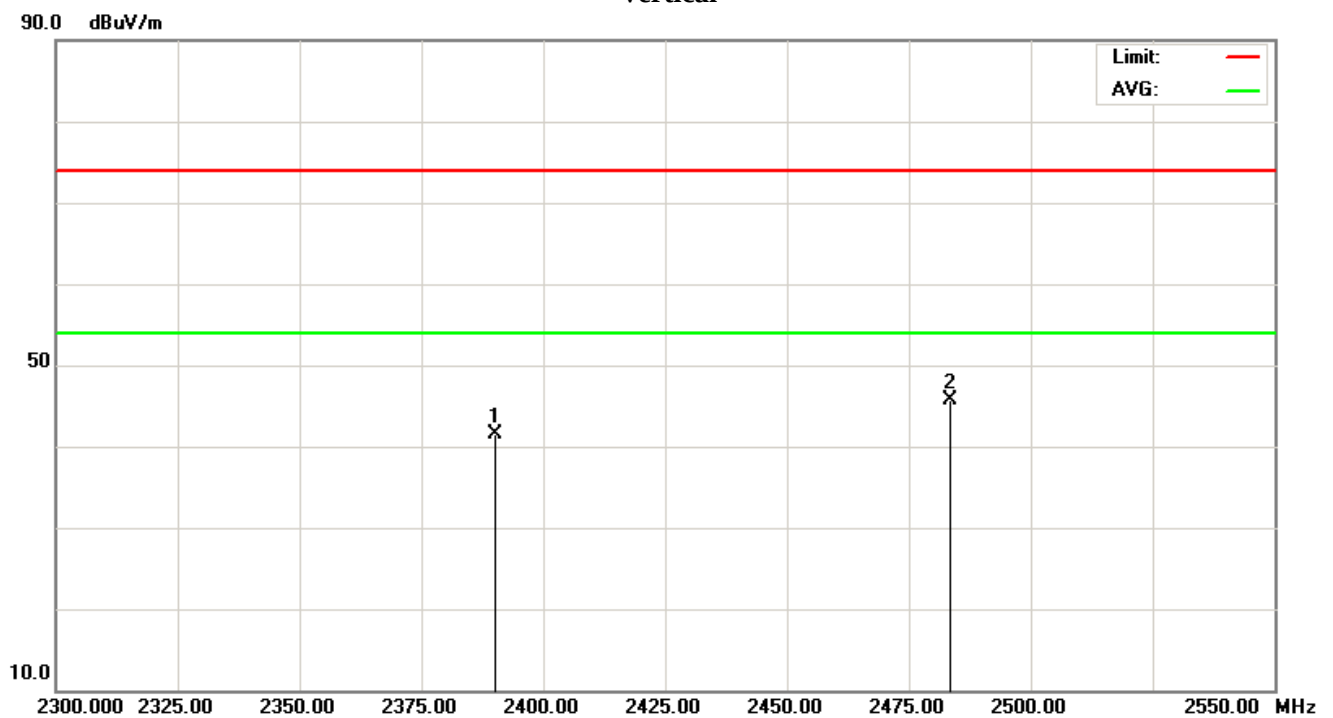
Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (4) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal



Vertical



Test result: The unit does meet the NCC requirements.

5. OCCUPIED BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(6.1.1)	Bandwidth	N/A	2402-2480	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth)
VB	100 kHz (20dB Bandwidth)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto, Span=3MHz.

5.1.2 TEST SETUP



5.1.3 EUT OPERATION CONDITIONS

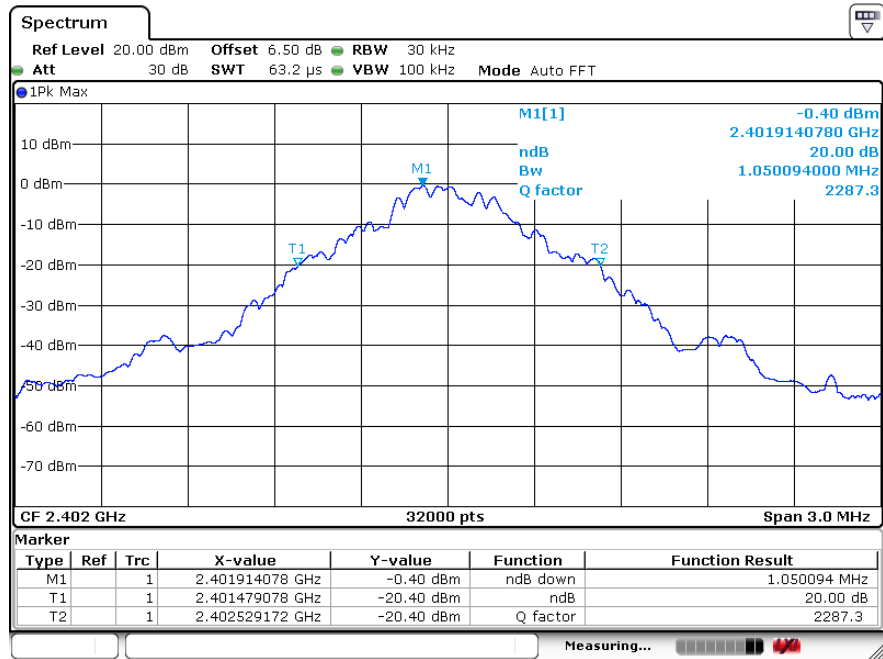
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.4 TEST RESULTS

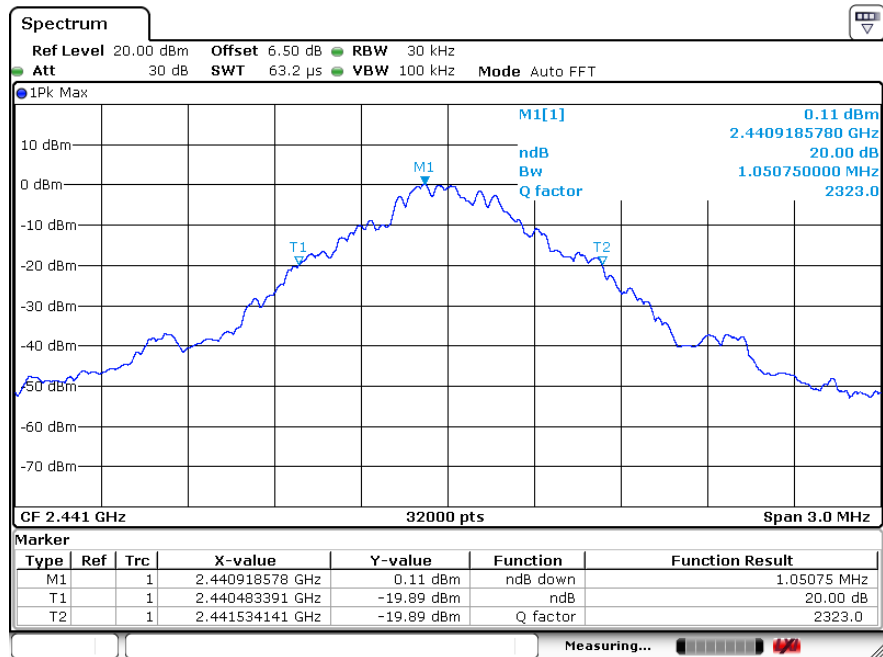
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (1Mbps Mode)		
Test Date :	2021-04-04		

Frequency	20dB Bandwidth (kHz)	Result
2402 MHz	1050.094	Pass
2441 MHz	1050.750	Pass
2480 MHz	1049.625	Pass

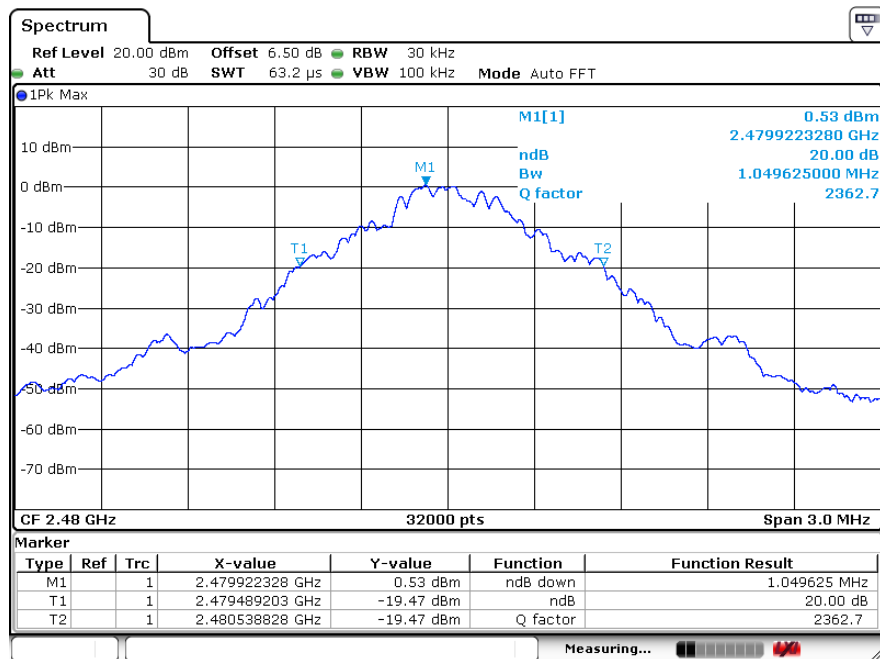
CH00-1Mbps



CH 39-1Mbps



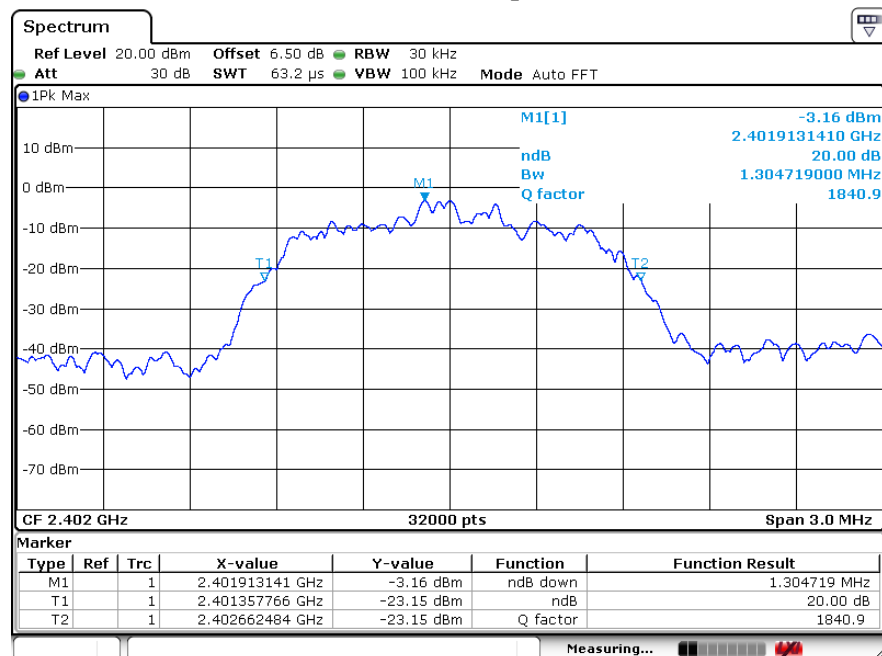
CH 78-1Mbps



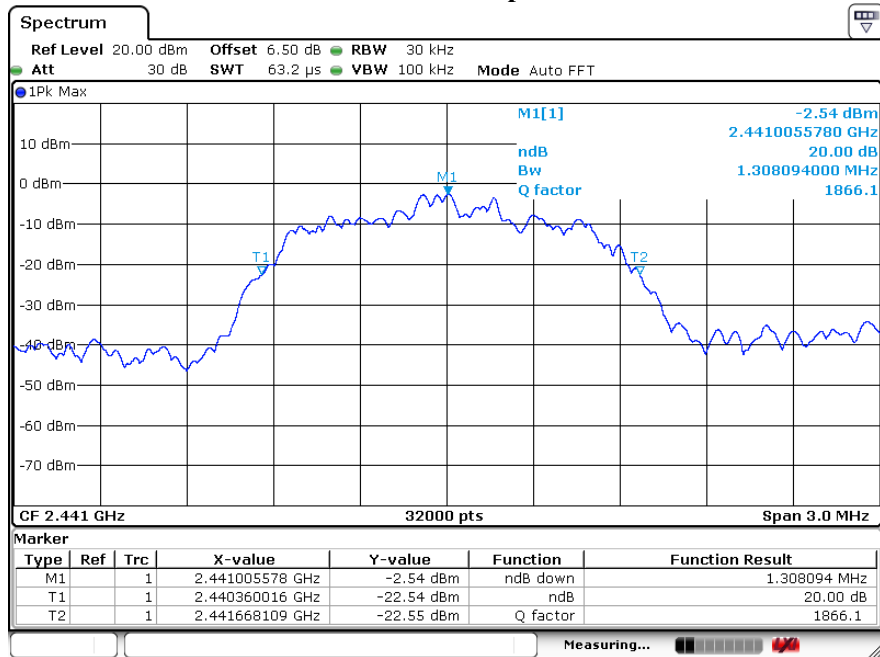
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (3Mbps Mode)		
Test Date :	2021-04-04		

Frequency	20dB Bandwidth (kHz)	Result
2402 MHz	1304.719	Pass
2441 MHz	1308.094	Pass
2480 MHz	1308.281	Pass

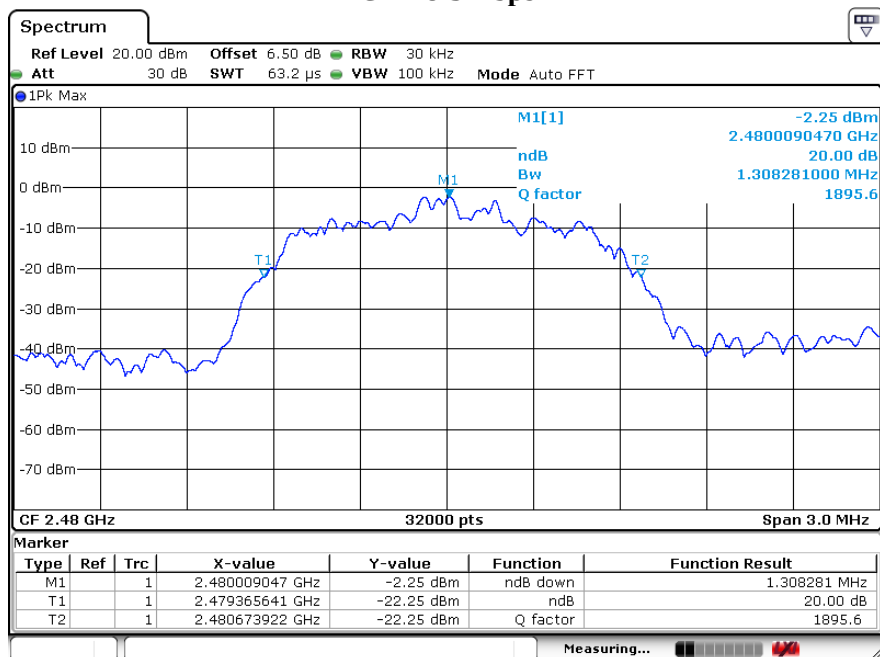
CH 00-3Mbps



CH 39-3Mbps



CH 78-3Mbps



6. NUMBER OF HOPPING CHANNEL

6.1 APPLIED PROCEDURES / LIMIT

LP0002			
Section	Test Item	Frequency Range (MHz)	Result
3.10.1(6.1.1)	Number of Hopping Channel	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	Operating Frequency Range
RB	less than 30% Ch. Separation or the 20 dB bandwidth, whichever is smaller
VB	$VBW \geq RBW$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100 kHz, VBW=300 kHz, Sweep time = Auto, Span= Operating Frequency Range.

6.1.2 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 1 MHz, VBW=1 MHz, Sweep time = Auto.

6.1.3 TEST SETUP



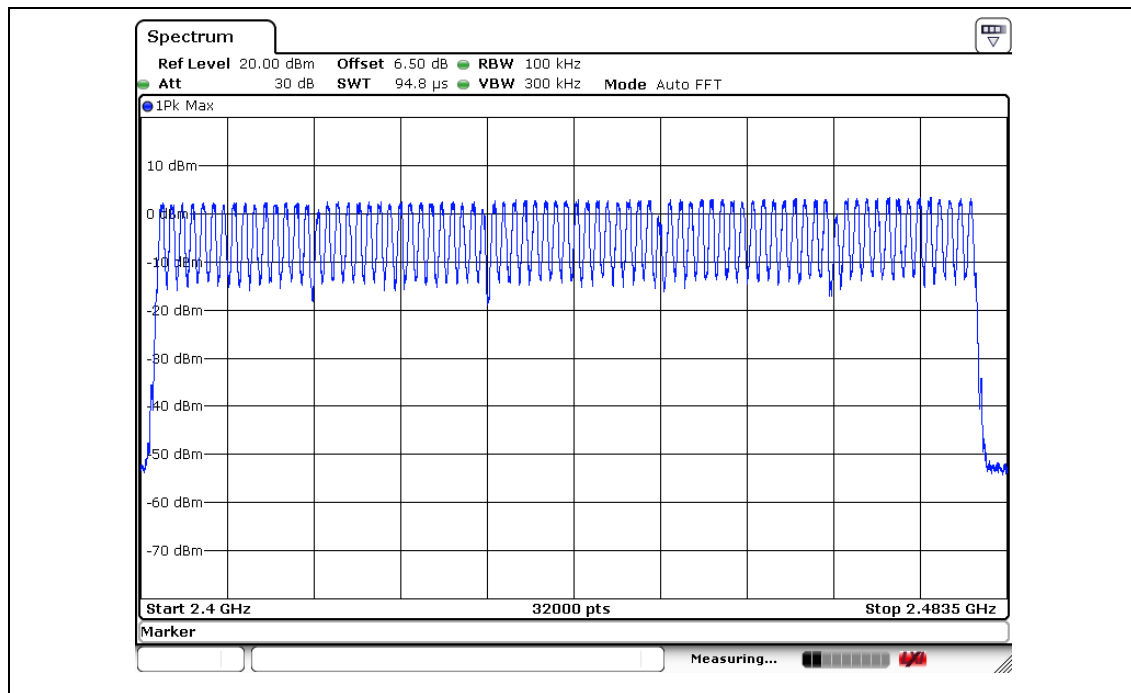
6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

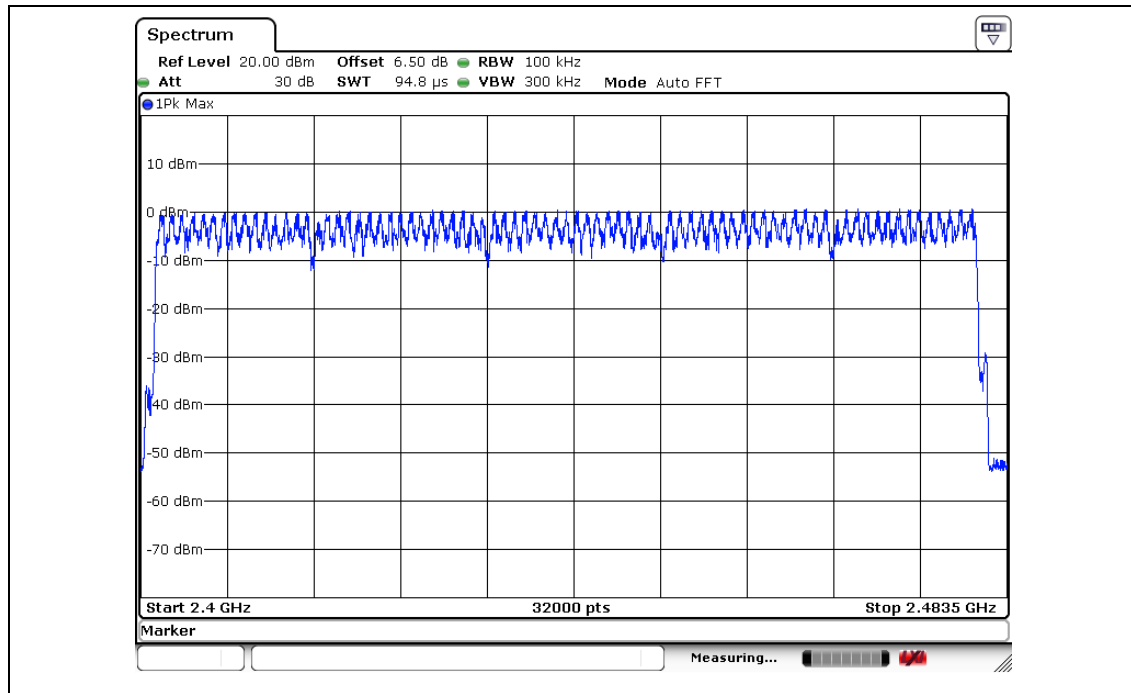
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	Hopping Mode –1Mbps mode		
Test Date :	2021-04-04		

Number of Hopping Channel	79
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EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	Hopping Mode –3Mbps mode		
Test Date :	2021-04-04		

Number of Hopping Channel	79
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7. AVERAGE TIME OF OCCUPANCY

7.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
4.10.1.6(1)(A)(a)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

7.1.1 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $3.37 \times 31.6 = 106.6$ within 31.6 seconds.
- j. DH3 Packet permit maximum $1600 / 79 / 4 = 5.06$ hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
- k. DH1 Packet permit maximum $1600 / 79 / 2 = 10.12$ hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds.

7.1.2 TEST SETUP



7.1.3 EUT OPERATION CONDITIONS

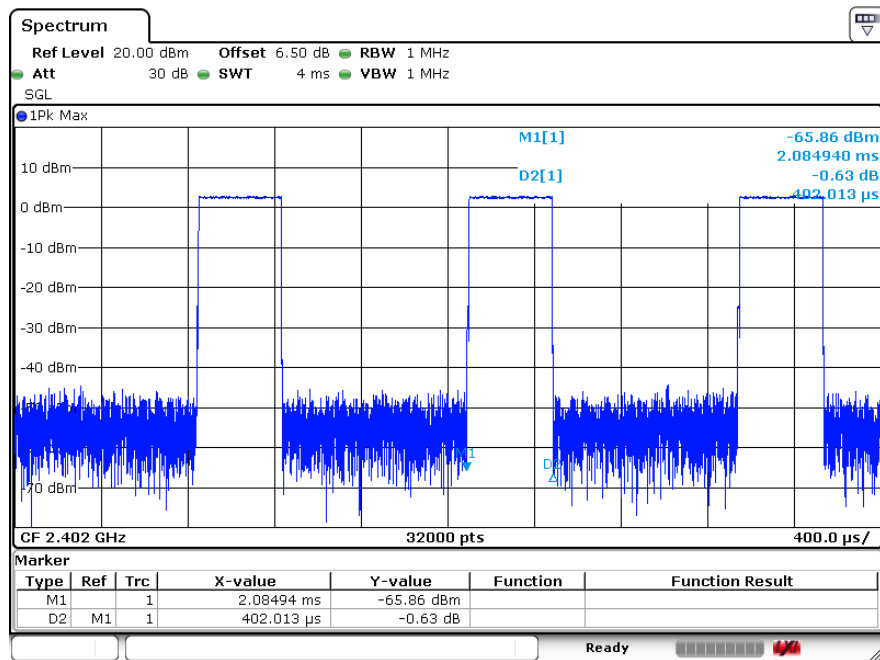
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.4 TEST RESULTS

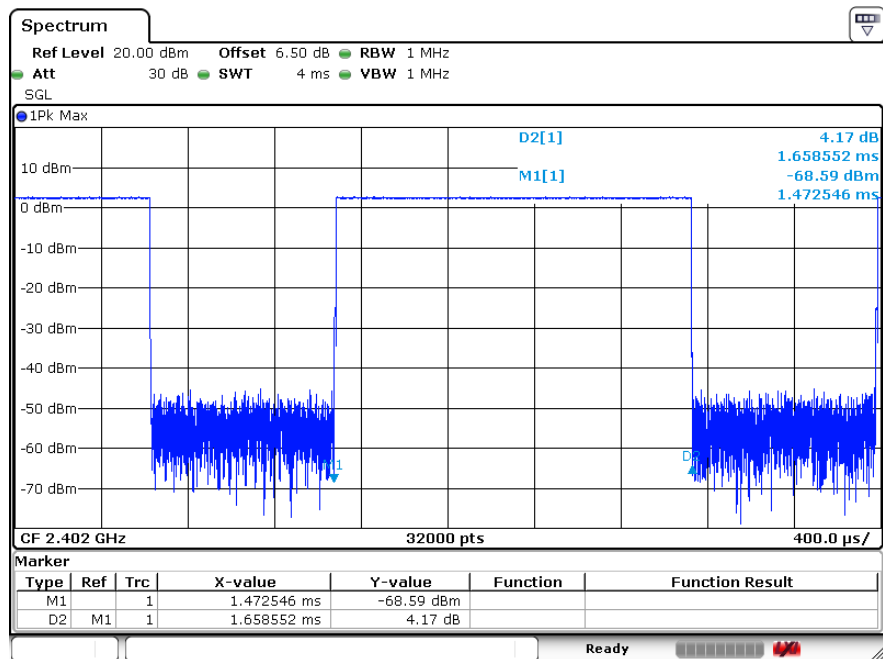
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00-DH1/DH3/DH5 (1Mbps Mode)		
Test Date :	2021-04-04		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH1	2402 MHz	0.402	0.1286	0.4000
DH3	2402 MHz	1.659	0.2654	0.4000
DH5	2402 MHz	2.909	0.3103	0.4000

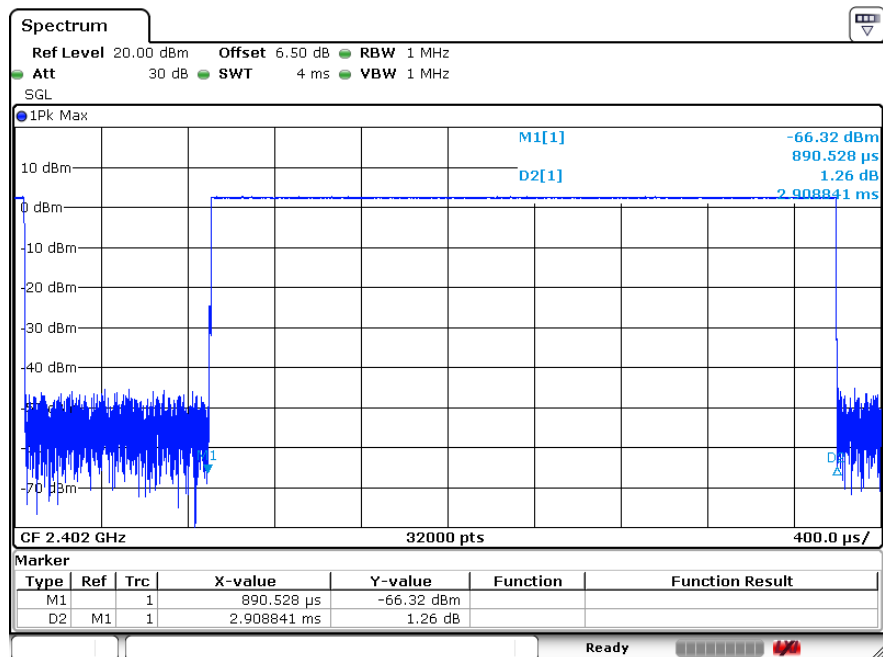
CH 00- DH1



CH 00- DH3



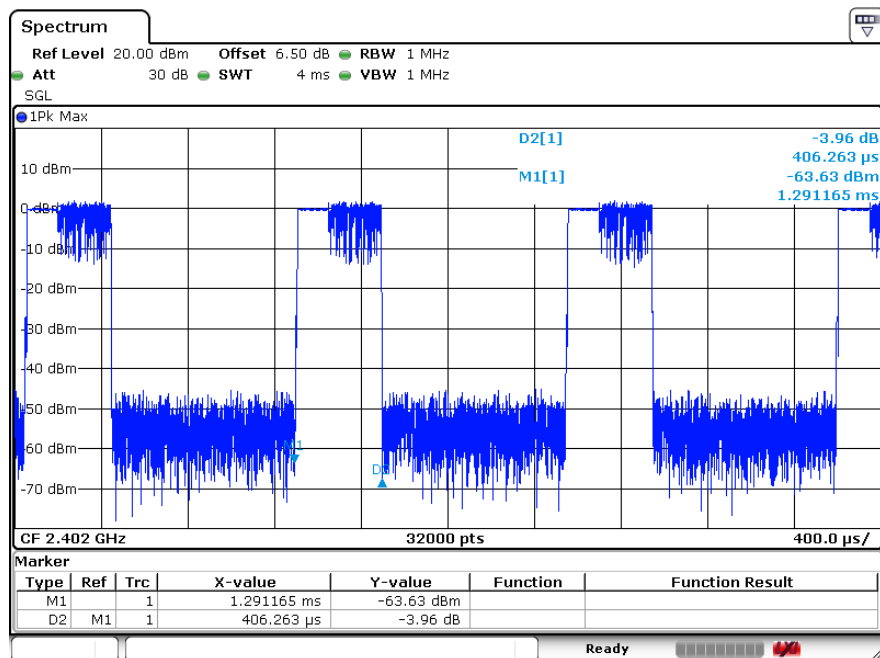
CH 00- DH5



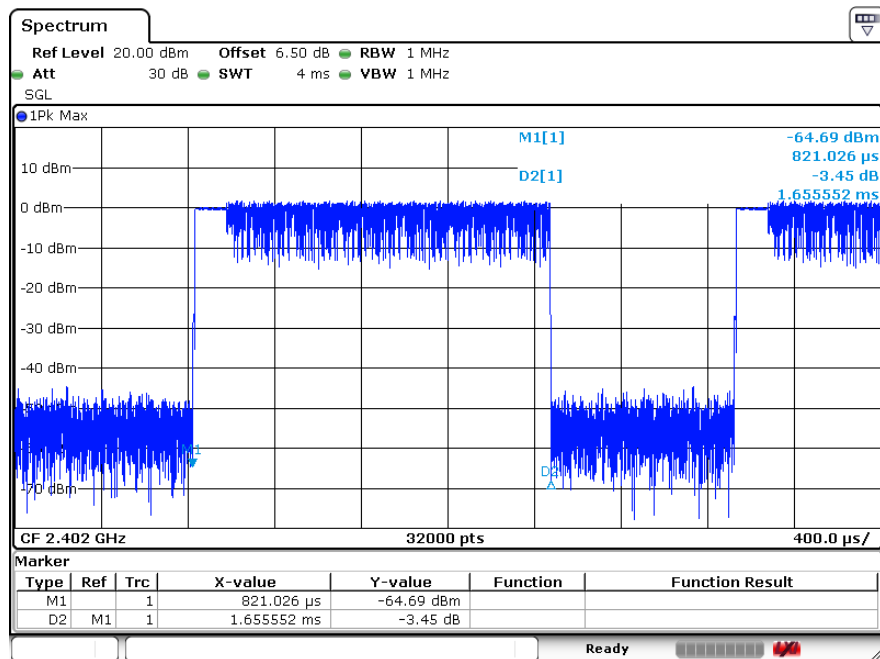
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00-DH1/DH3/DH5 (3Mbps Mode)		
Test Date :	2021-04-04		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
3DH1	2402 MHz	0.406	0.1299	0.4000
3DH3	2402 MHz	1.656	0.2650	0.4000
3DH5	2402 MHz	2.912	0.3106	0.4000

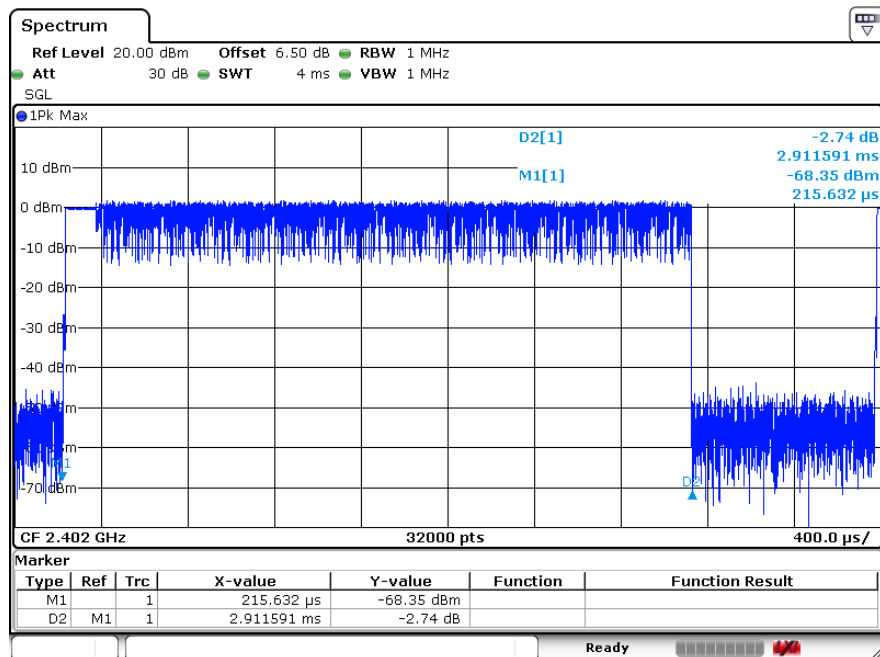
CH 00- 3DH1



CH 00- 3DH3



CH 00- 3DH5



8. HOPPING CHANNEL SEPARATION MEASUREMENT

8.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

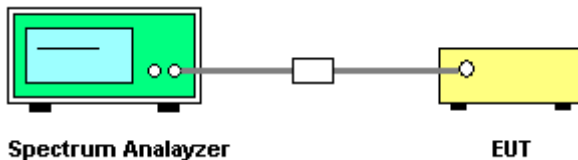
- The transmitter work in TX (Hopping on) modes output (antenna port) was connected to the spectrum analyser in peak hold mode.
- Spectrum Setting:.

Spectrum Parameter	Setting
Span Frequency	3MHz
RB	30 kHz (Channel Separation)
VB	100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

8.1.1 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

8.1.2 TEST SETUP



8.1.3 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

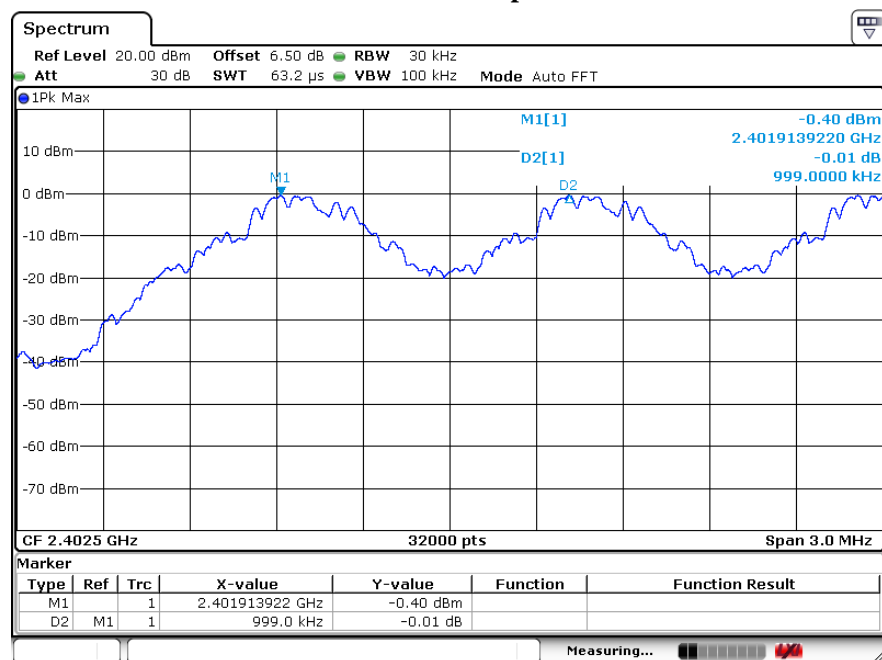
8.1.4 TEST RESULTS

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (1Mbps Mode)		
Test Date :	2021-04-04		

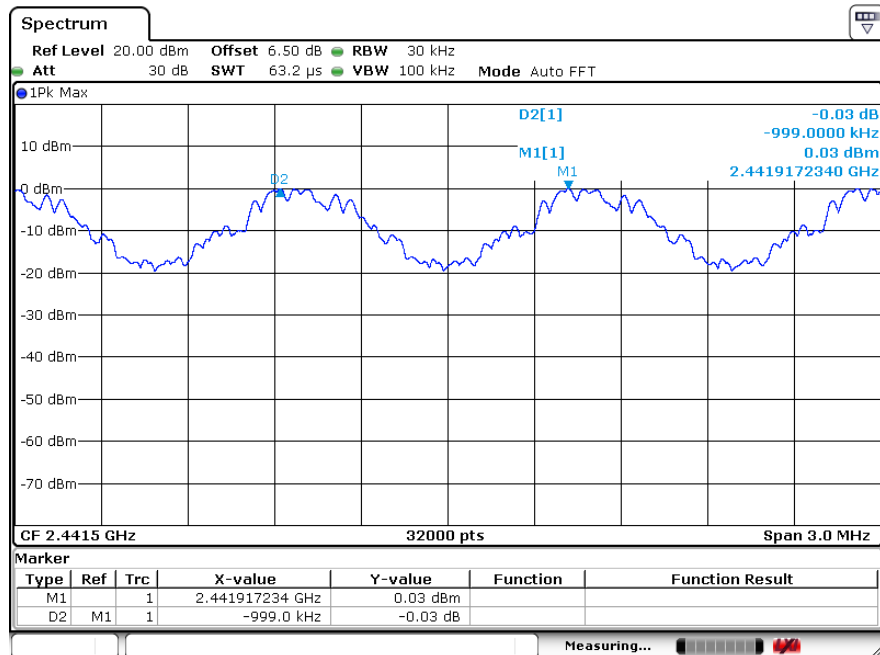
Frequency	Ch. Separation (KHz)	Limit 2/3(20dB bandwidth) (kHz)	Result
2402 MHz	999.0	700.063	PASS
2441 MHz	999.0	700.500	PASS
2480 MHz	999.0	699.750	PASS

Ch. Separation >2/3(20dB bandwidth)

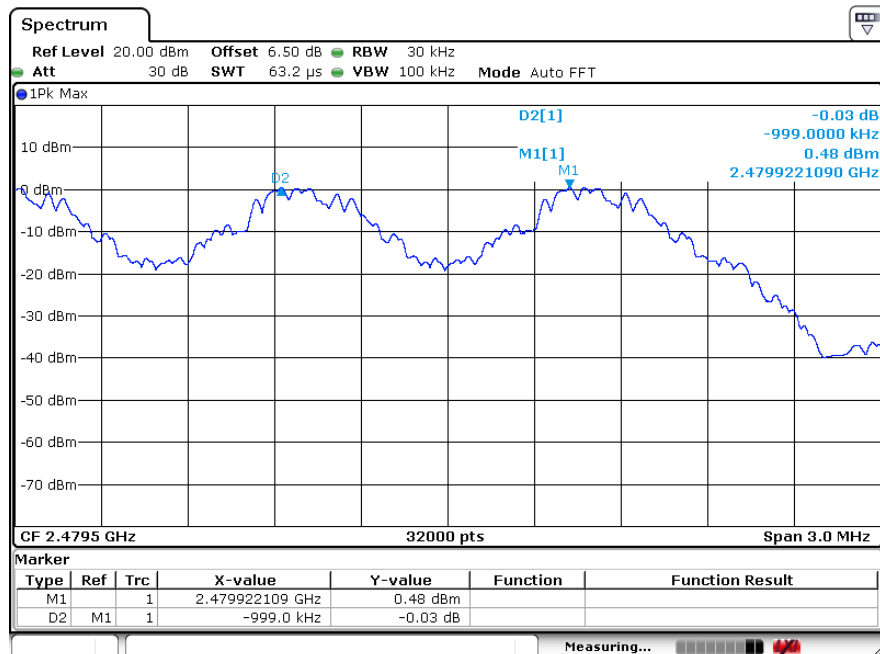
CH 00-1Mbps



CH 39-1Mbps



CH 78-1Mbps

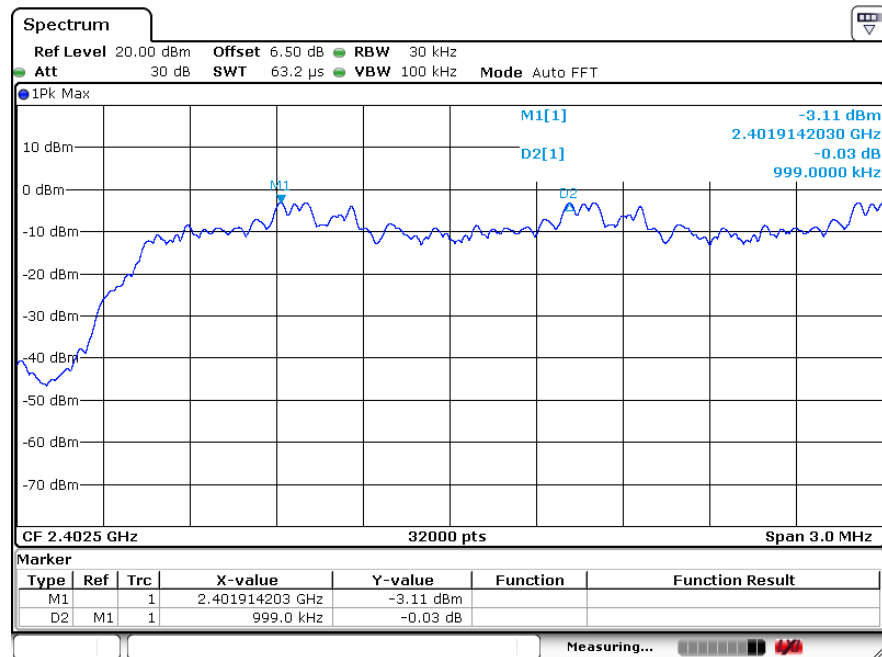


EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (3Mbps Mode)		
Test Date :	2021-04-04		

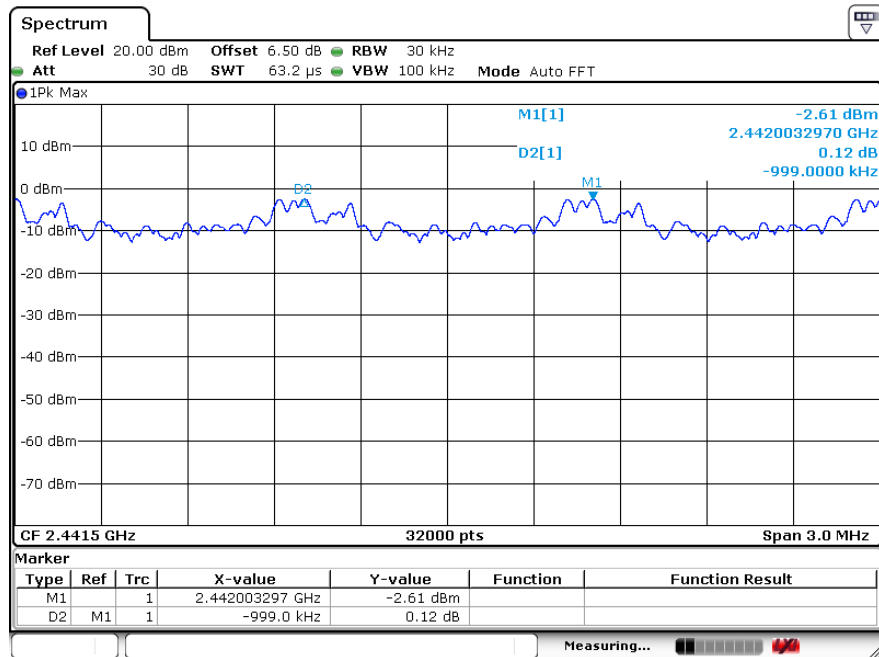
Frequency	Ch. Separation (KHz)	Limit 2/3(20dB bandwidth) (KHz)	Result
2402 MHz	999.0	869.813	PASS
2441 MHz	999.0	872.063	PASS
2480 MHz	999.0	872.188	PASS

Ch. Separation >2/3(20dB bandwidth)

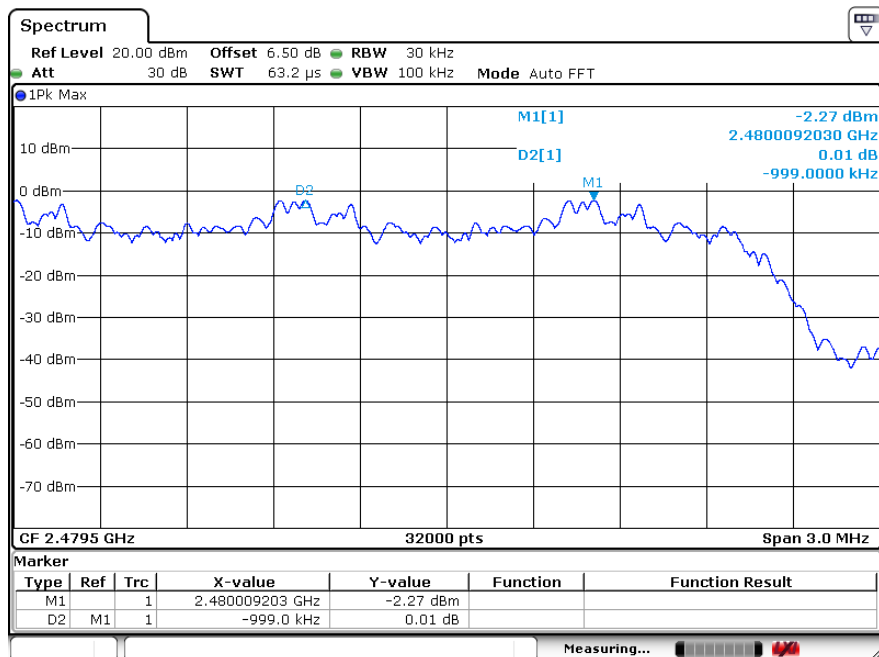
CH 00-3Mbps



CH 39-3Mbps



CH 78-3Mbps



9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
4.10.1.2	Peak Output Power	0.125 watt or 21dBm	2400-2483.5	PASS

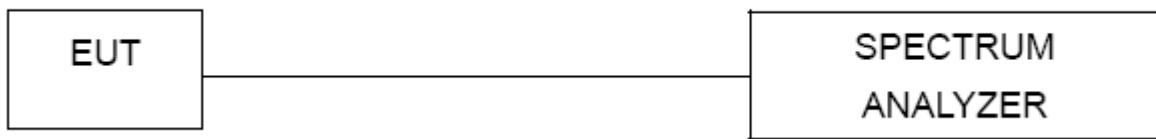
9.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting : (1Mbps)RBW= 3MHz, VBW= 10MHz, Sweep time = Auto.
(3Mbps)RBW= 3MHz, VBW= 10MHz, Sweep time = Auto.

9.1.2 DEVIATION FROM STANDARD

No deviation.

9.1.3 TEST SETUP



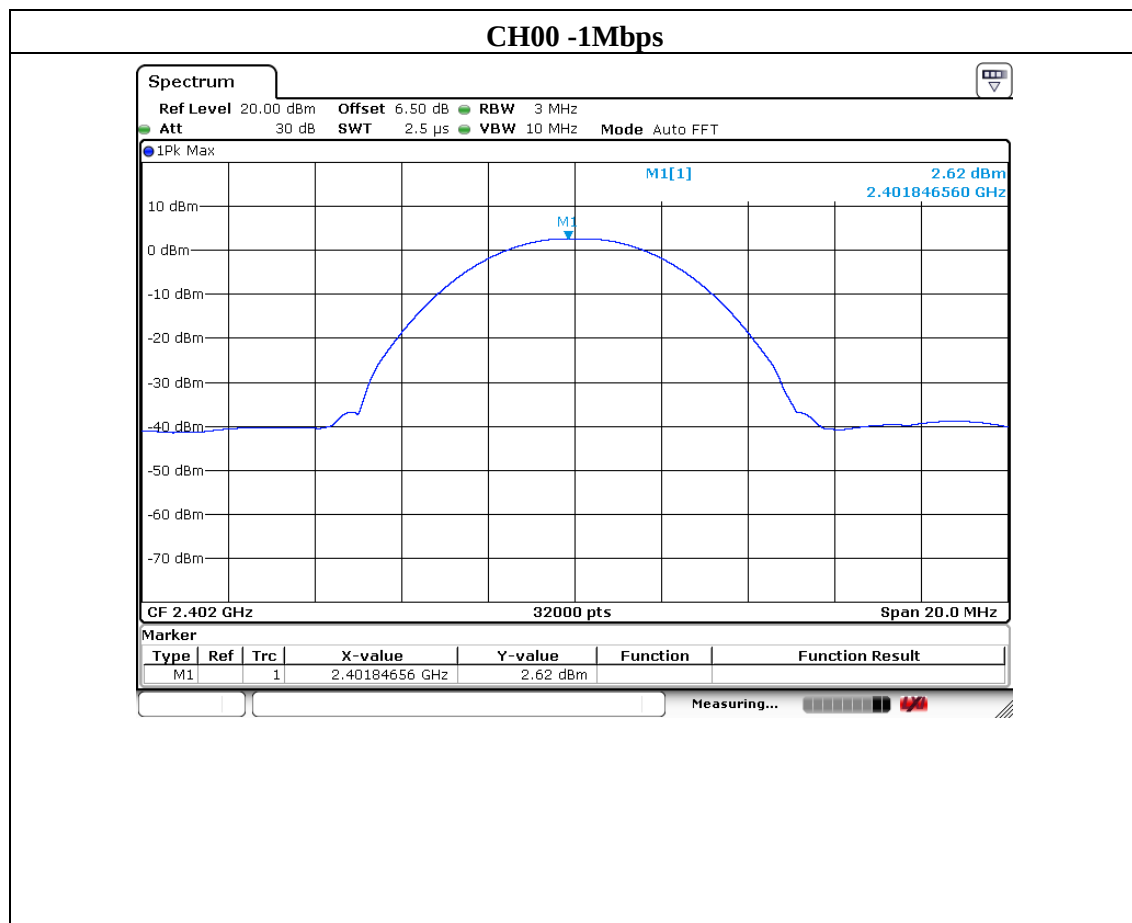
9.1.4 EUT OPERATION CONDITIONS

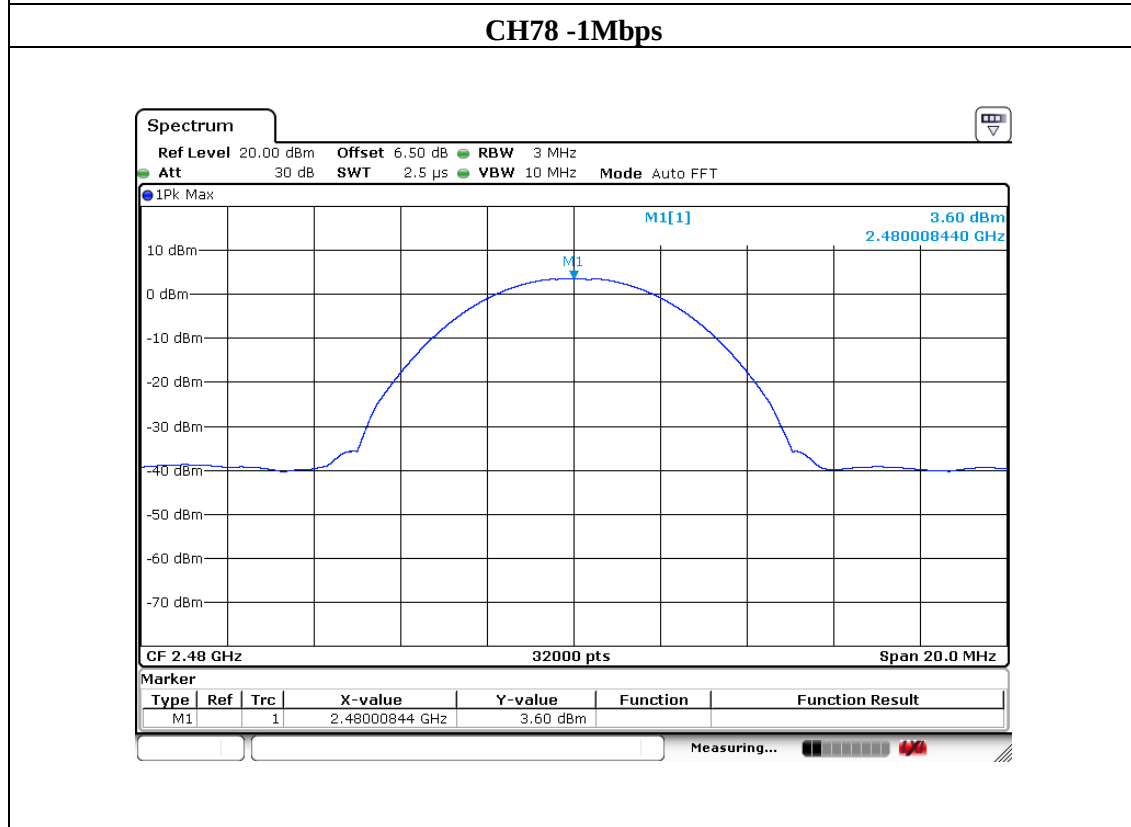
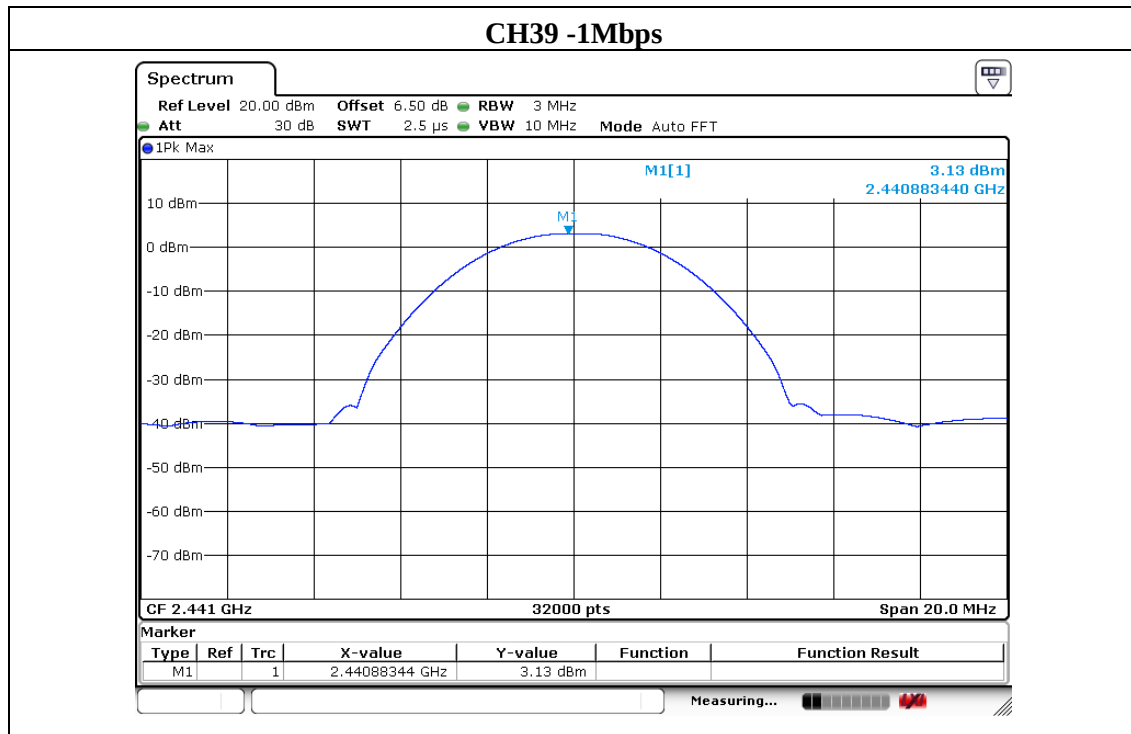
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.1.5 TEST RESULTS

EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00/ CH39 /CH78 (1Mbps Mode)		
Test Date :	2021-04-04		

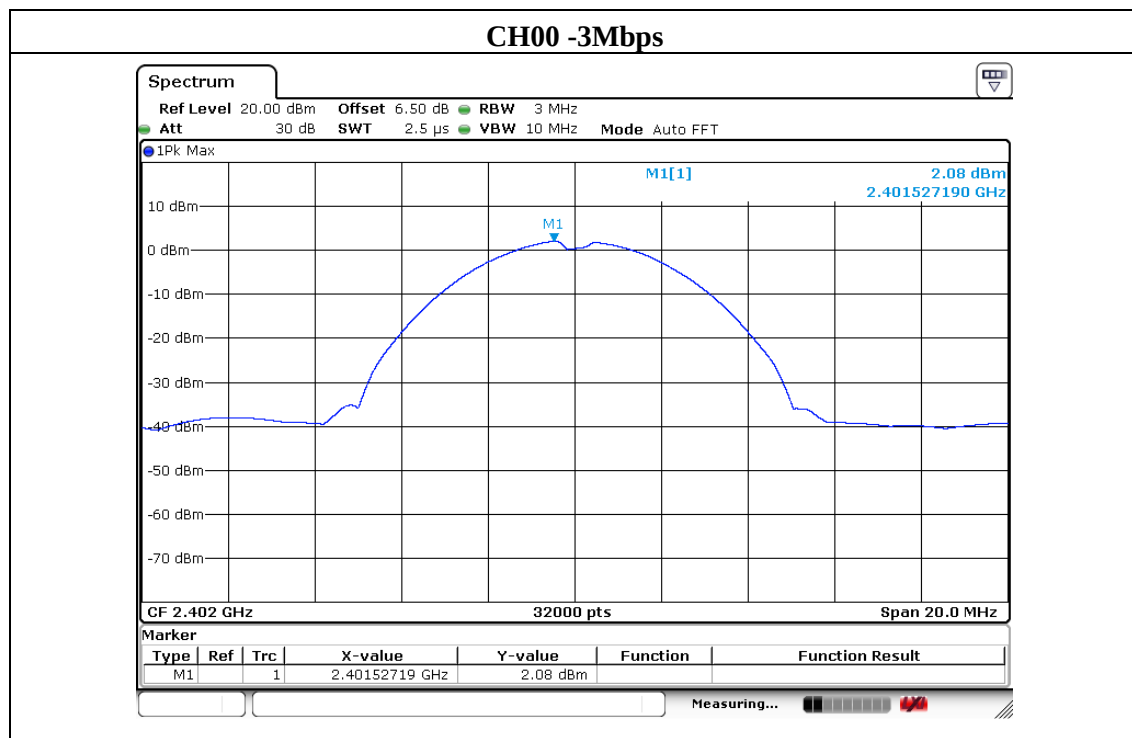
Frequency (MHz)	Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	2.62	21	0.125
2441	3.13	21	0.125
2480	3.60	21	0.125

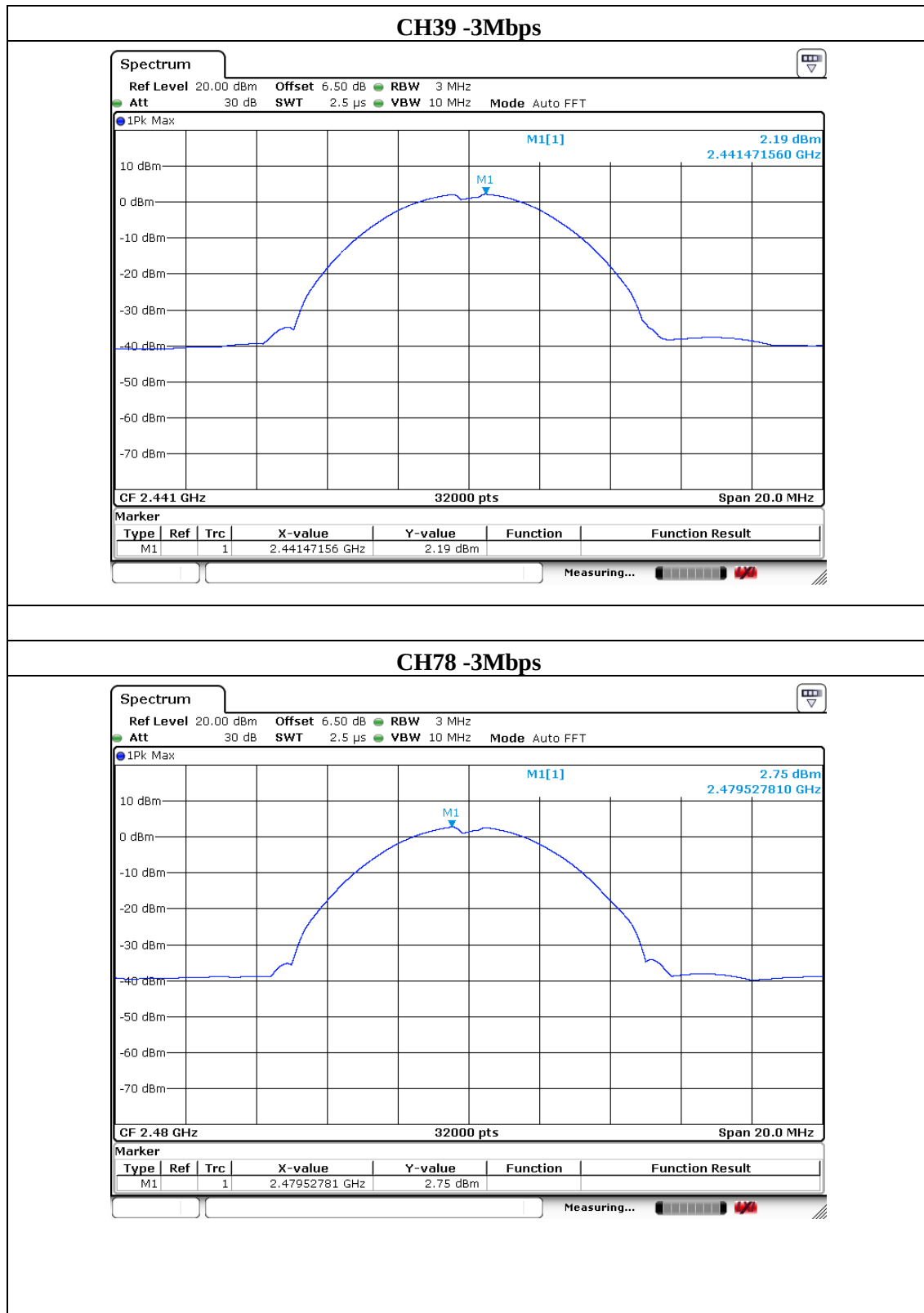




EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00/ CH39 /CH78 (3Mbps Mode)		
Test Date :	2021-04-04		

Frequency (MHz)	Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	2.08	21	0.125
2441	2.19	21	0.125
2480	2.75	21	0.125





10. ANTENNA CONDUCTED SPURIOUS EMISSION

10.1 APPLIED PROCEDURES / LIMIT

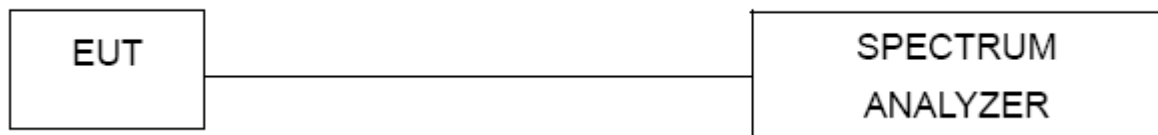
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in Section 3.6.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

10.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

10.1.2 TEST SETUP



10.1.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

10.1.4 TEST RESULTS

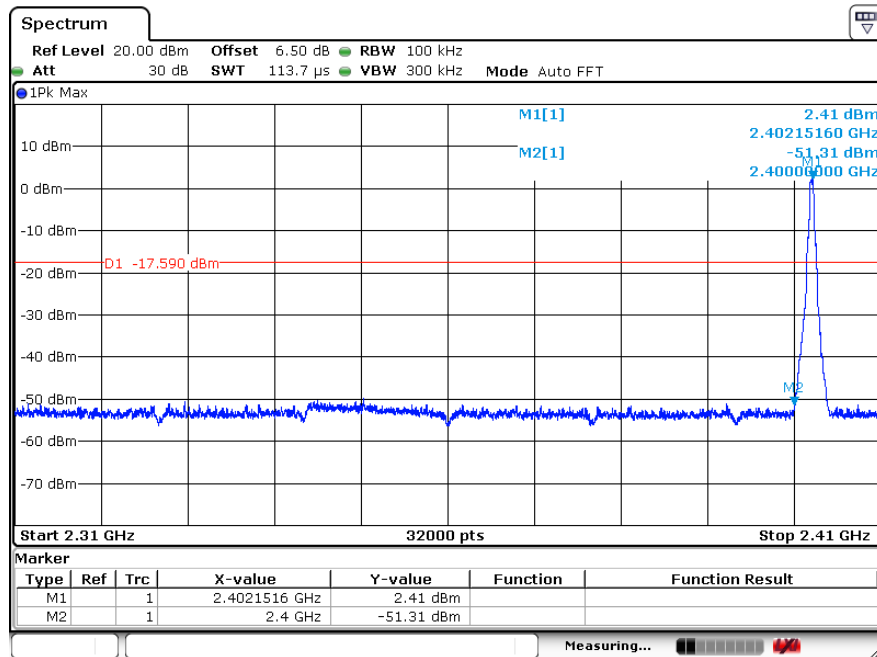
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH78 (1Mbps)		
Test Date :	2021-04-04		

in any 100kHz bandwidth outside the low frequency band	in any 100 kHz bandwidth outside the high frequency band
Pass	Pass
Result	
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.	

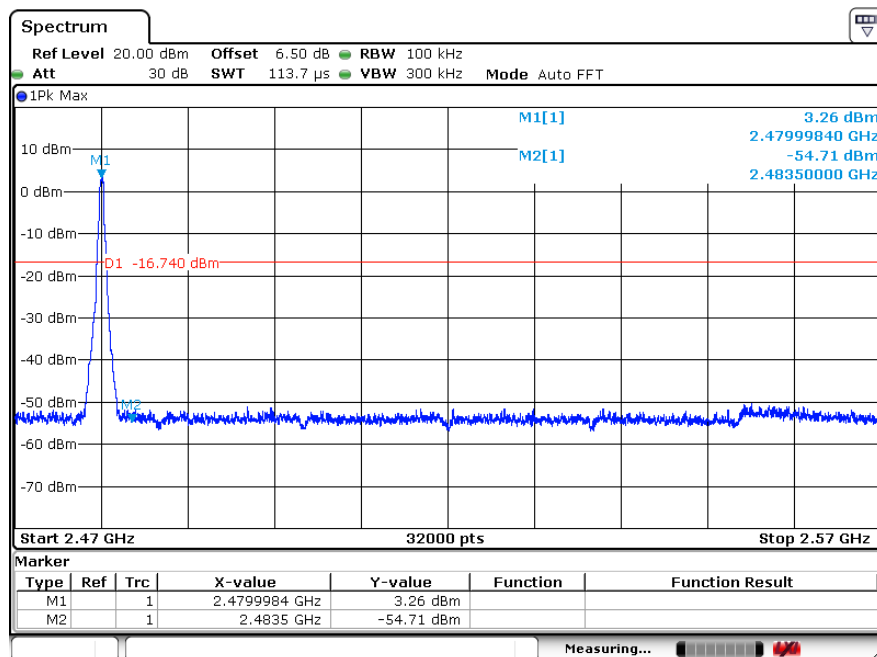
Remark :

- (1) Hopping enabled and disabled have evaluated, and the worst data was reported

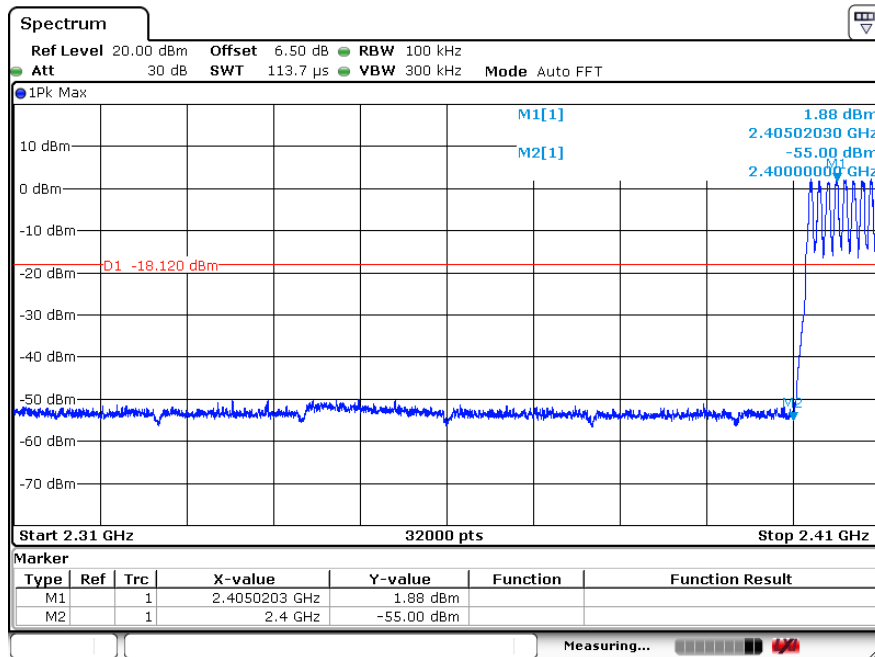
CH00 (Lower) Data rate 1Mbps



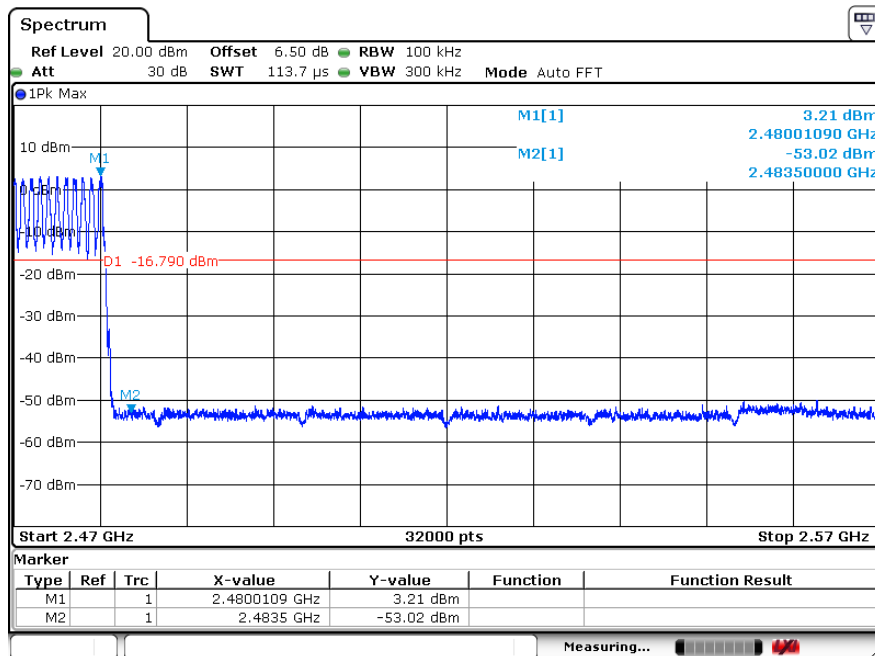
CH 78 (Upper) Data rate 1Mbps



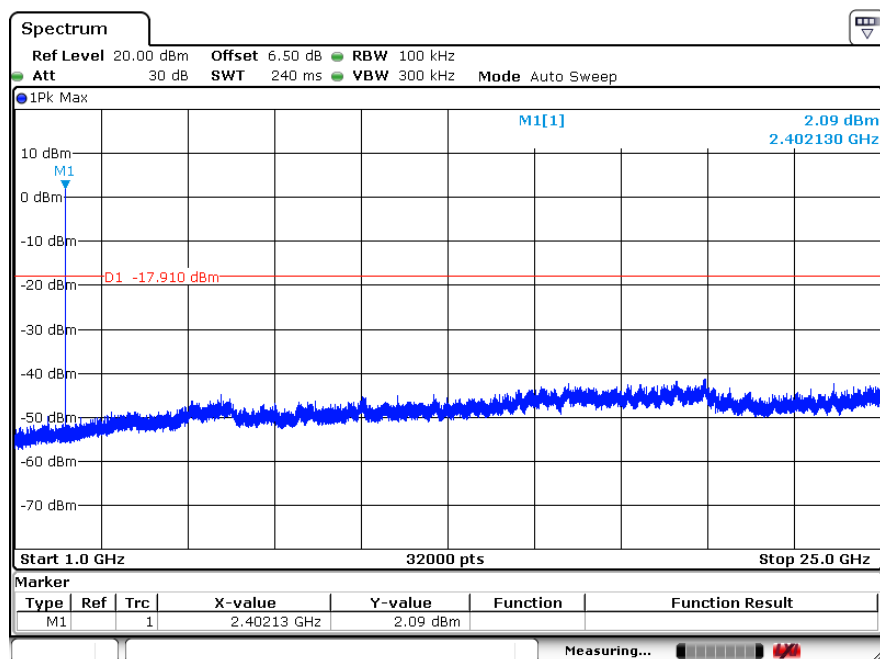
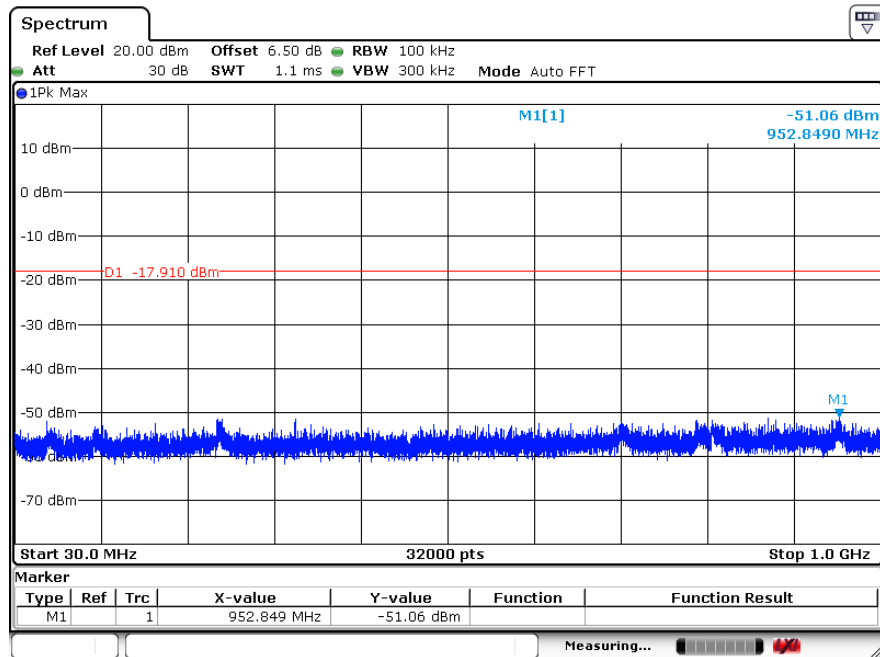
CH00 (Lower) Data rate 1Mbps



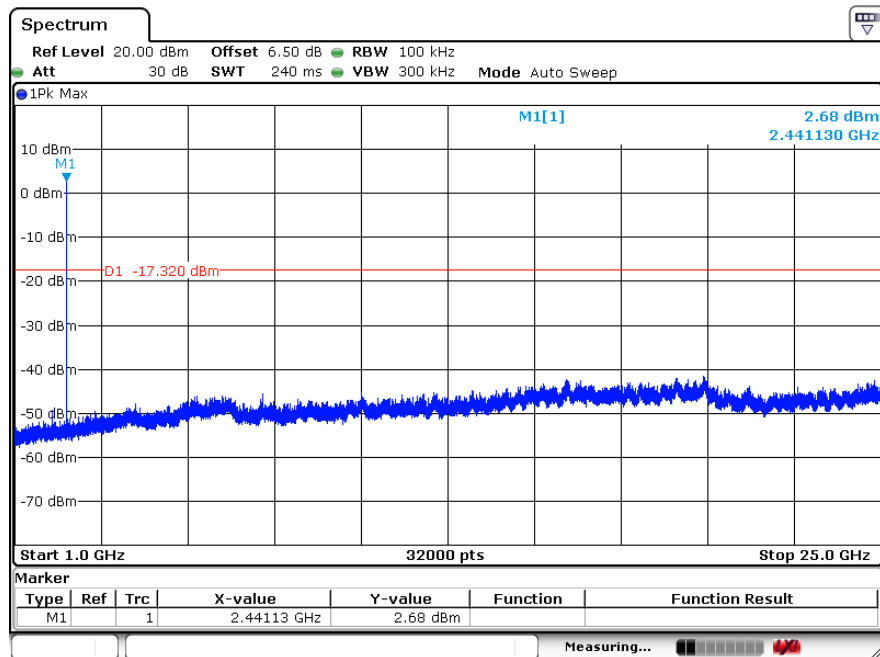
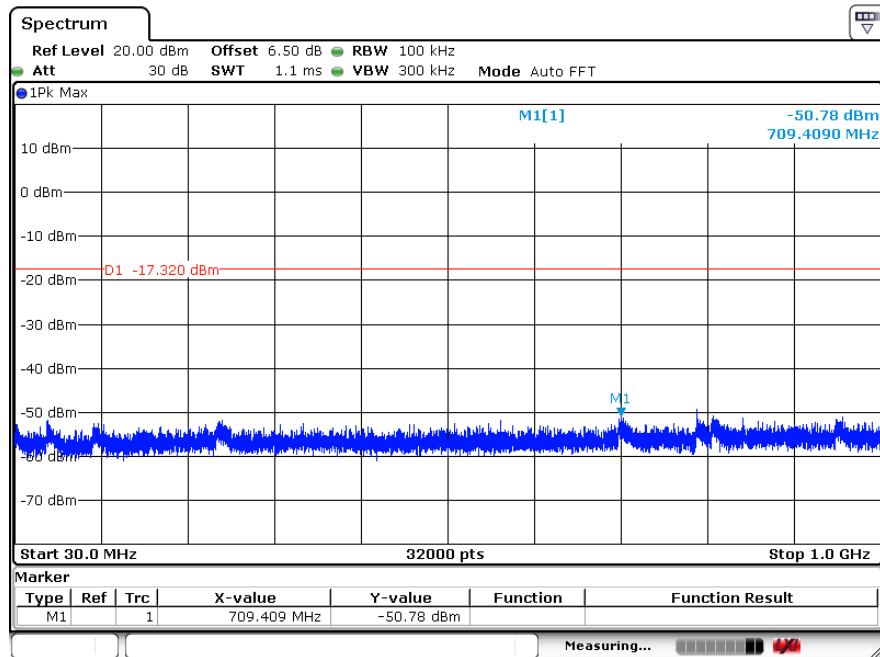
CH 78 (Upper) Data rate 1Mbps



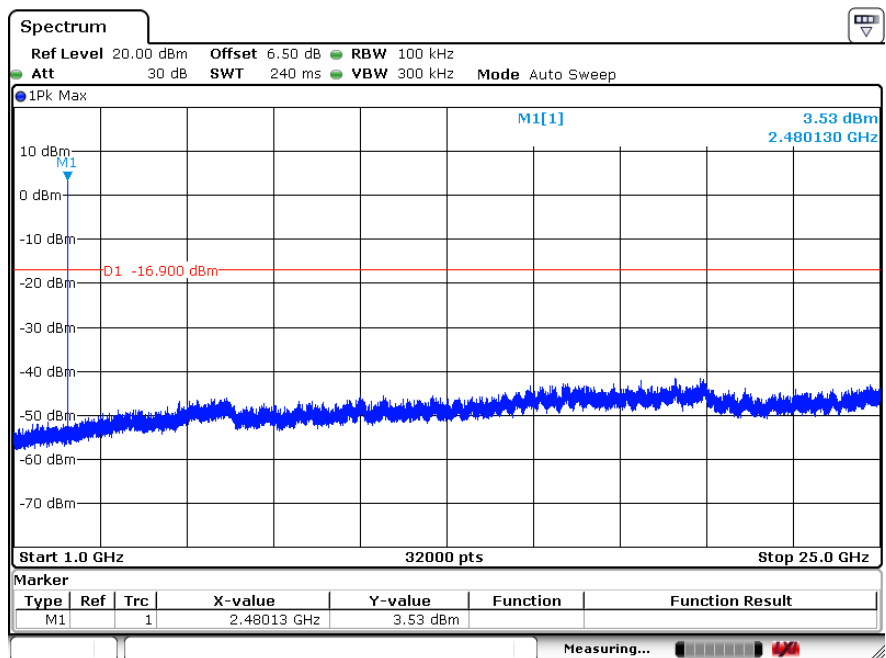
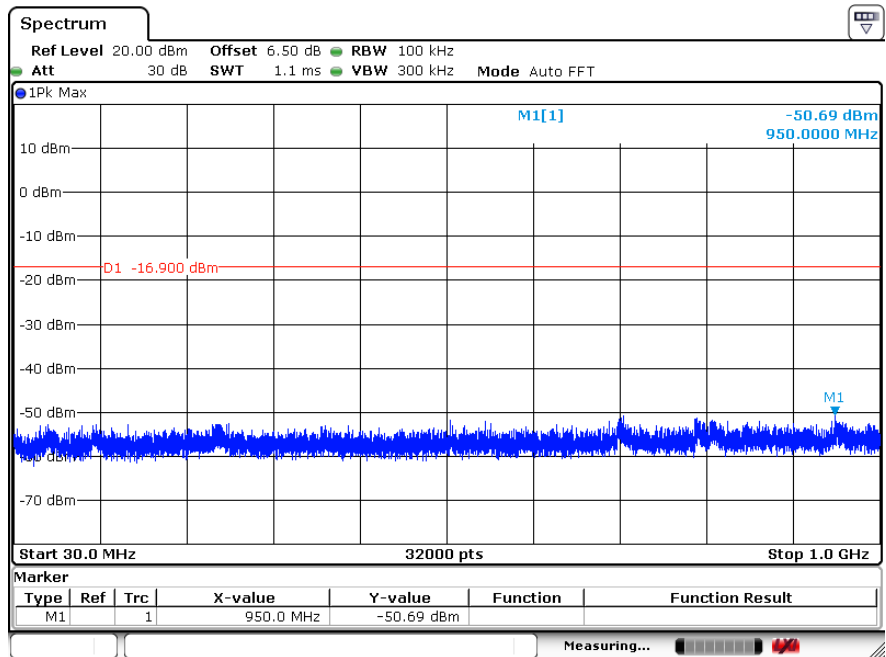
CH01



CH39



CH78



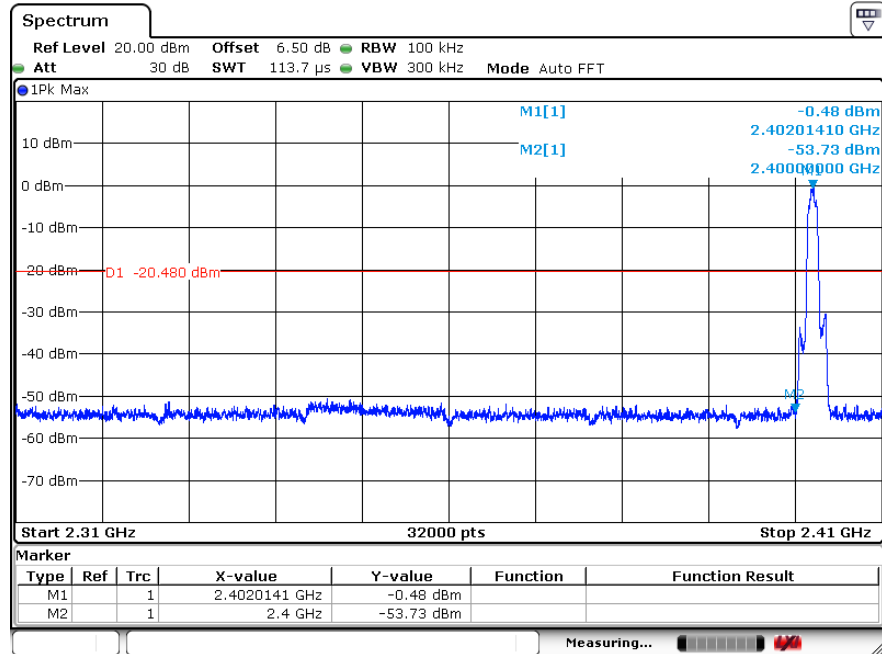
EUT :	Wavo Pro	Model Name :	JB01715-BWW
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V from battery
Test Mode :	CH00 / CH78 (3Mbps)		
Test Date :	2021-04-04		

in any 100kHz bandwidth outside the low frequency band	in any 100 kHz bandwidth outside the high frequency band
Pass	Pass
Result	
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.	

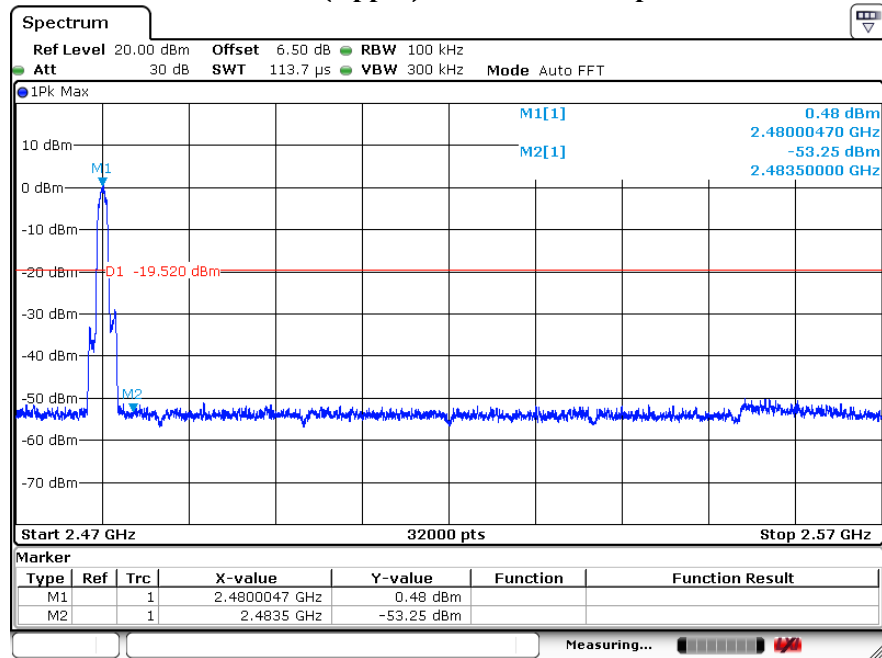
Remark :

- (1) Hopping enabled and disabled have evaluated, and the worst data was reported

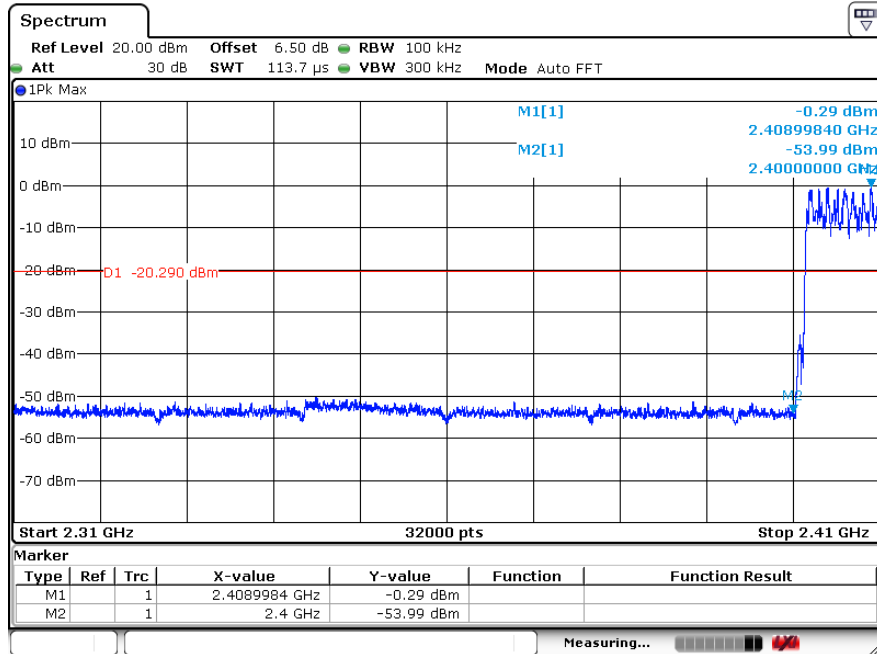
CH00 (Lower) Data rate 3Mbps



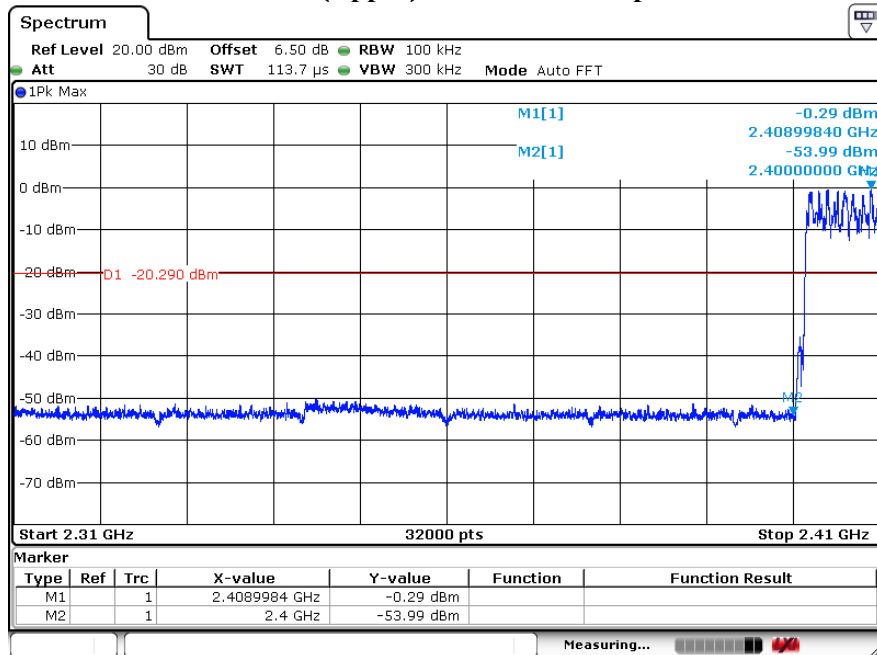
CH 78 (Upper) Data rate 3Mbps



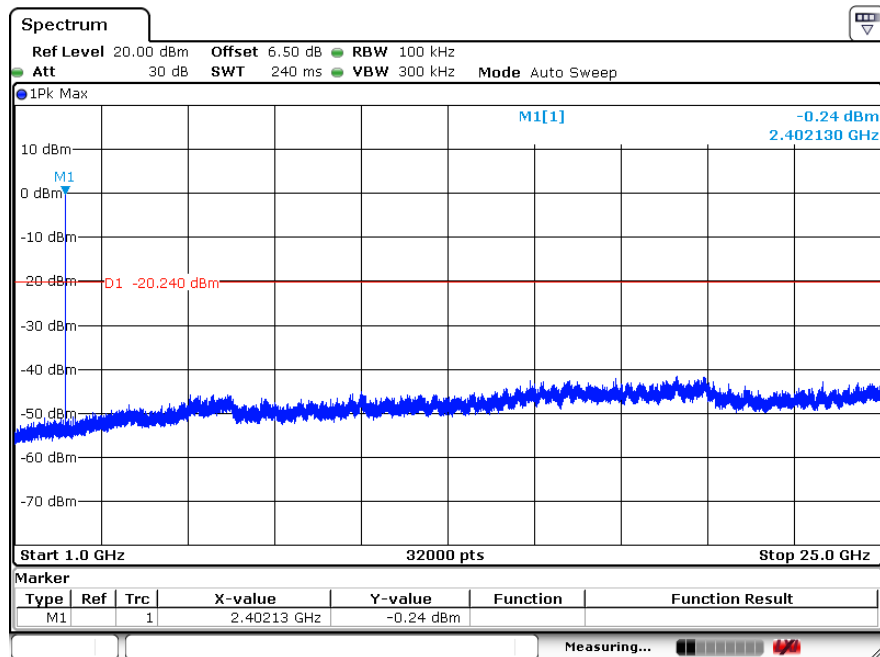
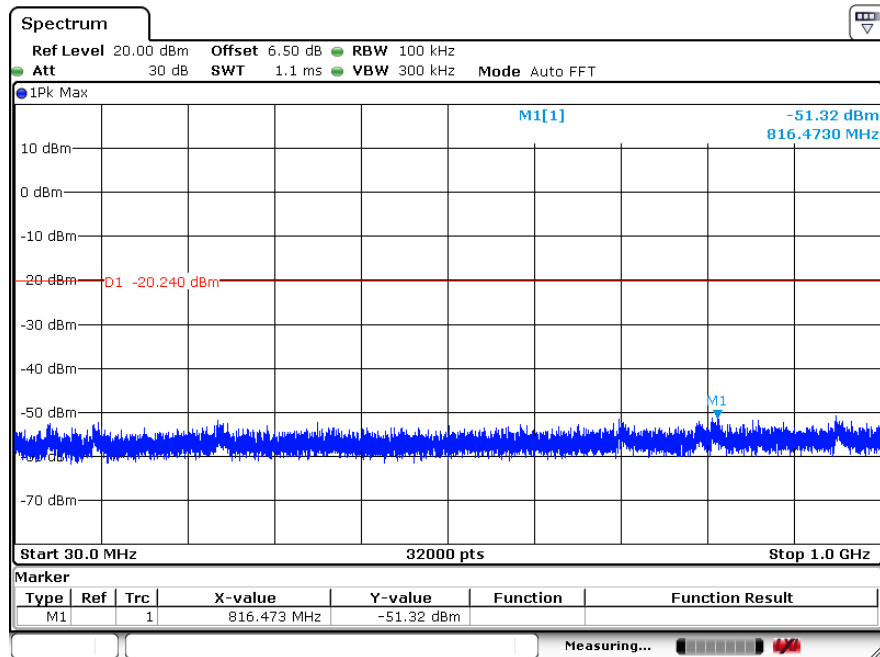
CH00 (Lower) Data rate 3Mbps



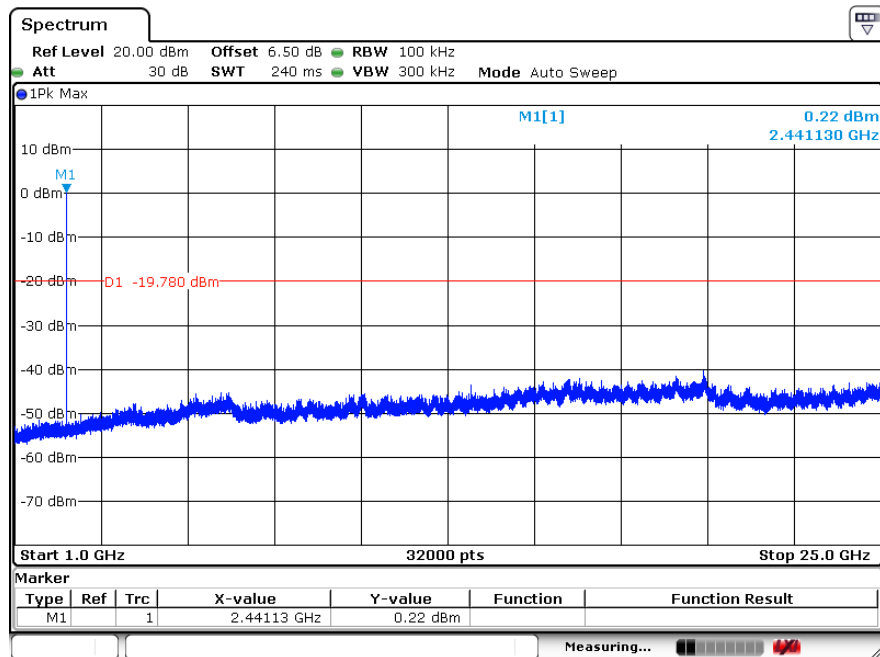
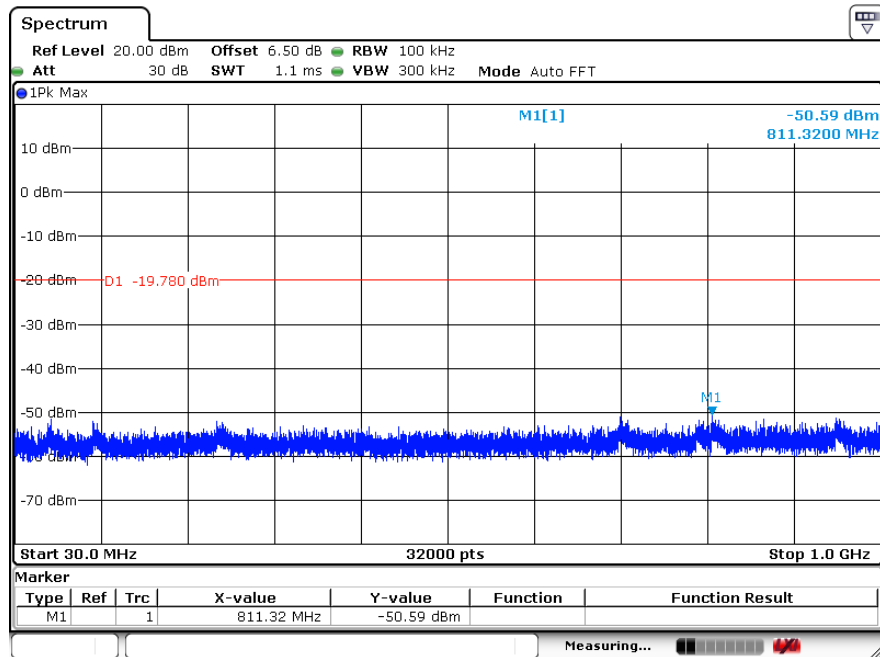
CH 78 (Upper) Data rate 3Mbps



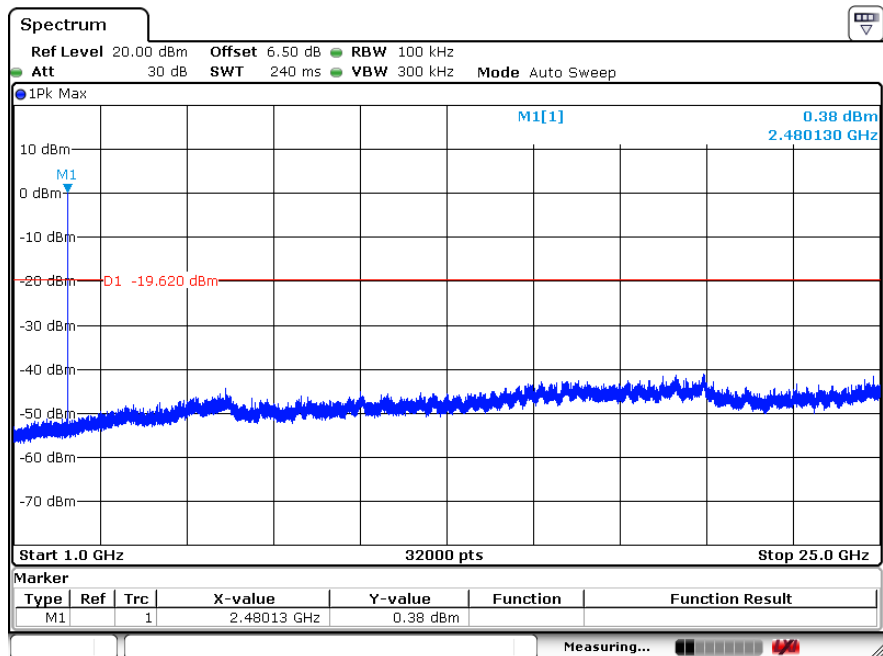
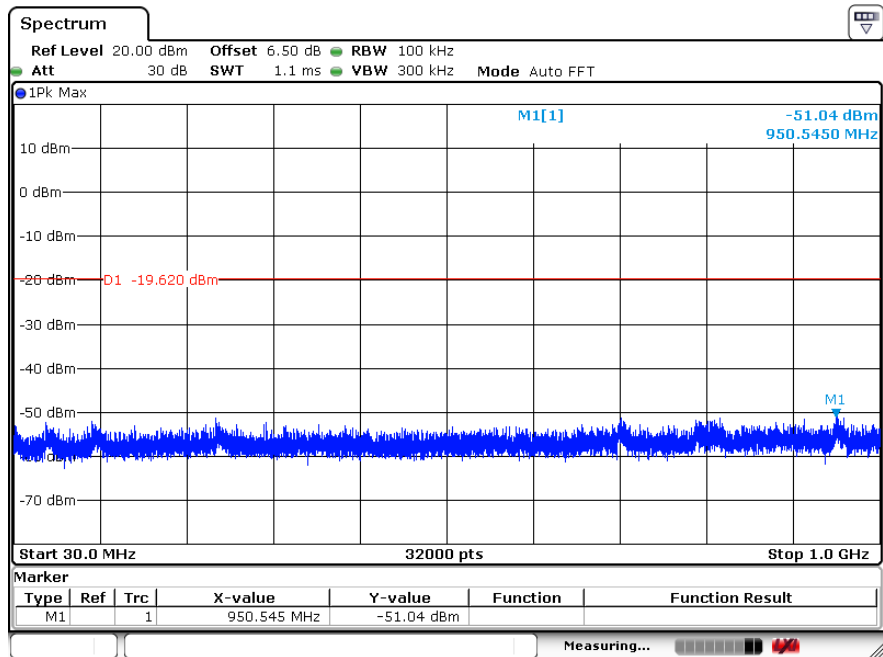
CH01



CH39



CH78



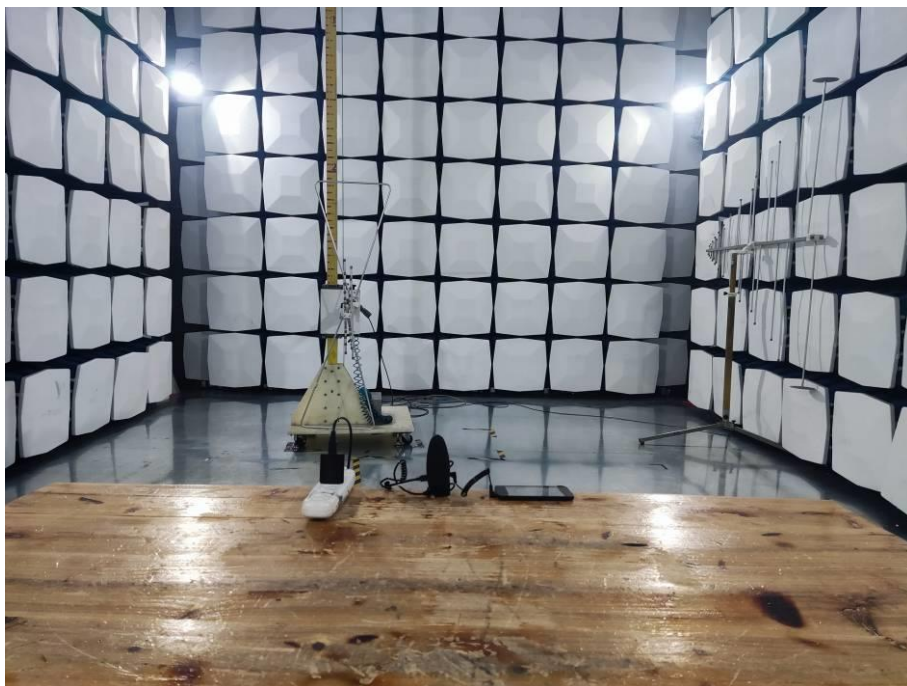
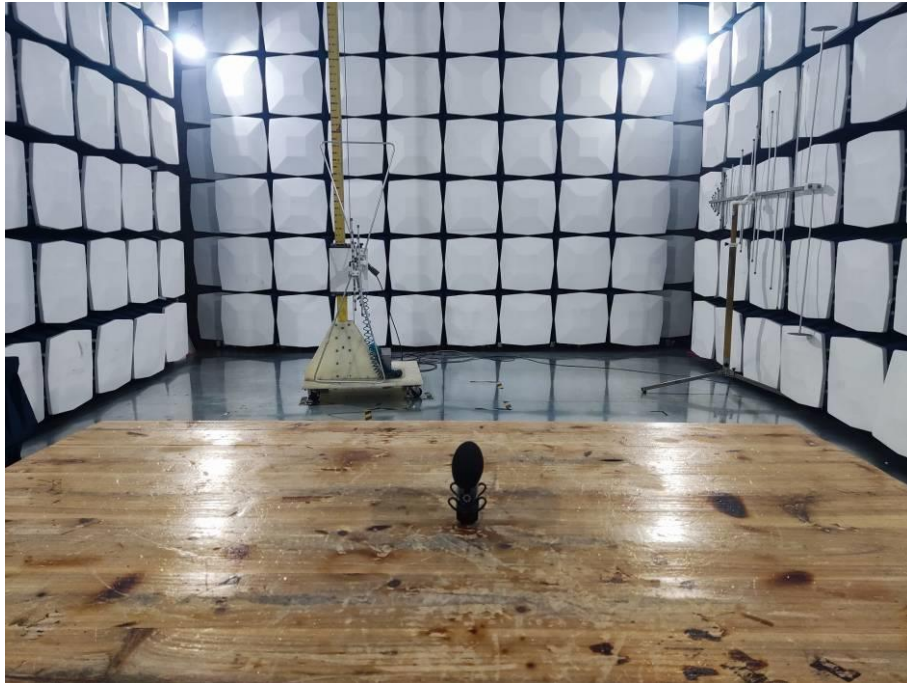
10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

4.10.1.3/4.10.1.4 requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

10.2 EUT ANTENNA

The antenna is a External antenna and no consideration of replacement. Antenna max gain is 0 dBi from 2.4GHz to 2.5GHz.

11. EUT TEST PHOTO**Radiated Measurement Photos
30MHz-1GHz**

**Radiated Measurement Photos
Above 1GHz**

Conducted Measurement Photos

**** End of Report ****