

NCC RADIO TEST REPORT

Product name	Creative Outlier Air
Applicant	ASIA INSTITUTE TECHNOLOGY LIMITED
Manufacture	CREATIVE LABS PTE. LTD.
Rating(s)	DC 3.7V (Battery Supplied)
Trademark	CREATIVE
Model and/or type reference	EF0830
Standard	LP0002:2018
Test Result	PASS

Date of receipt: 08-27-2019

Date of Issue: 09-06-2019

signature :



NCC RADIO TEST REPORT**Report Reference No.** M80620J800-01

Compiled by (+ signature)..... Kevin Bothmann

Approved by (+ signature) Jay Gandhi

Date of issue..... 2019-09-06

Applicant's name ASIA INSTITUTE TECHNOLOGY LIMITED

Address 3F., No.446, Sec. 2, Zhongshan Rd., Zhonghe Dist., New Taipei City, 23557, Taiwan.

Manufacture's Name CREATIVE LABS PTE. LTD.

Address 3I International Business Park, #03-01 creative Resource, Singapore 609921

Test specification:

Standard LP0002: 2018

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 : Creative Outlier Air

Model and/or type reference : EF0830,

Rating(s)..... : DC 3.7V (Battery Supplied)

Testing Laboratory information:

Testing Laboratory Name : Electro Magnetic Test, Inc.

Address : 1547 Plymouth Street, Mountain View, CA 94043

CAB Identifier Number : US0036

Tel..... : (650) 965-4000

Fax : (650) 965-3000

E-mail : jgandhi@emtlabs.com

Testing.....

Date of receipt of test item Aug. 27, 2019

Date (s) of performance of tests..... Aug. 28~Sep. 05, 2019

Date of Issue..... Sep. 06, 2019

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.

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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:

LP0002 : 2018			
Standard Section	Test Item	Judgment	Remark
2.3	Conducted Emission	PASS	None
3.10.1(5)/2.8	Radiated Spurious Emission	PASS	None
3.10.1(2)	Peak Output Power	PASS	None
3.10.1(6.1.1)	Occupied Bandwidth	PASS	None
3.10.1(6.1.1)	Hopping Channel Separation	PASS	None
3.10.1(6.1.2)	Number of Hopping Frequency	PASS	None
3.10.1(6.1.2)	Dwell Time	PASS	None
3.10.1(5)/2.8	Restricted Bands	PASS	None
3.10.1(3)	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	Creative Outlier Air	
Model Name	EF0830	
Trade mark	CREATIVE	
OEM Brand/Model Name	N/A	
Product Description	The EUT is a Creative Outlier Air.	
	Operation Frequency:	2402~2480 MHz
	Modulation Type:	GFSK(1Mbps) π/4 DQPSK(2Mbps) 8DPSK(3Mbps)
	Number Of Channel	79 CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak)	1.89 dBi
	Output Power:	1Mbps Mode: 3.90dBm (Max.)
		3Mbps Mode: 3.80dBm(Max.)
Channel List	Please refer to the Note 2.	
Power Rating	DC 3.7V (Battery Supplied)	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	
EUT Modification(s)	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

No.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	CREATIVE LABS PTE. LTD.	EF0830	FPC Antenna	N/A	1.89 dBi	Antenna

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH00 /CH39 /CH78
Mode 3	CH00 /CH39 /CH78

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00 /CH39 /CH78
Mode 3	CH00 /CH39 /CH78

Note:

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

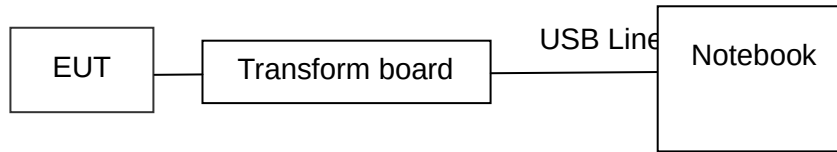
2.3 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

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

Test software Version	Test program: BTCert.exe		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	G	H	I
Parameters(3Mbps)	R	S	T

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Block diagram of EUT configuration



Note: 1. The EUT was used fully-charged battery programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.
2. Set EUT as above block diagram, run the software, set the transmit serial port/power/channel/packet type/data type/hopping or not, send configuration, then EUT enter the TX mode. After finishing the test setting, the notebook and the transform board will be removed during measurements.

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	Creative Outlier Air	CREATIVE	EF0830	U4GSX4WB	N/A	EUT

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	Notebook	ASUS	N/A	X401A	X16-96072	N/A
2	USB Cable	FUJIA	2720	N/A	N/A	0.3m/unshielded /detachable
3	Transform board	N/A	N/A	N/A	N/A	N/A
4	SWITCHING ADAPTOR	Blackview	HJ-0502000K9-US	N/A	N/A	N/A

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”

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	MANU-FACT URER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	April 29, 2019	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	April 29, 2019	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	April 29, 2019	1 Year
Preamplifier	Com Power	PA-102	1482	April 29, 2019	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 8, 2018	1 Year
LISN	Com Power	LI-200	12012	September 10, 2018	1 Year
LISN	Com Power	LI-200	12214	September 10, 2018	1 Year
LISN	Com Power	LI-200	1767	September 10, 2018	1 Year
LISN	Com Power	LI-200	1768	September 10, 2018	1 Year
Biconical Antenna	Com Power	AB-100	01557	December 29, 2018	1 Year
Log Periodic Antenna	Com Power	AL-100	16037	December 22, 2018	1 Year
Horn Antenna	Com Power	AHA-118	711054	December 22, 2018	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
Printer	Hewlett Packard	C8124A	CN39B2234T	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A

EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACT URER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	June 12, 2019	1 Year
BiConiLog Antenna	ETS-Lindgren	3142D	00102183	August 14, 2019	1 Year
Horn Antenna	ETS-Lindgren	3117	00109294	May 6, 2019	1 Year
Preamplifier	Rohde & Schwarz	TS-PR18	100056	June 12, 2019	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, 2019	1 Year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 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

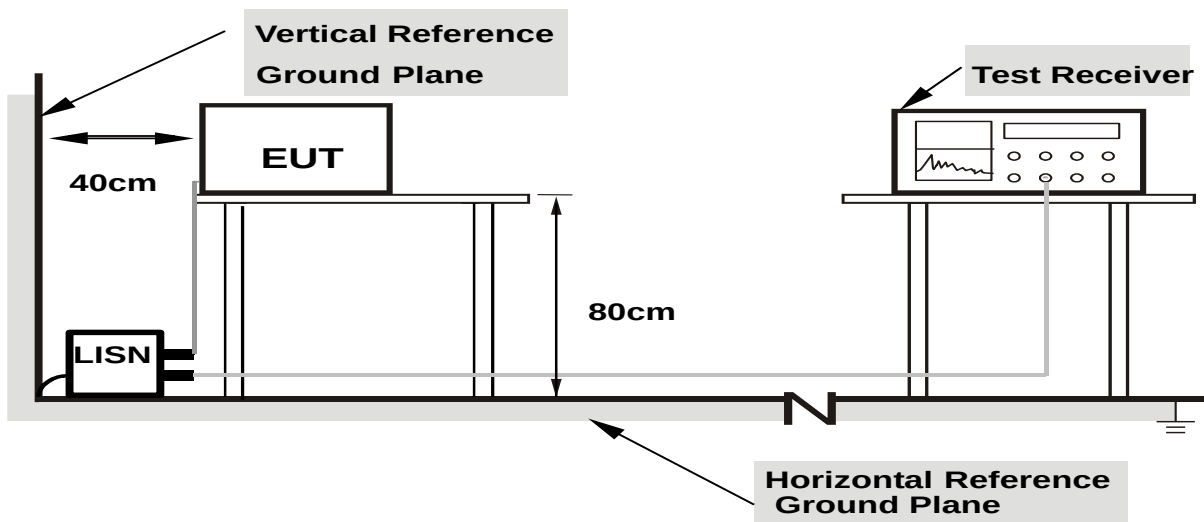
3.1.2 TEST PROCEDURE

- 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.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



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

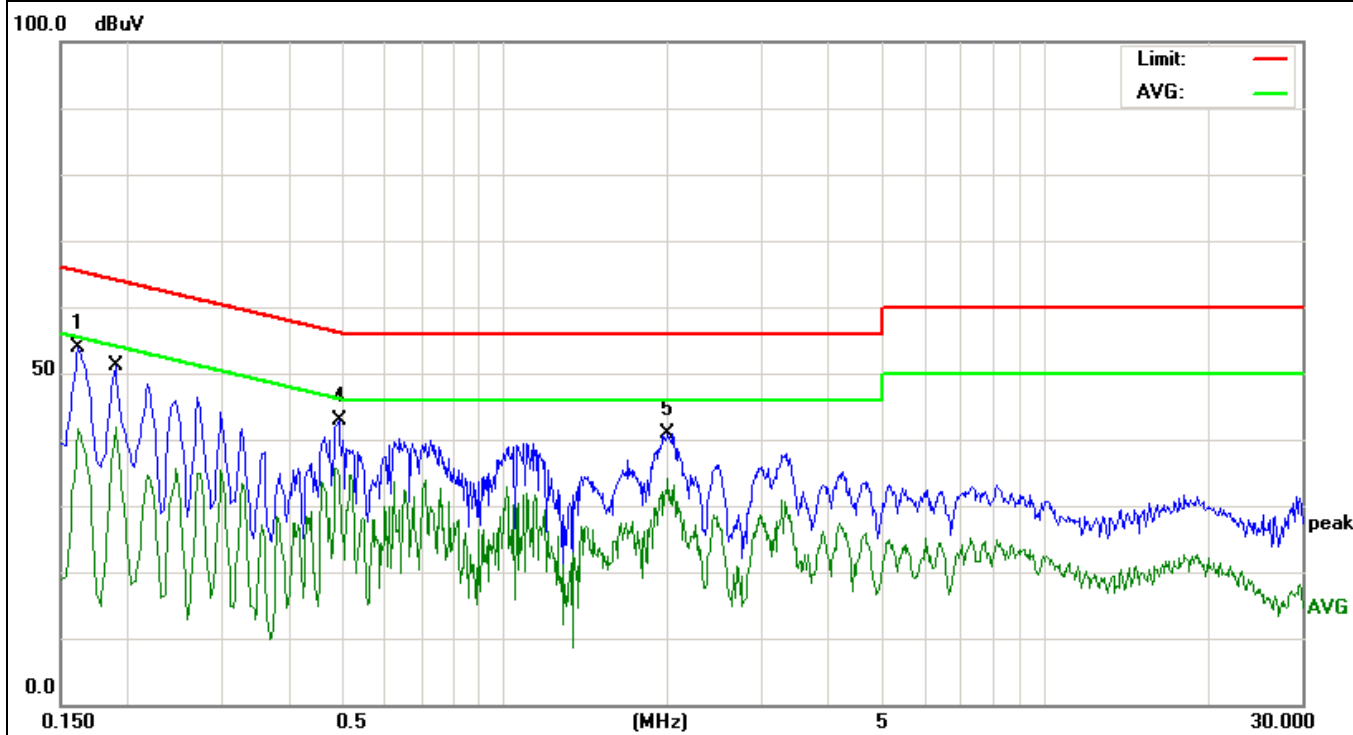
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 TEST RESULTS

EUT :	Creative Outlier Air	Model Name. :	EF0830
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2019-09-03
Test Mode :	TX (1Mbps) CH00 (worst case)	Phase :	Line
Test Voltage :	DC 5V from adapter, AC 120V/60Hz for adapter		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
0.1620	42.13	11.68	53.81	65.36	-11.55	Quasi-Peak
0.1900	30.50	11.26	41.76	54.03	-12.27	Average
0.4860	25.54	10.00	35.54	46.24	-10.70	Quasi-Peak
0.4940	32.96	9.99	42.95	56.10	-13.15	Average
2.0059	30.89	9.96	40.85	56.00	-15.15	Quasi-Peak
2.0059	24.16	9.96	34.12	46.00	-11.88	Average

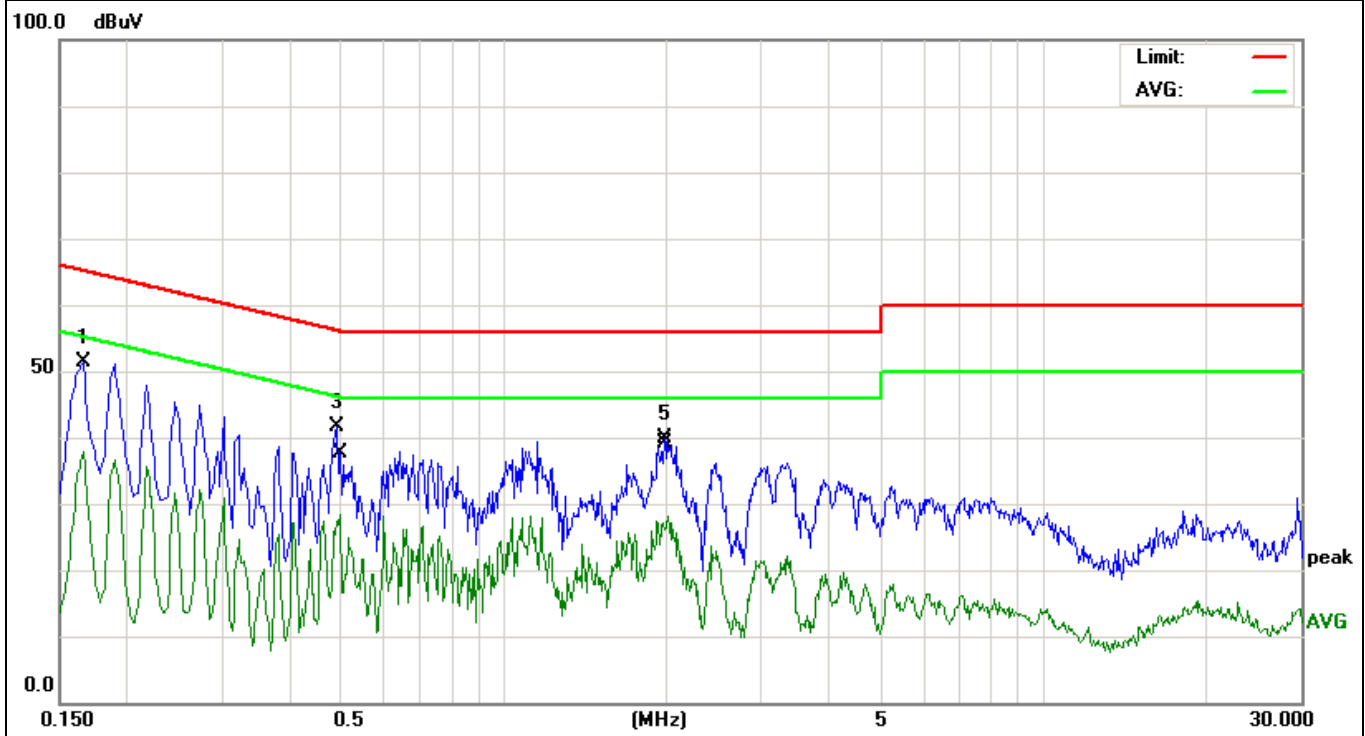
Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



EUT :	Creative Outlier Air	Model Name. :	EF0830
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2019-09-03
Test Mode :	TX (1Mbps) CH00 (worst case)	Phase :	Neutral
Test Voltage :	DC 5V from adapter, AC 120V/60Hz for adapter		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector
0.1660	39.67	11.61	51.28	65.15	-13.87	Quasi-Peak
0.1660	26.29	11.61	37.90	55.15	-17.25	Average
0.4900	31.63	9.99	41.62	56.17	-14.55	Quasi-Peak
0.4980	18.39	9.98	28.37	46.03	-17.66	Average
1.9900	29.98	9.96	39.94	56.00	-16.06	Quasi-Peak
2.0220	18.05	9.96	28.01	46.00	-17.99	Average

Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 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)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to LP002.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

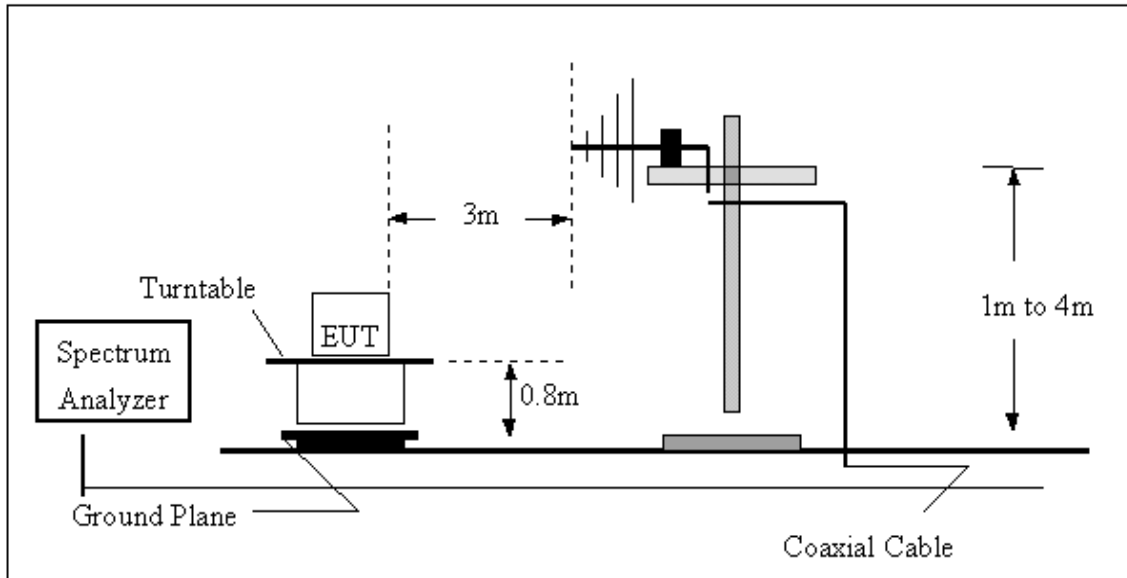
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

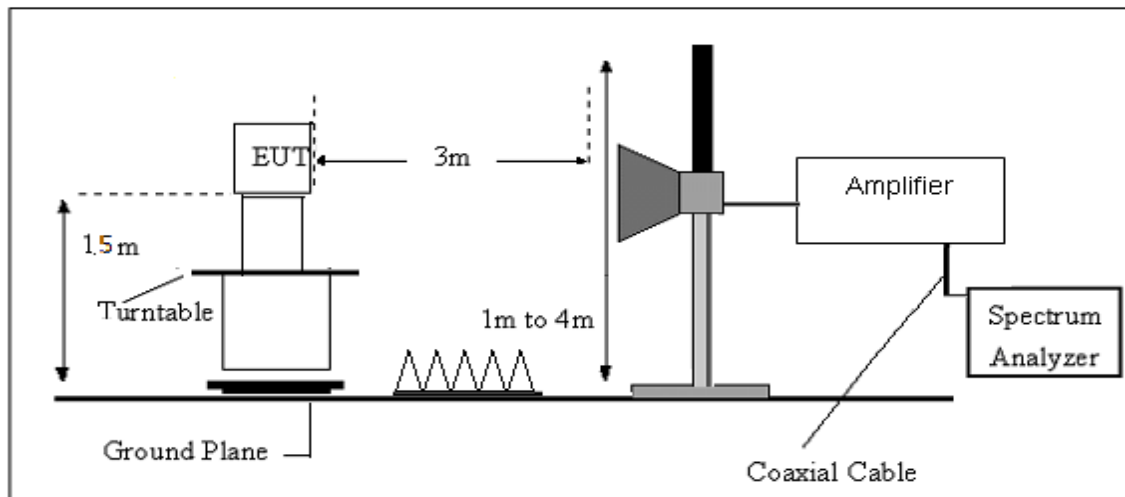
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 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.
- The field strength of spurious radiation emission was measured in the following position: EUT stand-up position (Y mode) and lie-down position (X, Z mode) the following data show only the worst case setup.
The worst case (X axis) was reported.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



3.2.4 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.

3.2.5 TEST RESULTS (BELOW 30 MHz)

There is no detected BELOW 30MHz

3.2.6 TEST RESULTS (BETWEEN 30 – 1000 MHz)

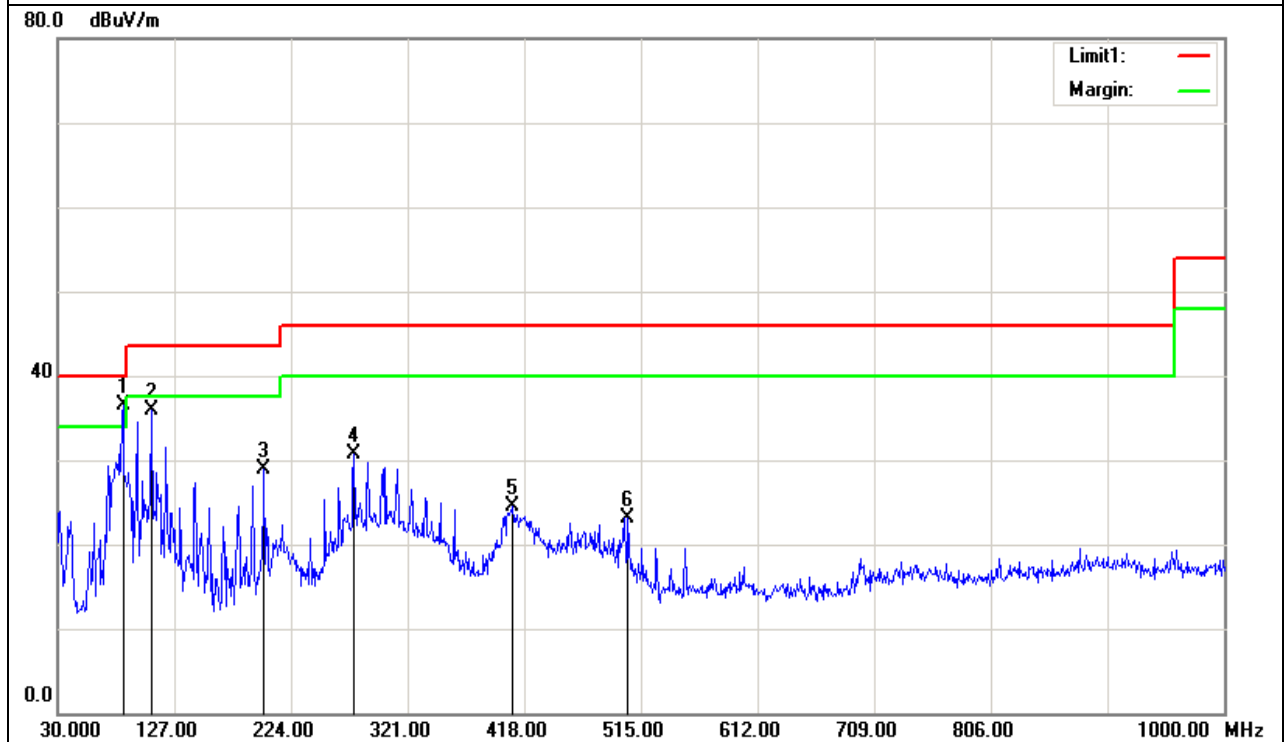
Radiated Emissions Test Data Below 1GHz

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX (1Mbps) CH00 (worst case)	Polarization :	Horizontal
Measurement Distance	3 m	Frequency Range	30MHz to 1GHz
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
84.3200	62.36	-25.84	36.52	40.00	-3.48	Quasi-Peak
107.6000	58.12	-22.27	35.85	43.50	-7.65	Quasi-Peak
201.6900	51.51	-22.52	28.99	43.50	-14.51	Quasi-Peak
276.3800	51.11	-20.43	30.68	46.00	-15.32	Quasi-Peak
408.3000	40.15	-15.69	24.46	46.00	-21.54	Quasi-Peak
504.3300	37.46	-14.31	23.15	46.00	-22.85	Quasi-Peak

Remark:

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

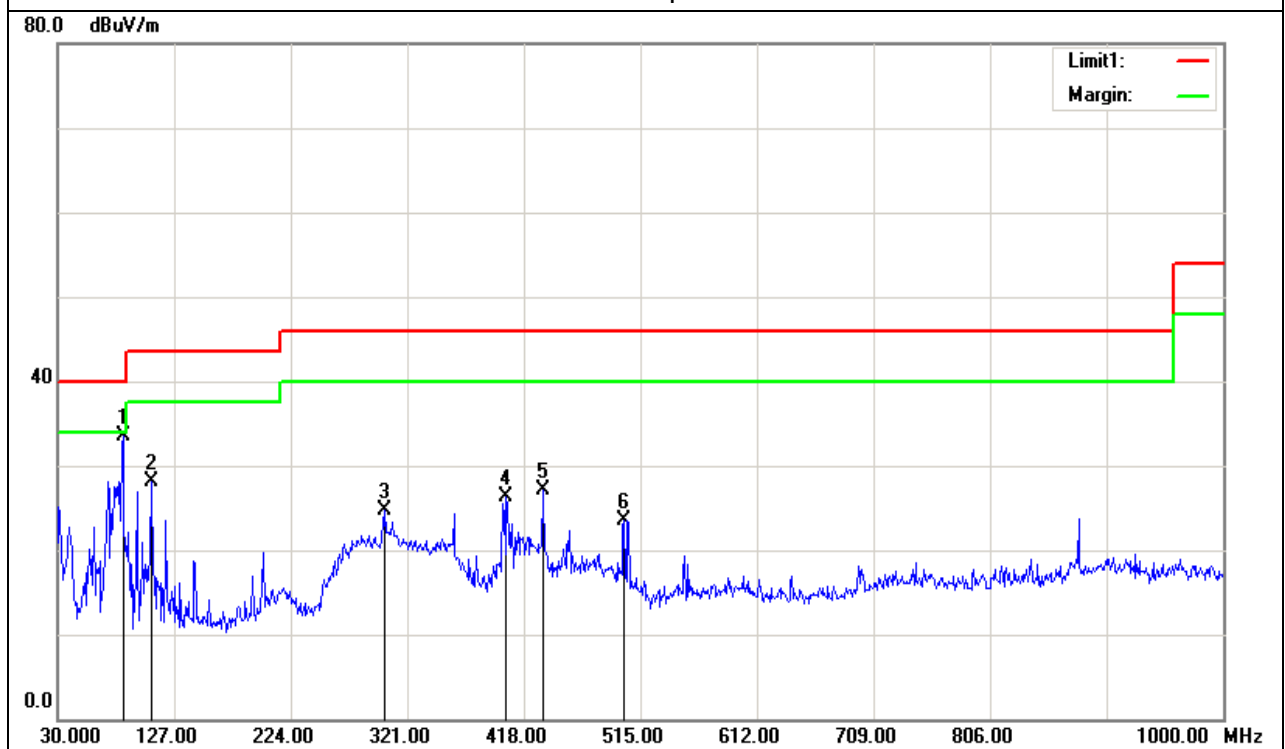


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX (1Mbps) CH00 (worst case)	Polarization :	Vertical
Measurement Distance	3 m	Frequency Range	30MHz to 1GHz
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
84.3200	59.28	-25.84	33.44	40.00	-6.56	Quasi-Peak
108.5700	50.29	-22.09	28.20	43.50	-15.30	Quasi-Peak
302.5700	44.13	-19.47	24.66	46.00	-21.34	Quasi-Peak
403.4500	42.29	-15.92	26.37	46.00	-19.63	Quasi-Peak
433.5200	42.78	-15.62	27.16	46.00	-18.84	Quasi-Peak
501.4200	37.77	-14.34	23.43	46.00	-22.57	Quasi-Peak

Remark:

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



Note:

Measurement Level = Reading Level + Factor

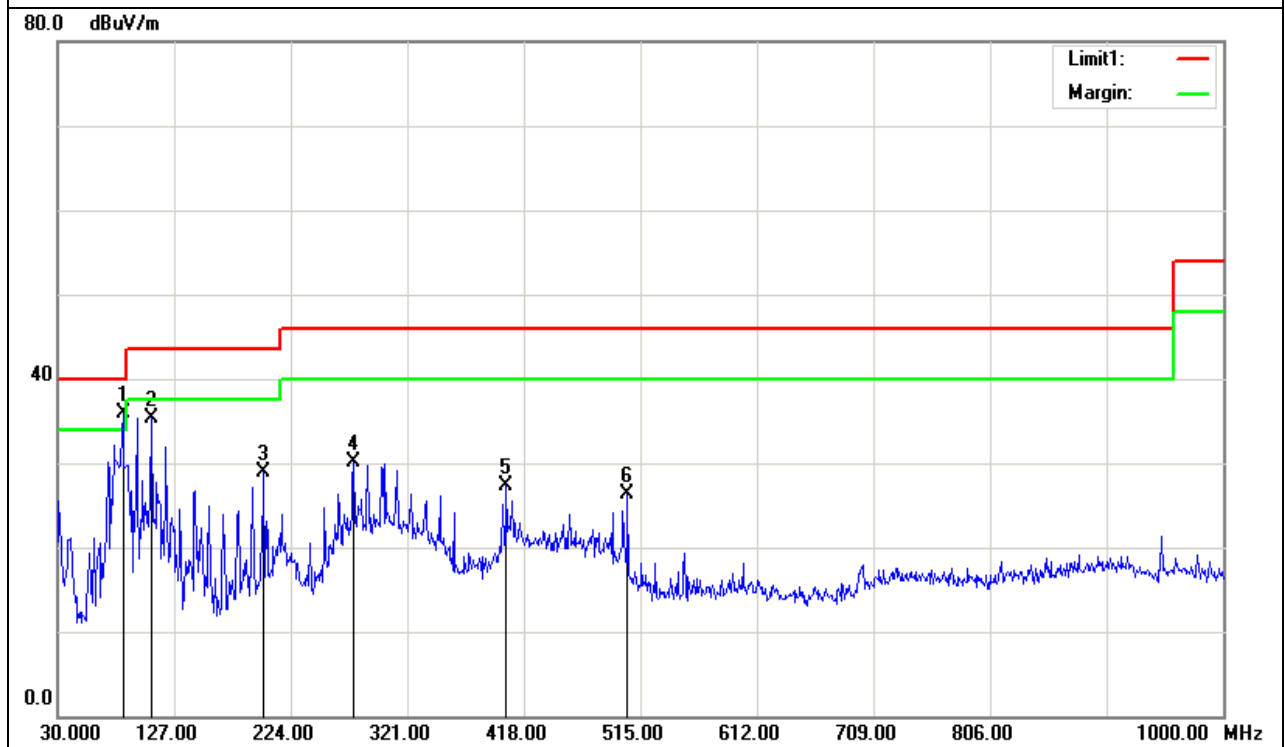
Remark: Factor = Antenna Factor + Cable Loss–Pre-amplifier

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX	Polarization :	Horizontal
Measurement Distance	3 m	Frequency Range	30MHz to 1GHz
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
84.3200	61.65	-25.84	35.81	40.00	-4.19	Quasi-Peak
107.6000	57.51	-22.27	35.24	43.50	-8.26	Quasi-Peak
201.6900	51.38	-22.52	28.86	43.50	-14.64	Quasi-Peak
276.3800	50.55	-20.43	30.12	46.00	-15.88	Quasi-Peak
403.4500	43.22	-15.92	27.30	46.00	-18.70	Quasi-Peak
504.3300	40.63	-14.31	26.32	46.00	-19.68	Quasi-Peak

Remark:

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

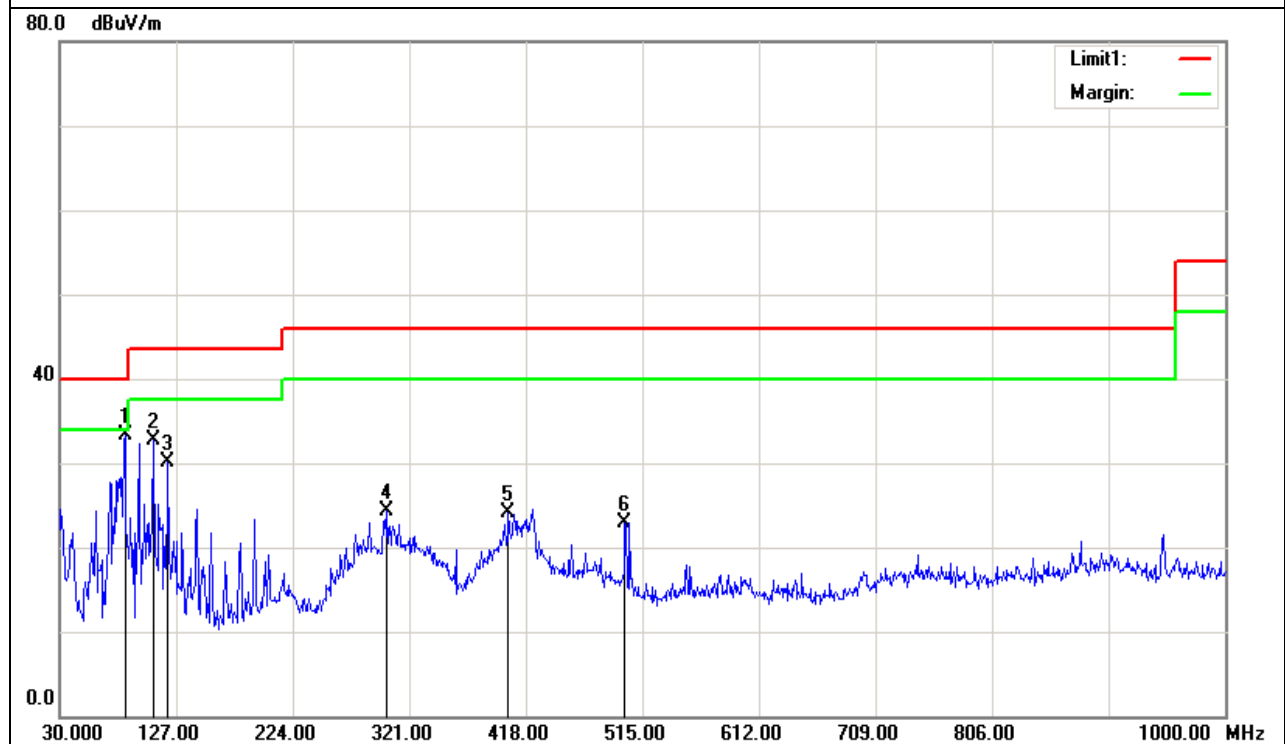


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX	Polarization :	Vertical
Measurement Distance	3 m	Frequency Range	30MHz to 1GHz
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
84.3200	59.22	-25.84	33.38	40.00	-6.62	Quasi-Peak
107.6000	55.06	-22.27	32.79	43.50	-10.71	Quasi-Peak
120.2100	51.22	-21.13	30.09	43.50	-13.41	Quasi-Peak
302.5700	43.72	-19.47	24.25	46.00	-21.75	Quasi-Peak
403.4500	40.07	-15.92	24.15	46.00	-21.85	Quasi-Peak
500.4500	37.31	-14.35	22.96	46.00	-23.04	Quasi-Peak

Remark:

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



Note:

Measurement Level = Reading Level + Factor

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

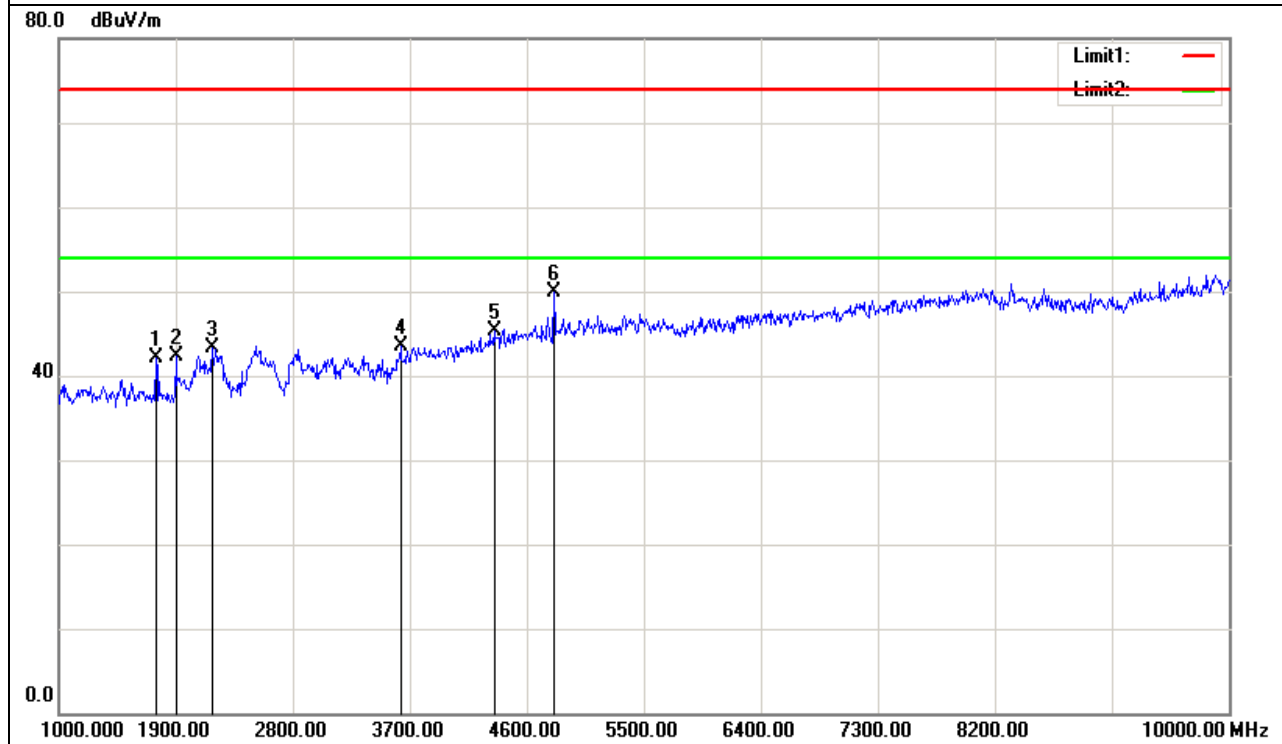
Radiated Emissions Test Data Above 1GHz

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1747.000	48.49	-6.38	42.11	74.00	-31.89	peak
1900.000	47.89	-5.63	42.26	74.00	-31.74	peak
2179.000	47.31	-4.02	43.29	74.00	-30.71	peak
3628.000	43.48	0.02	43.50	74.00	-30.50	peak
4348.000	42.45	2.81	45.26	74.00	-28.74	peak
4807.000	45.53	4.35	49.88	74.00	-24.12	peak

Remark:

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

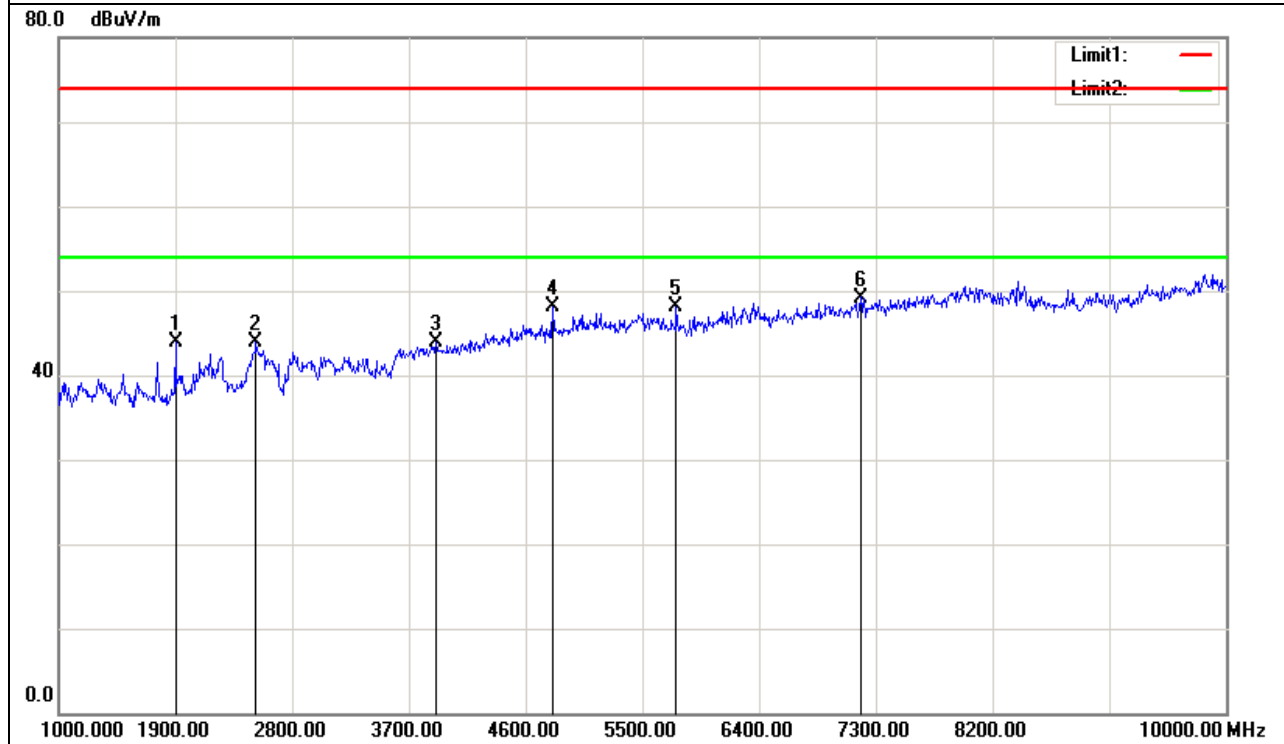


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2402MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	49.49	-5.63	43.86	74.00	-30.14	peak
2521.000	46.04	-2.22	43.82	74.00	-30.18	peak
3907.000	42.63	1.20	43.83	74.00	-30.17	peak
4807.000	43.66	4.35	48.01	74.00	-25.99	peak
5761.000	42.14	5.98	48.12	74.00	-25.88	peak
7183.000	41.14	8.06	49.20	74.00	-24.80	peak

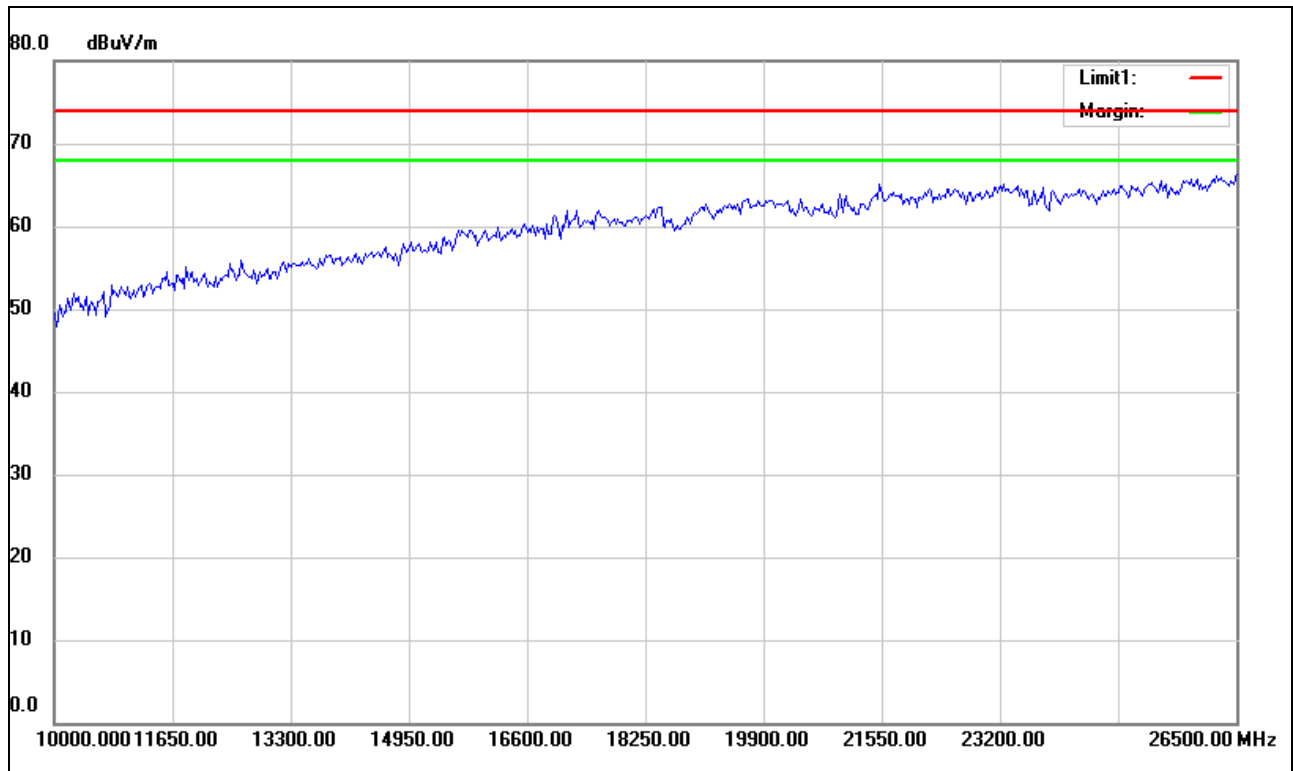
Remark:

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



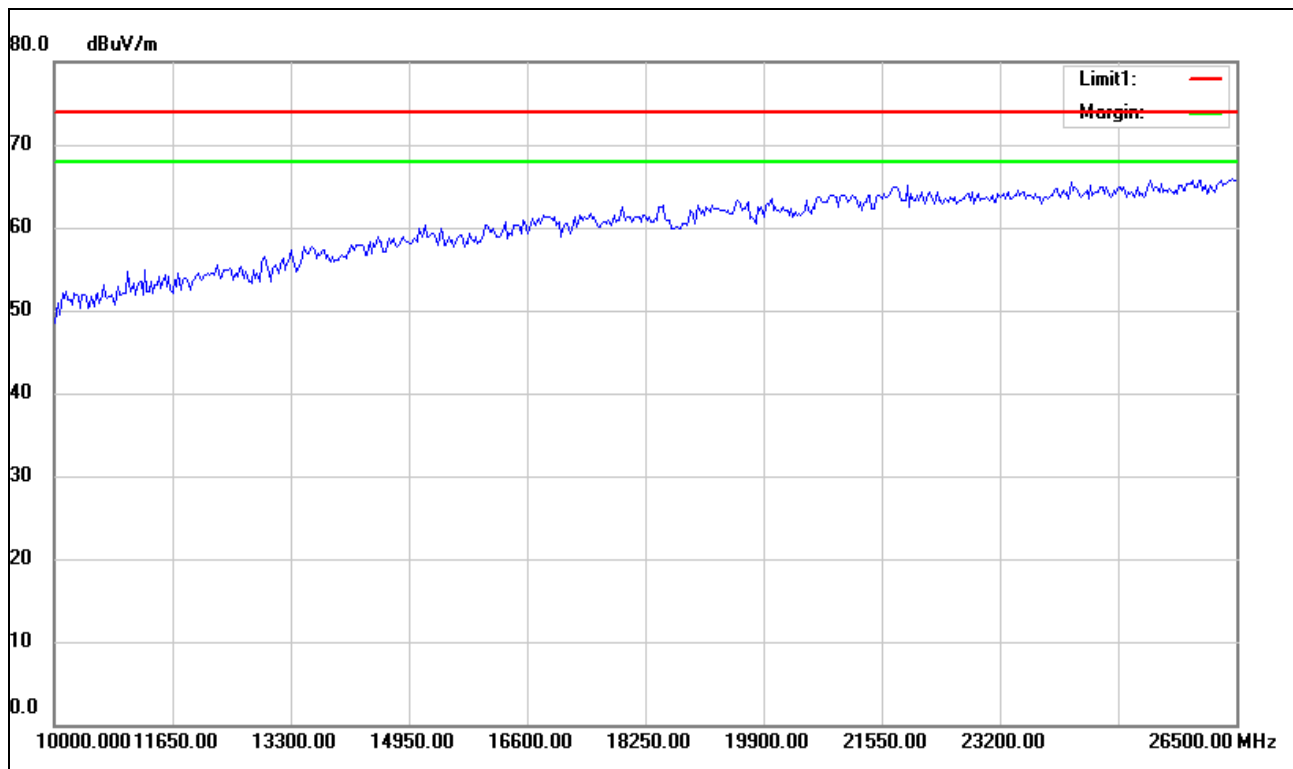
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

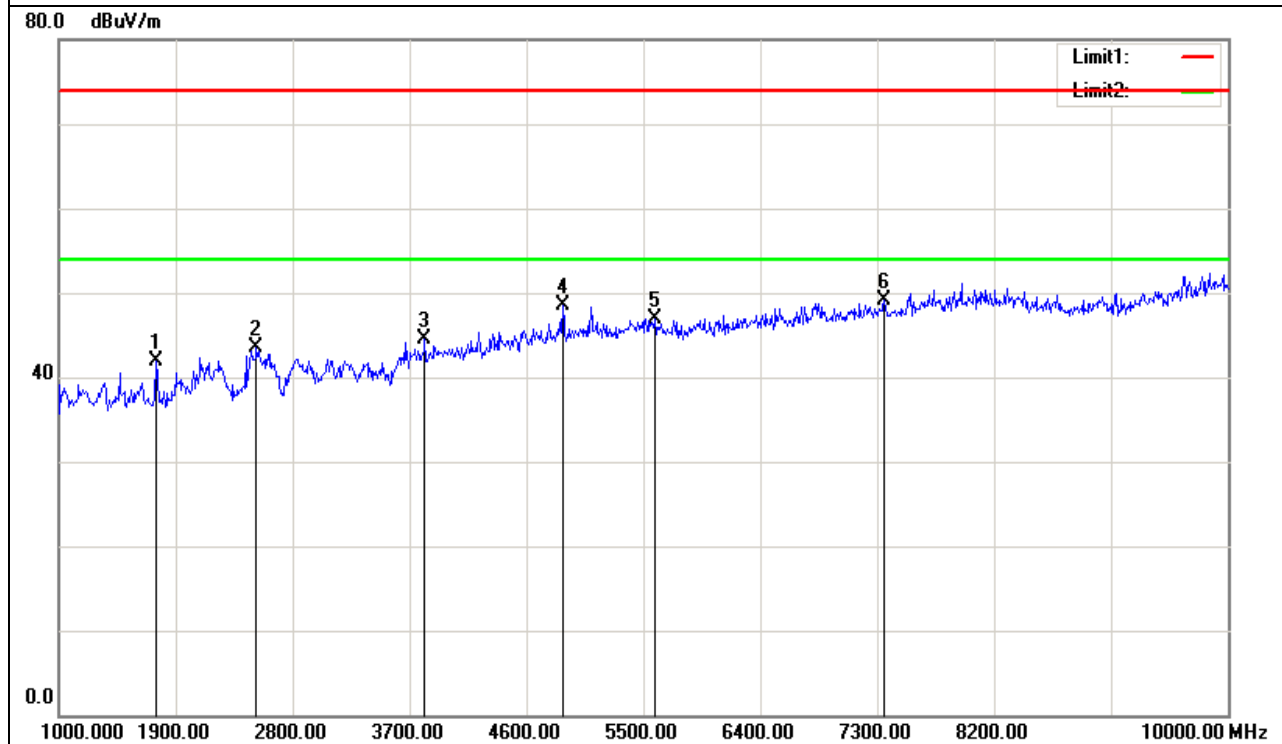


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1747.000	48.25	-6.38	41.87	74.00	-32.13	peak
2521.000	45.81	-2.22	43.59	74.00	-30.41	peak
3817.000	43.70	0.82	44.52	74.00	-29.48	peak
4879.000	43.84	4.59	48.43	74.00	-25.57	peak
5590.000	40.96	5.91	46.87	74.00	-27.13	peak
7354.000	40.70	8.39	49.09	74.00	-24.91	peak

Remark:

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

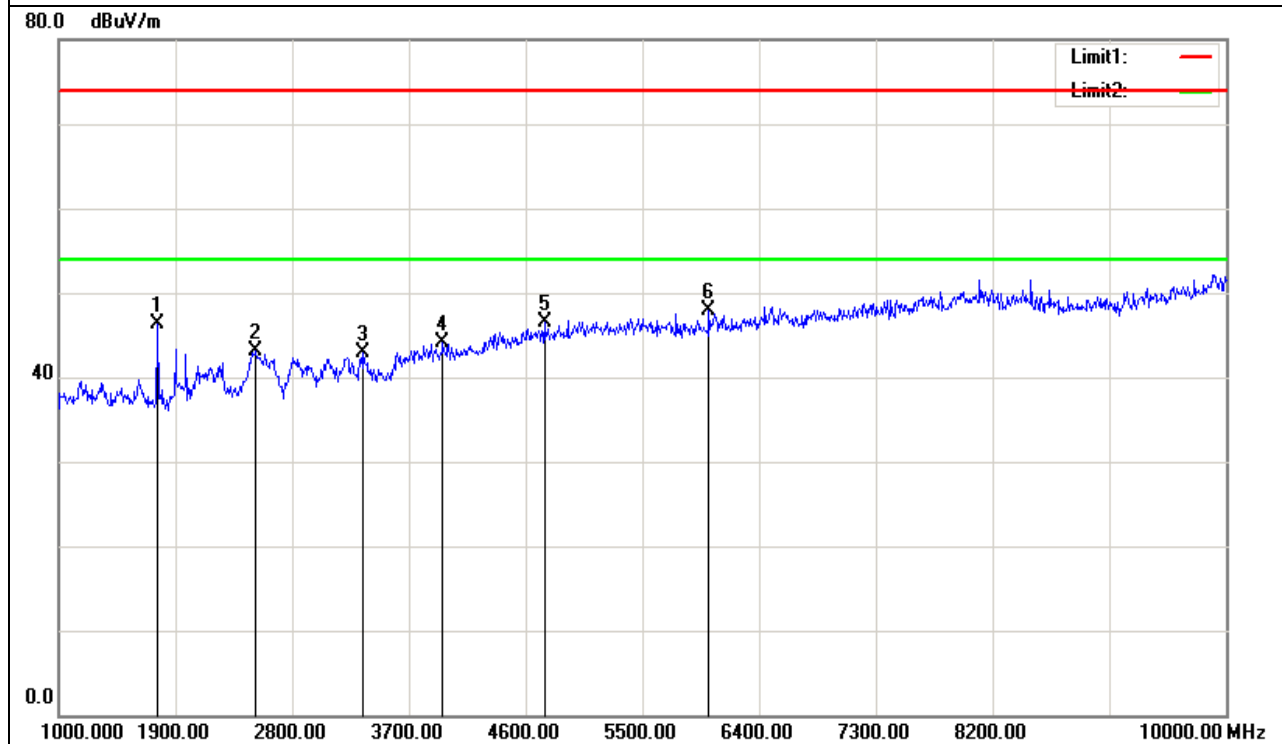


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2441MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1765.000	52.68	-6.35	46.33	74.00	-27.67	peak
2521.000	45.36	-2.22	43.14	74.00	-30.86	peak
3349.000	43.72	-0.77	42.95	74.00	-31.05	peak
3961.000	42.63	1.43	44.06	74.00	-29.94	peak
4744.000	42.31	4.15	46.46	74.00	-27.54	peak
6013.000	41.72	6.10	47.82	74.00	-26.18	peak

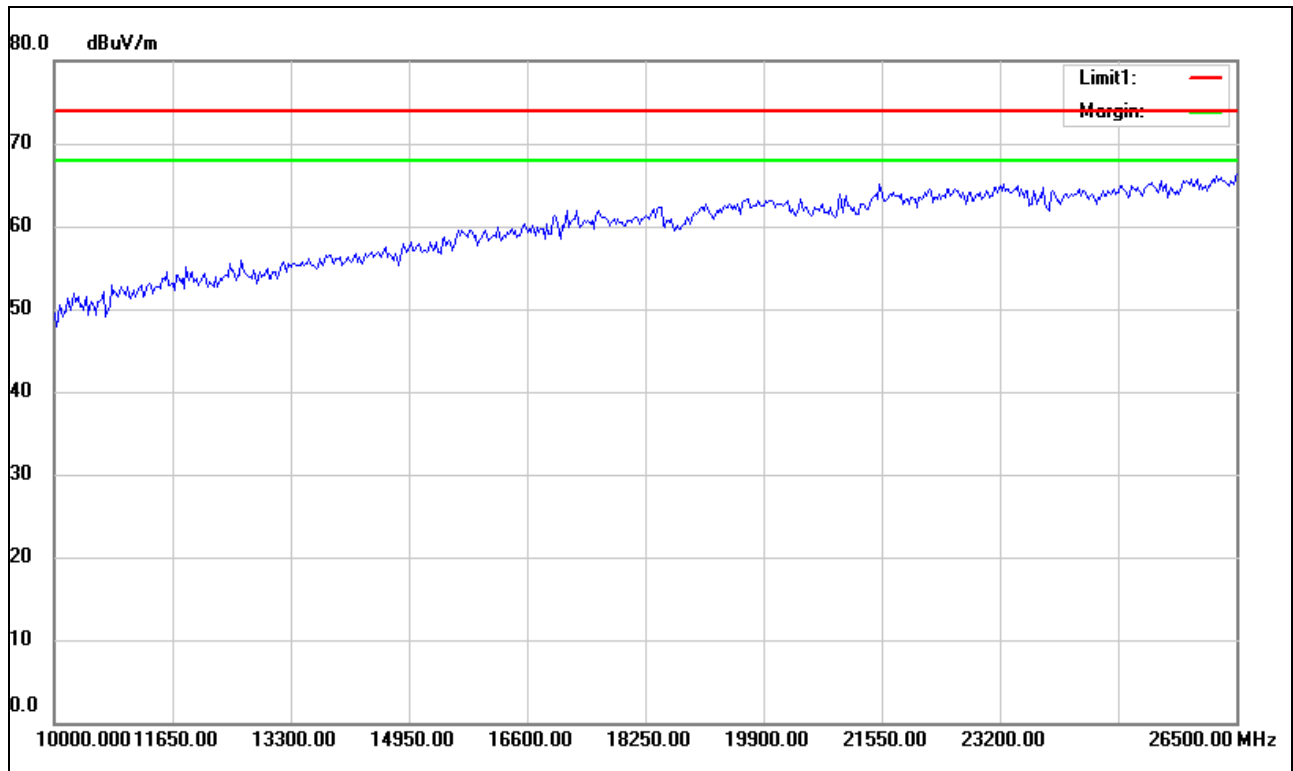
Remark:

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



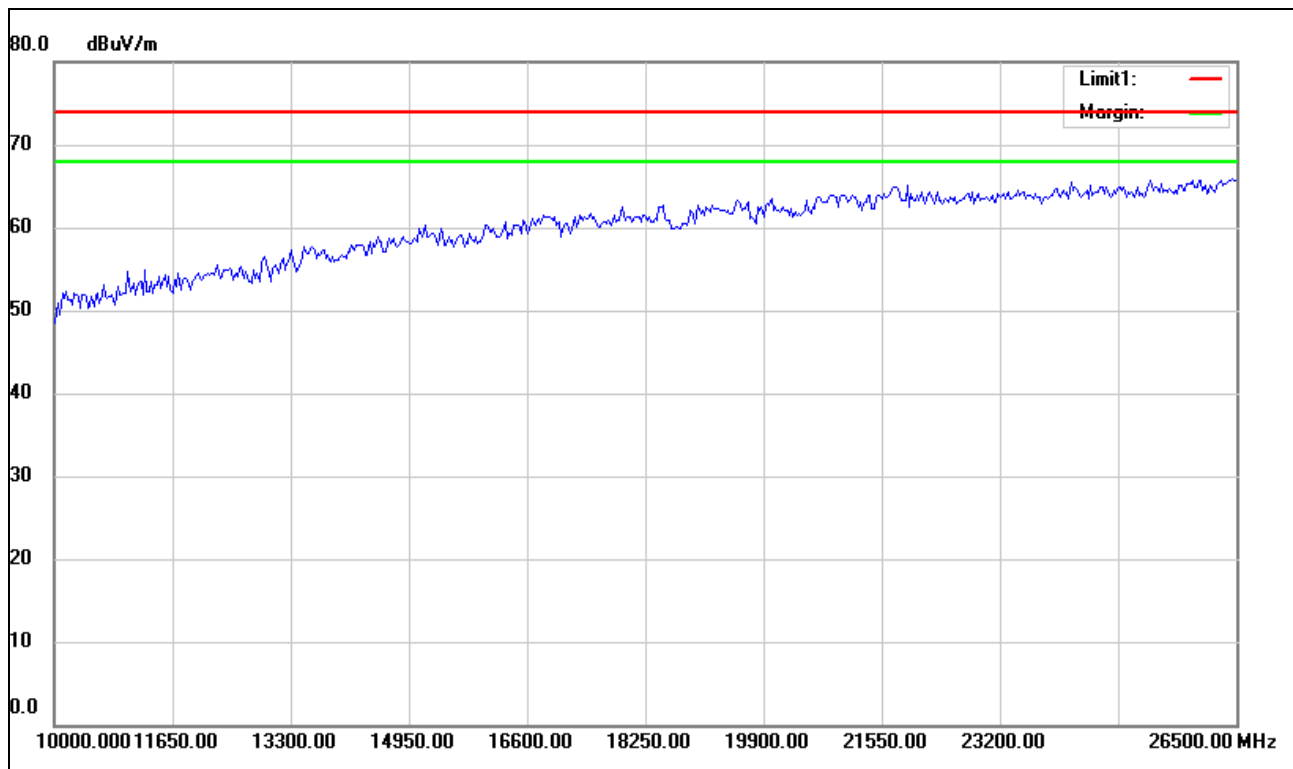
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

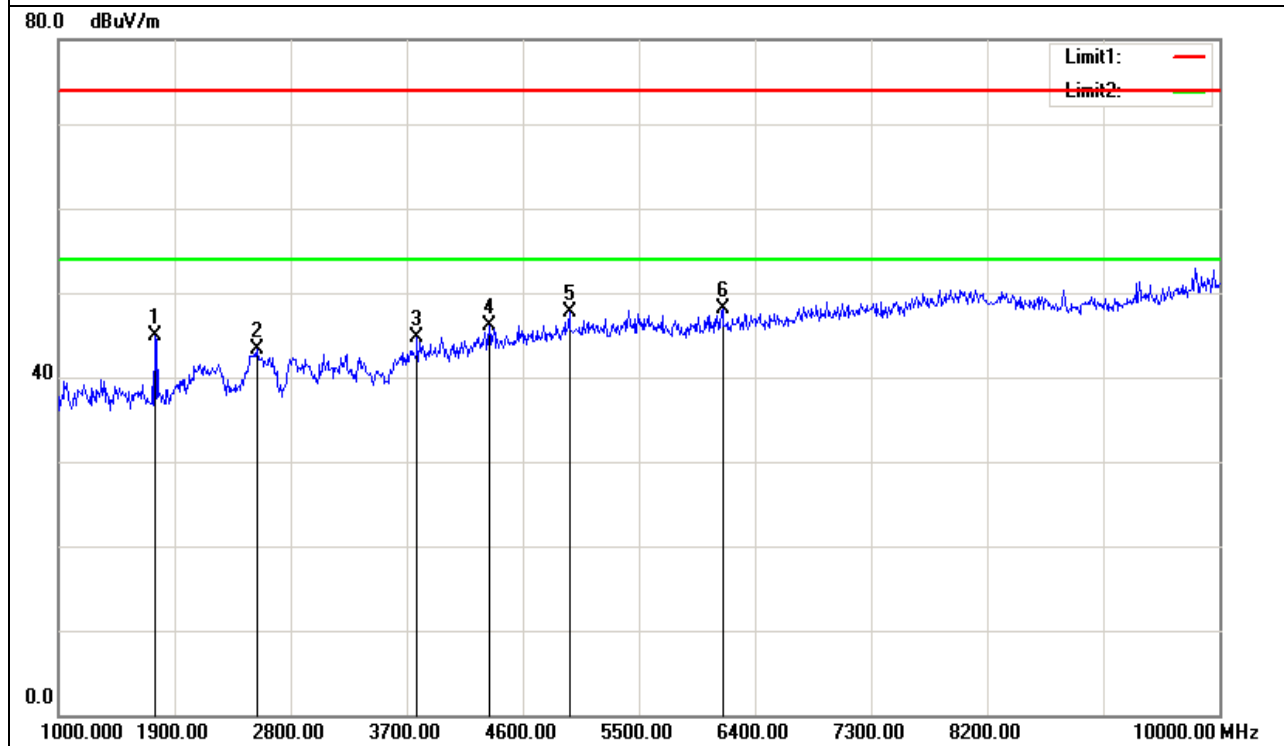


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1747.000	51.29	-6.38	44.91	74.00	-29.09	peak
2539.000	45.45	-2.19	43.26	74.00	-30.74	peak
3781.000	43.97	0.67	44.64	74.00	-29.36	peak
4339.000	43.34	2.78	46.12	74.00	-27.88	peak
4960.000	42.79	4.85	47.64	74.00	-26.36	peak
6148.000	41.70	6.32	48.02	74.00	-25.98	peak

Remark:

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

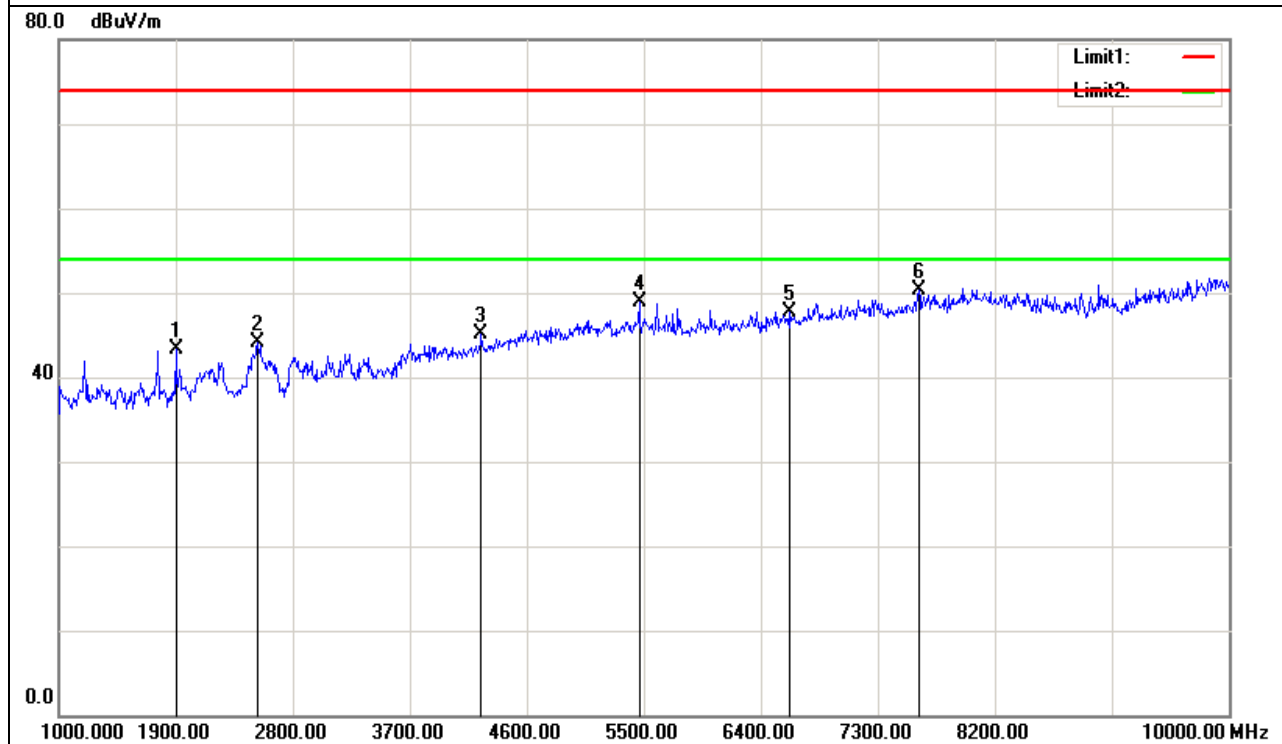


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2480MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	48.90	-5.63	43.27	74.00	-30.73	peak
2530.000	46.36	-2.21	44.15	74.00	-29.85	peak
4249.000	42.60	2.47	45.07	74.00	-28.93	peak
5464.000	43.04	5.81	48.85	74.00	-25.15	peak
6616.000	40.66	7.08	47.74	74.00	-26.26	peak
7615.000	41.34	8.90	50.24	74.00	-23.76	peak

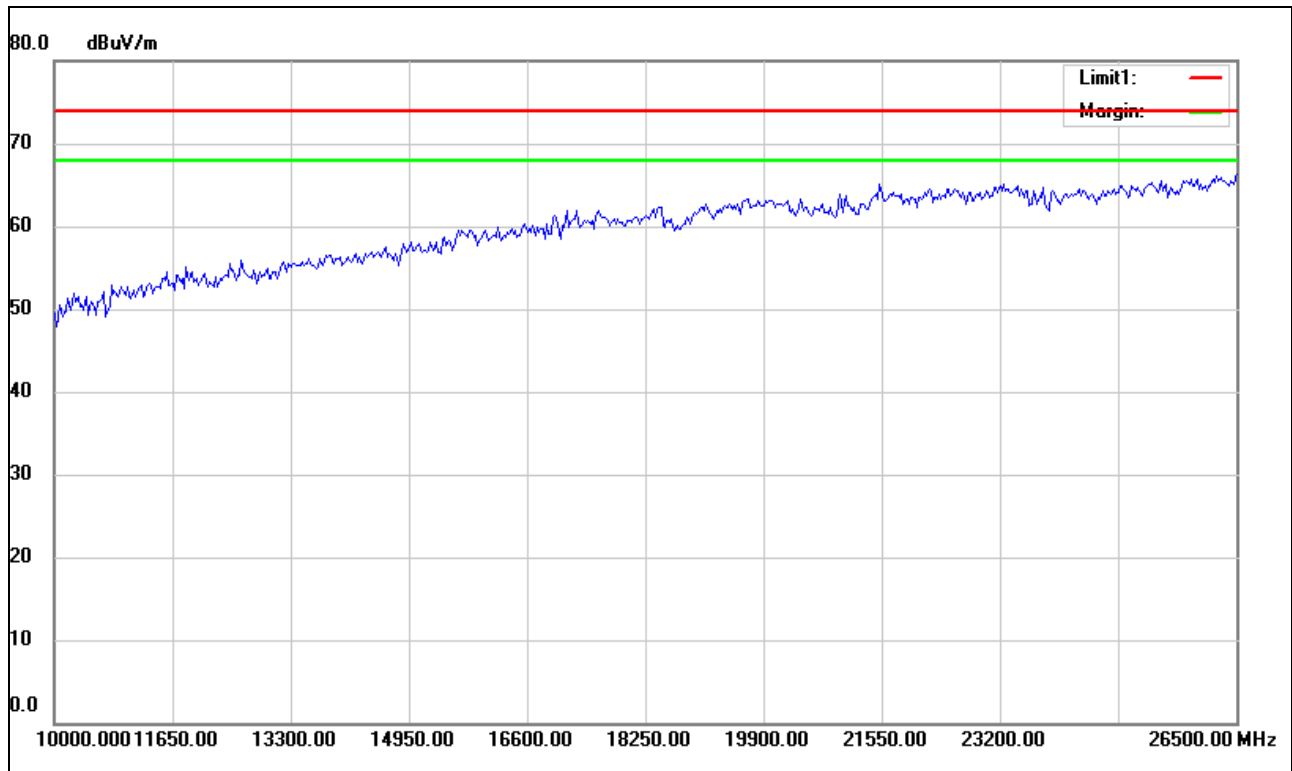
Remark:

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



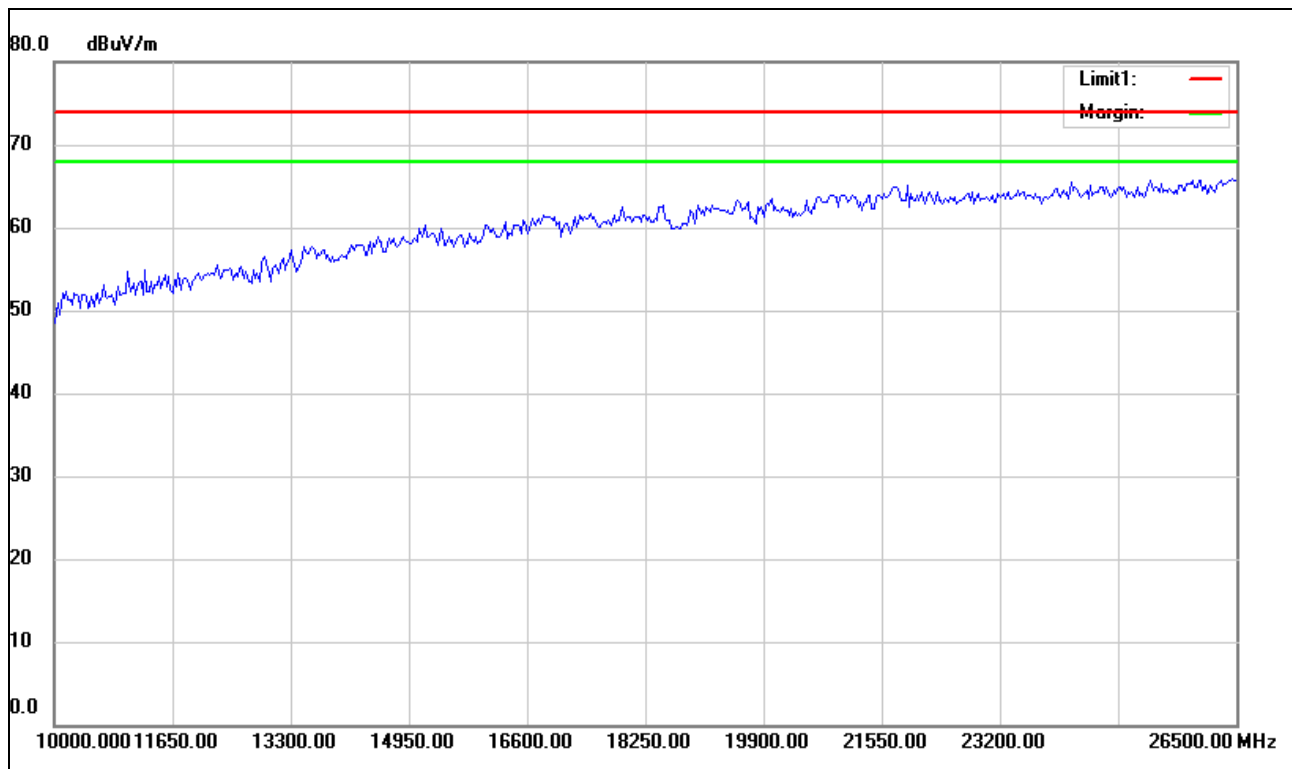
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

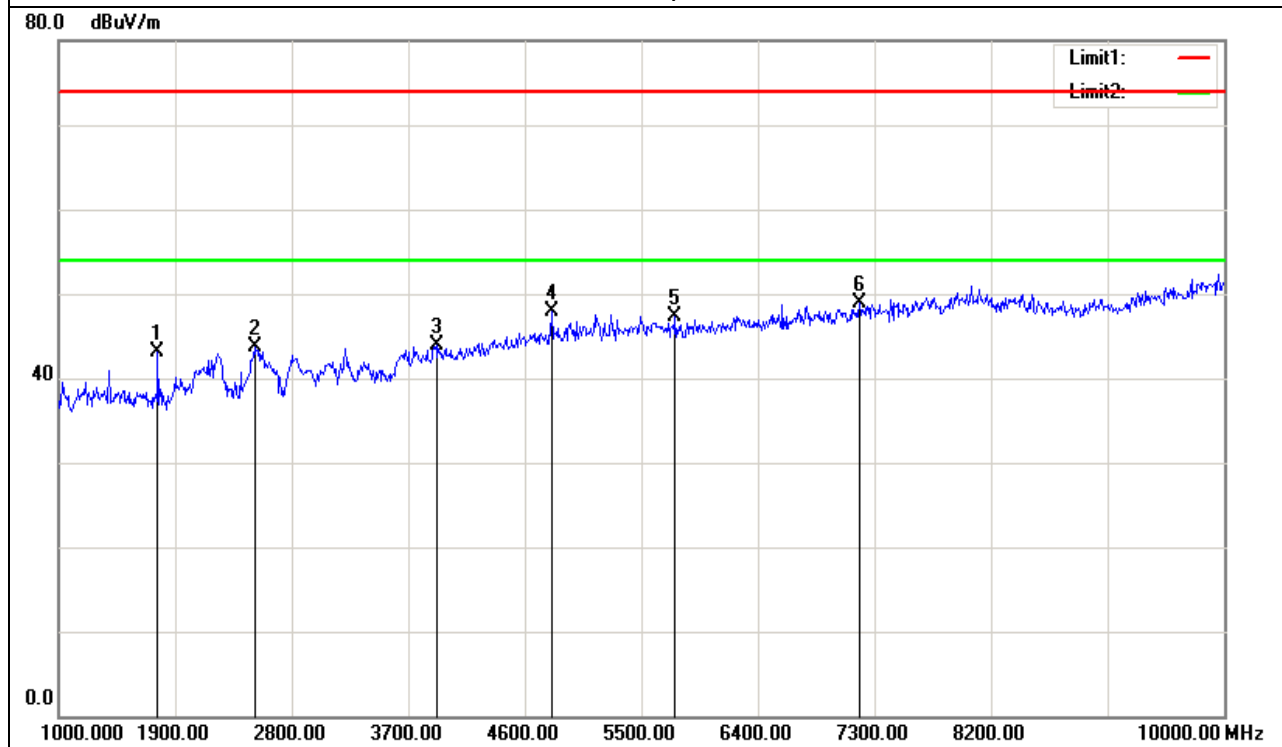


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1765.000	49.47	-6.35	43.12	74.00	-30.88	peak
2512.000	45.98	-2.24	43.74	74.00	-30.26	peak
3916.000	42.75	1.24	43.99	74.00	-30.01	peak
4807.000	43.52	4.35	47.87	74.00	-26.13	peak
5761.000	41.33	5.98	47.31	74.00	-26.69	peak
7183.000	40.78	8.06	48.84	74.00	-25.16	peak

Remark:

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

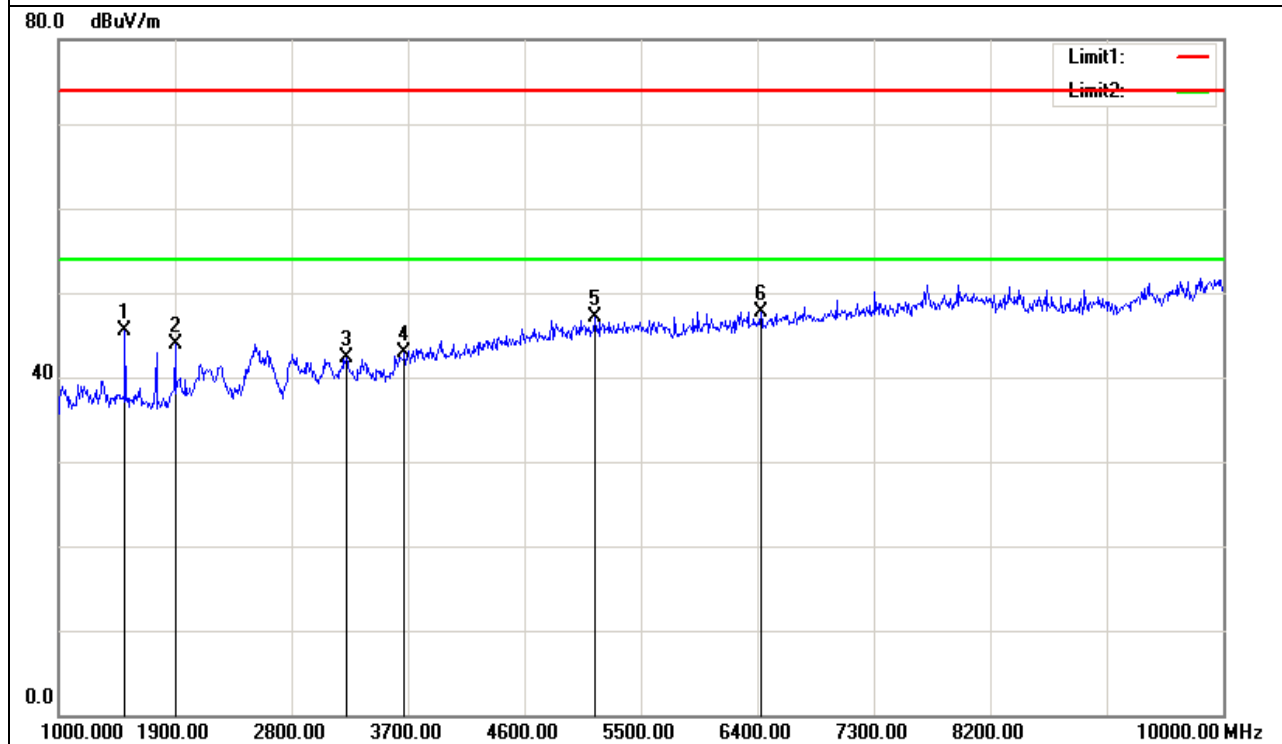


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2402MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1513.000	52.46	-6.86	45.60	74.00	-28.40	peak
1900.000	49.54	-5.63	43.91	74.00	-30.09	peak
3223.000	43.24	-0.99	42.25	74.00	-31.75	peak
3673.000	42.64	0.21	42.85	74.00	-31.15	peak
5149.000	41.86	5.25	47.11	74.00	-26.89	peak
6427.000	40.93	6.77	47.70	74.00	-26.30	peak

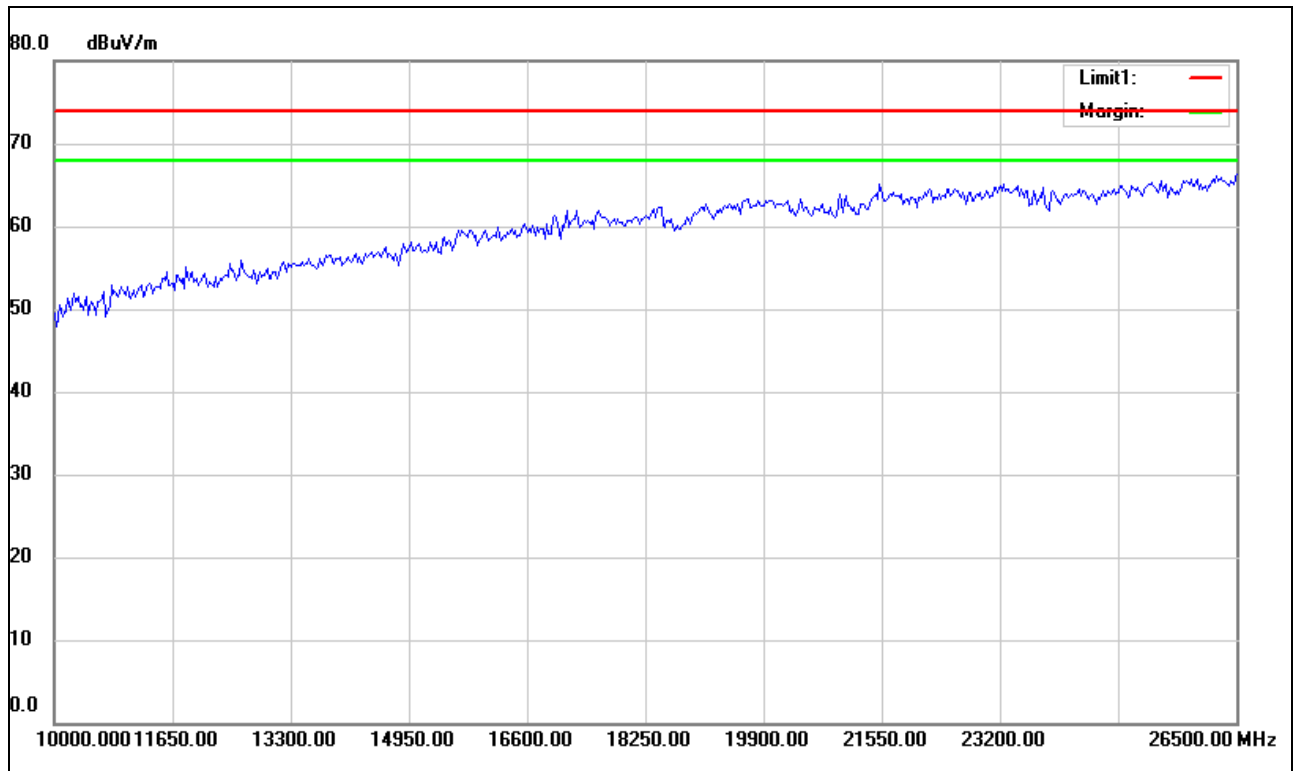
Remark:

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



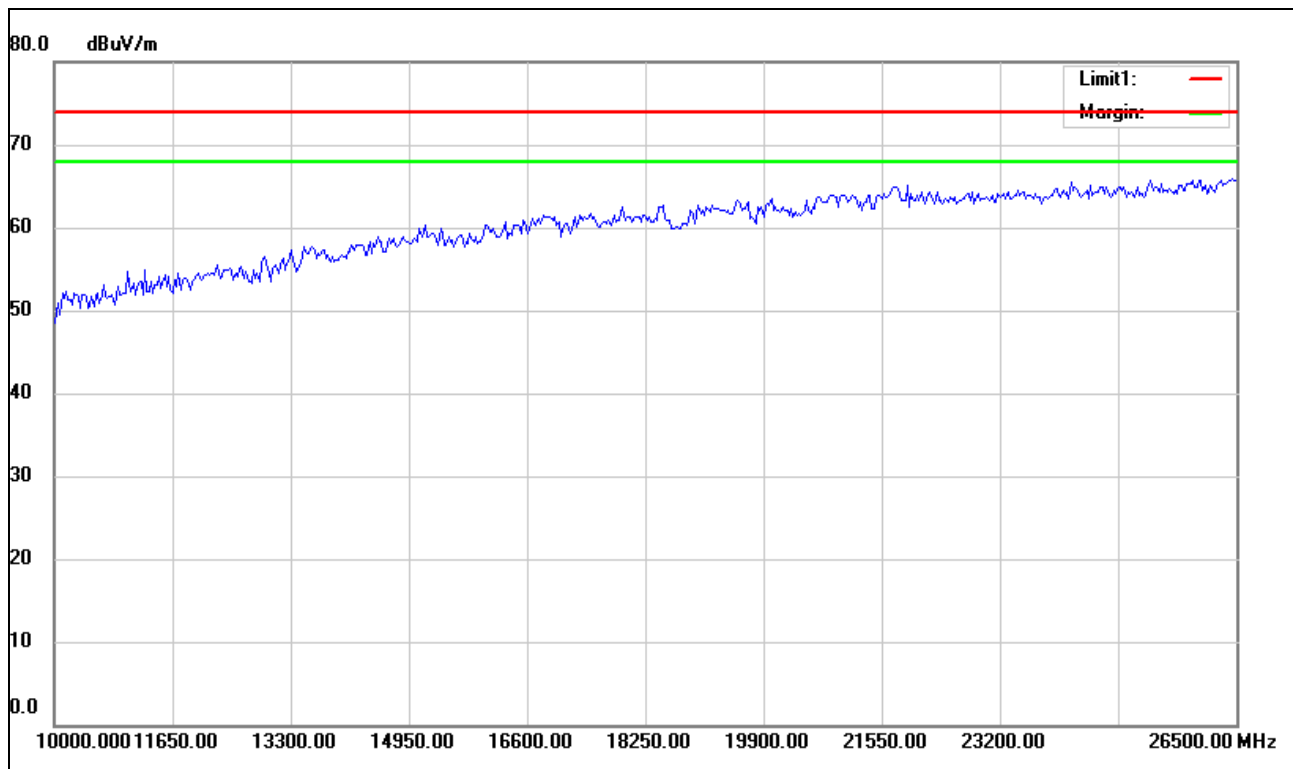
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

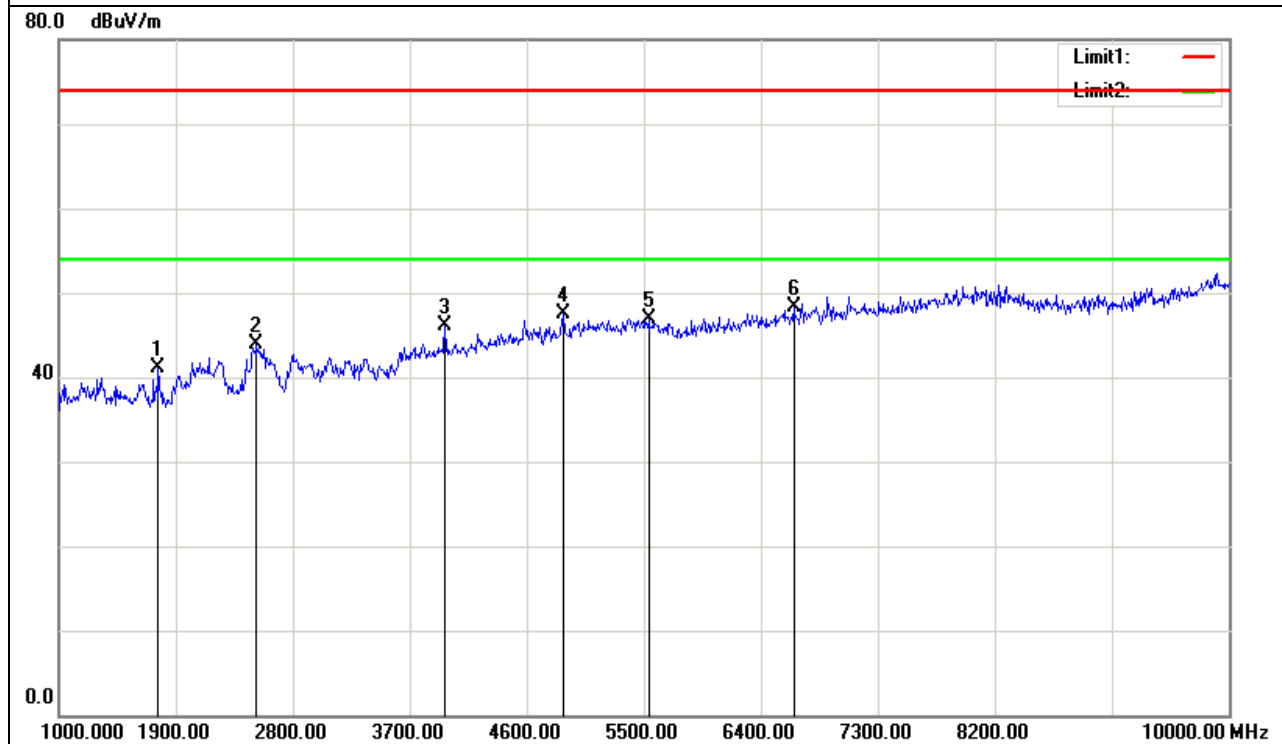


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1765.000	47.48	-6.35	41.13	74.00	-32.87	peak
2521.000	46.19	-2.22	43.97	74.00	-30.03	peak
3970.000	44.57	1.46	46.03	74.00	-27.97	peak
4879.000	42.86	4.59	47.45	74.00	-26.55	peak
5536.000	41.01	5.89	46.90	74.00	-27.10	peak
6652.000	41.18	7.14	48.32	74.00	-25.68	peak

Remark:

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

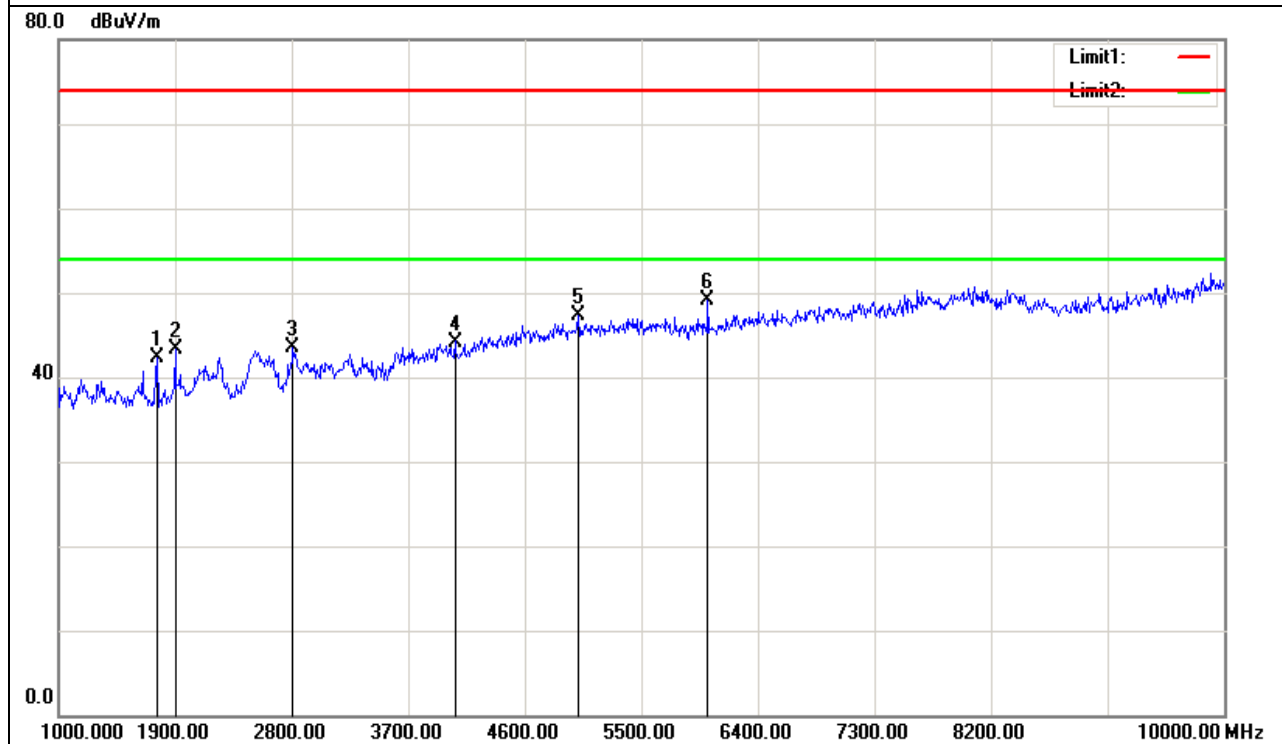


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2441MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1765.000	48.70	-6.35	42.35	74.00	-31.65	peak
1900.000	49.02	-5.63	43.39	74.00	-30.61	peak
2809.000	45.25	-1.70	43.55	74.00	-30.45	peak
4060.000	42.40	1.80	44.20	74.00	-29.80	peak
5014.000	42.37	5.00	47.37	74.00	-26.63	peak
6013.000	43.02	6.10	49.12	74.00	-24.88	peak

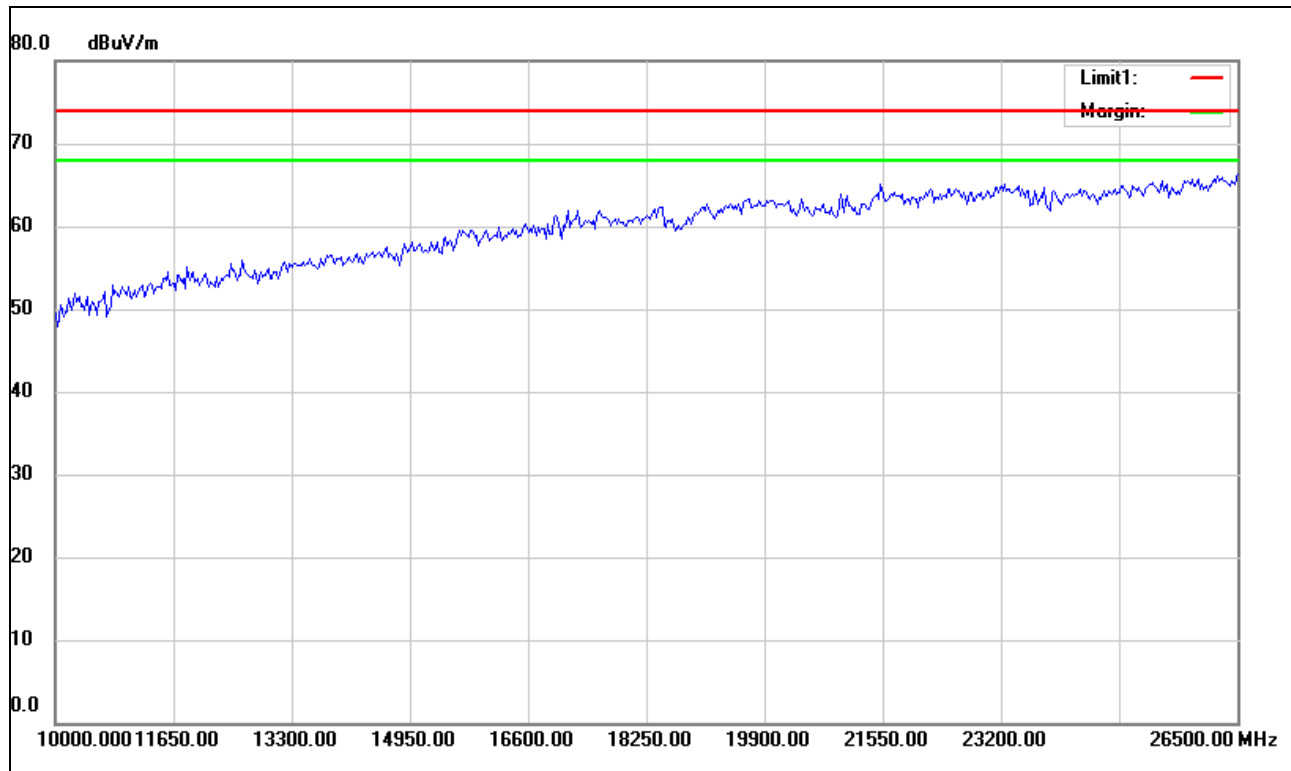
Remark:

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



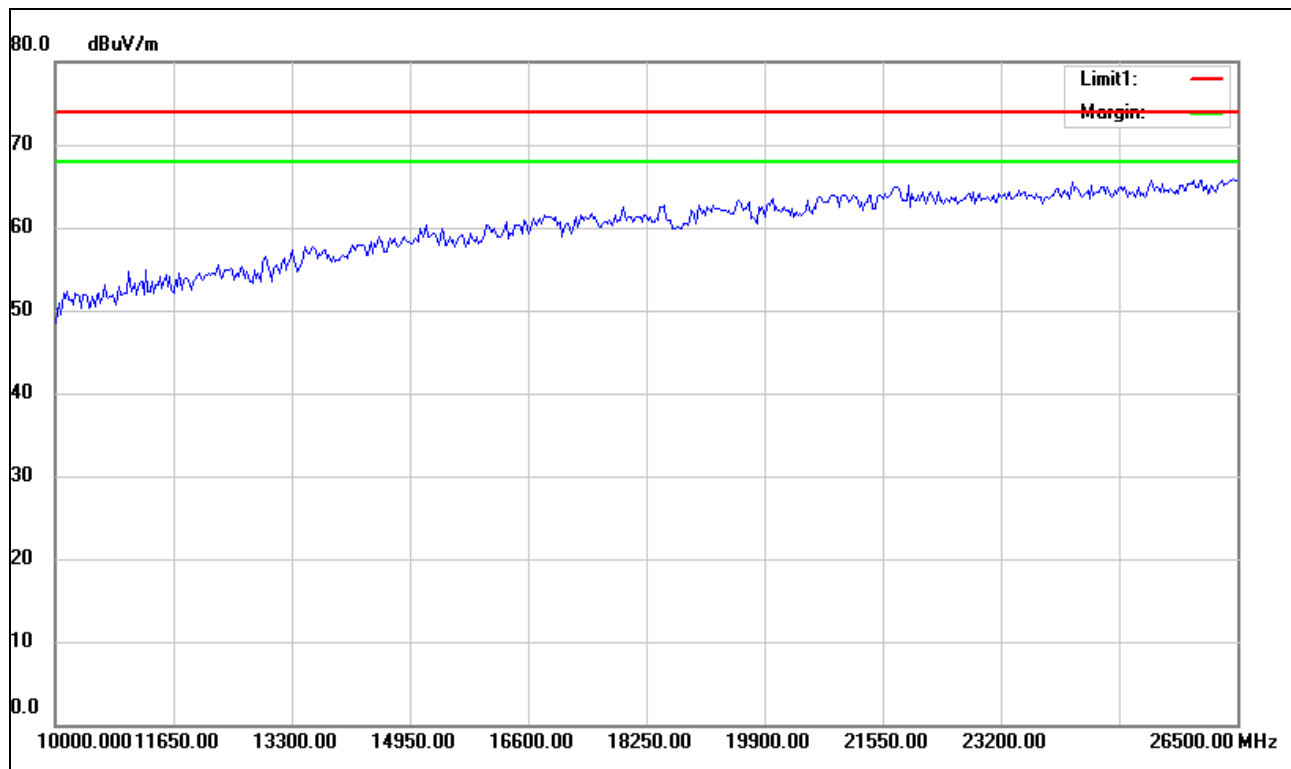
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

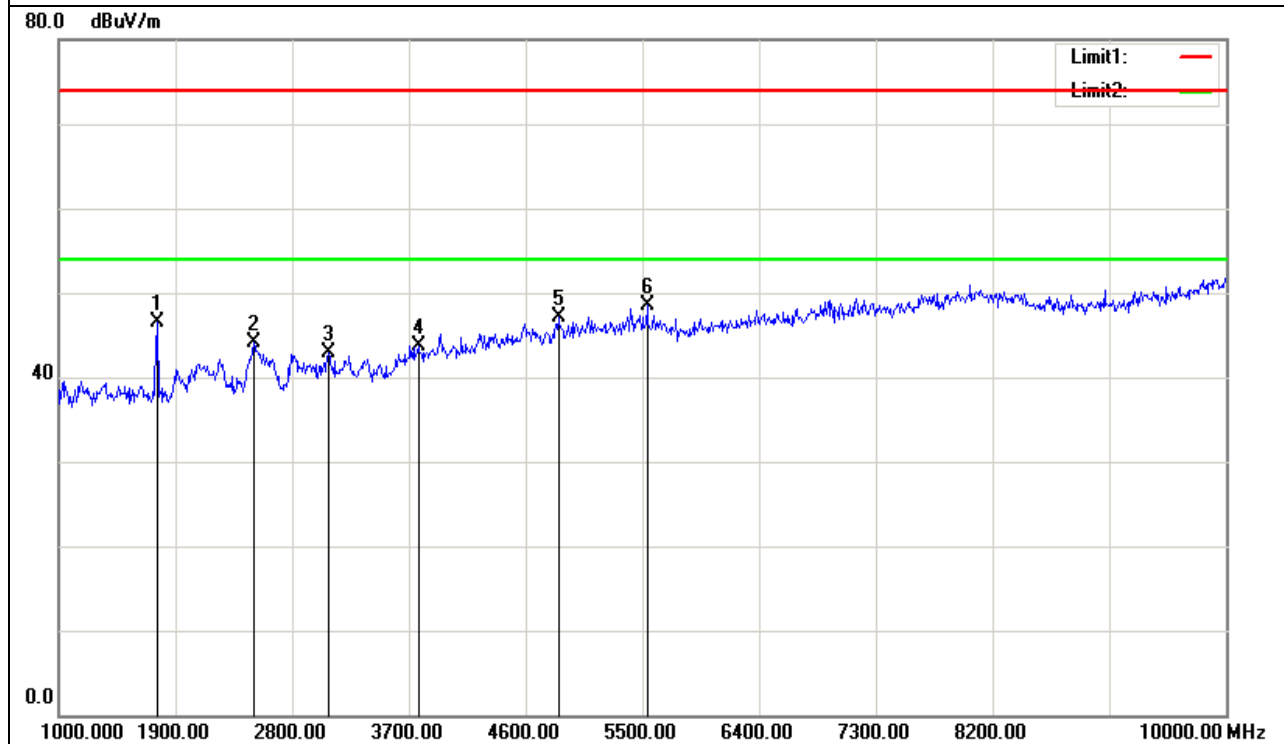


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1765.000	52.94	-6.35	46.59	74.00	-27.41	peak
2503.000	46.28	-2.25	44.03	74.00	-29.97	peak
3079.000	44.13	-1.23	42.90	74.00	-31.10	peak
3772.000	43.12	0.63	43.75	74.00	-30.25	peak
4852.000	42.68	4.50	47.18	74.00	-26.82	peak
5536.000	42.64	5.89	48.53	74.00	-25.47	peak

Remark:

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

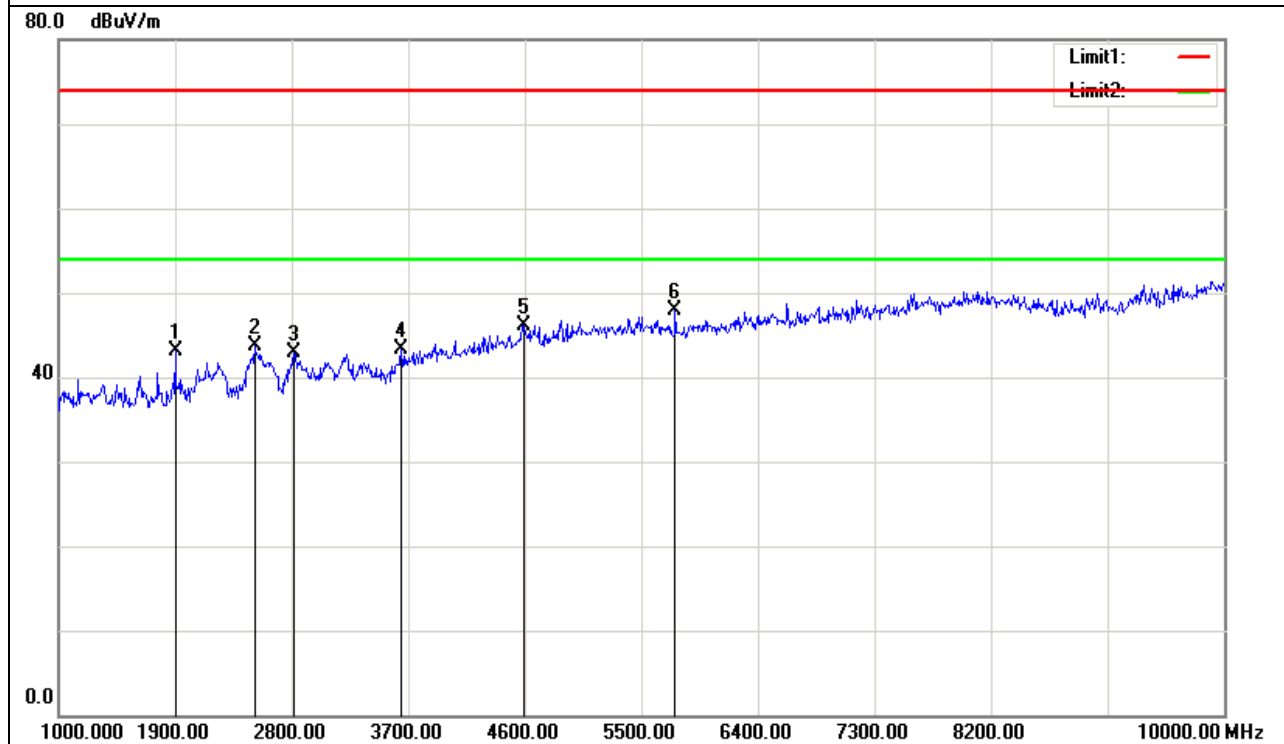


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	TX 2480MHz (3Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	48.79	-5.63	43.16	74.00	-30.84	peak
2512.000	45.89	-2.24	43.65	74.00	-30.35	peak
2818.000	44.55	-1.69	42.86	74.00	-31.14	peak
3646.000	43.18	0.10	43.28	74.00	-30.72	peak
4591.000	42.54	3.65	46.19	74.00	-27.81	peak
5761.000	41.91	5.98	47.89	74.00	-26.11	peak

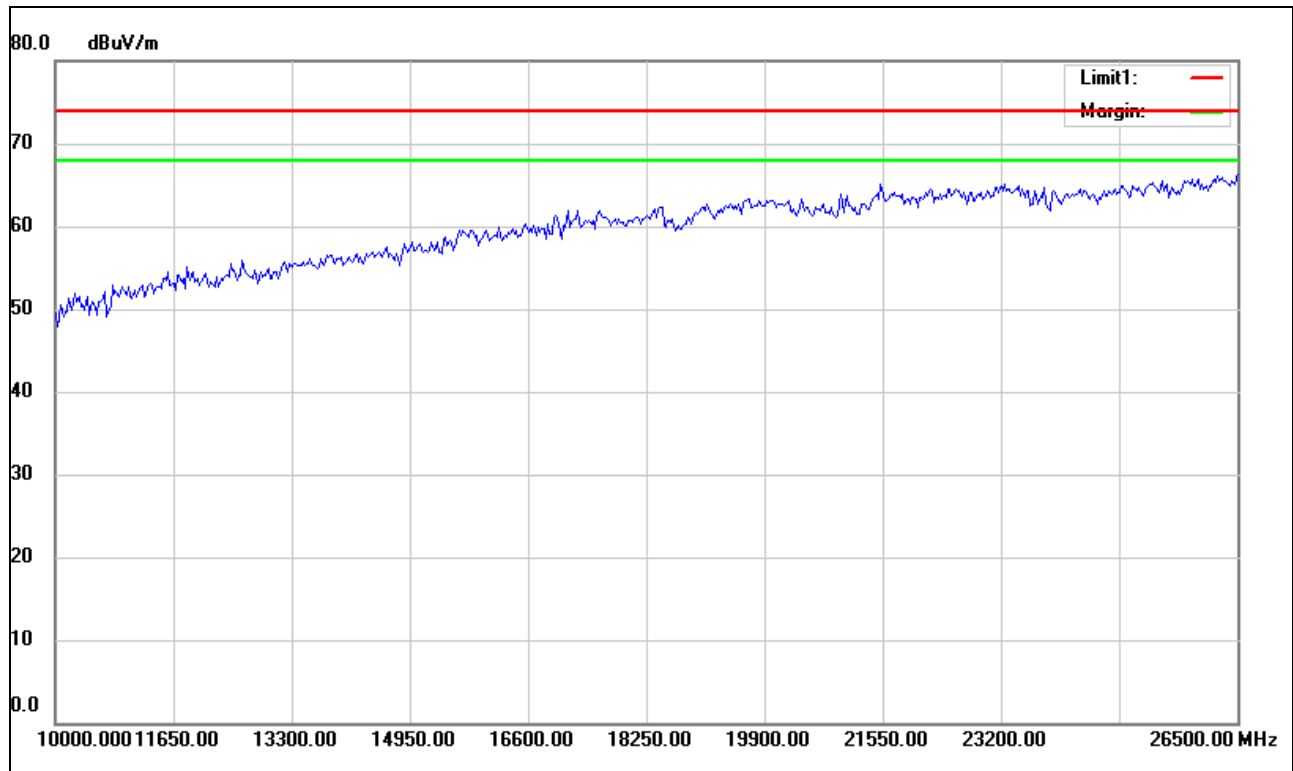
Remark:

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



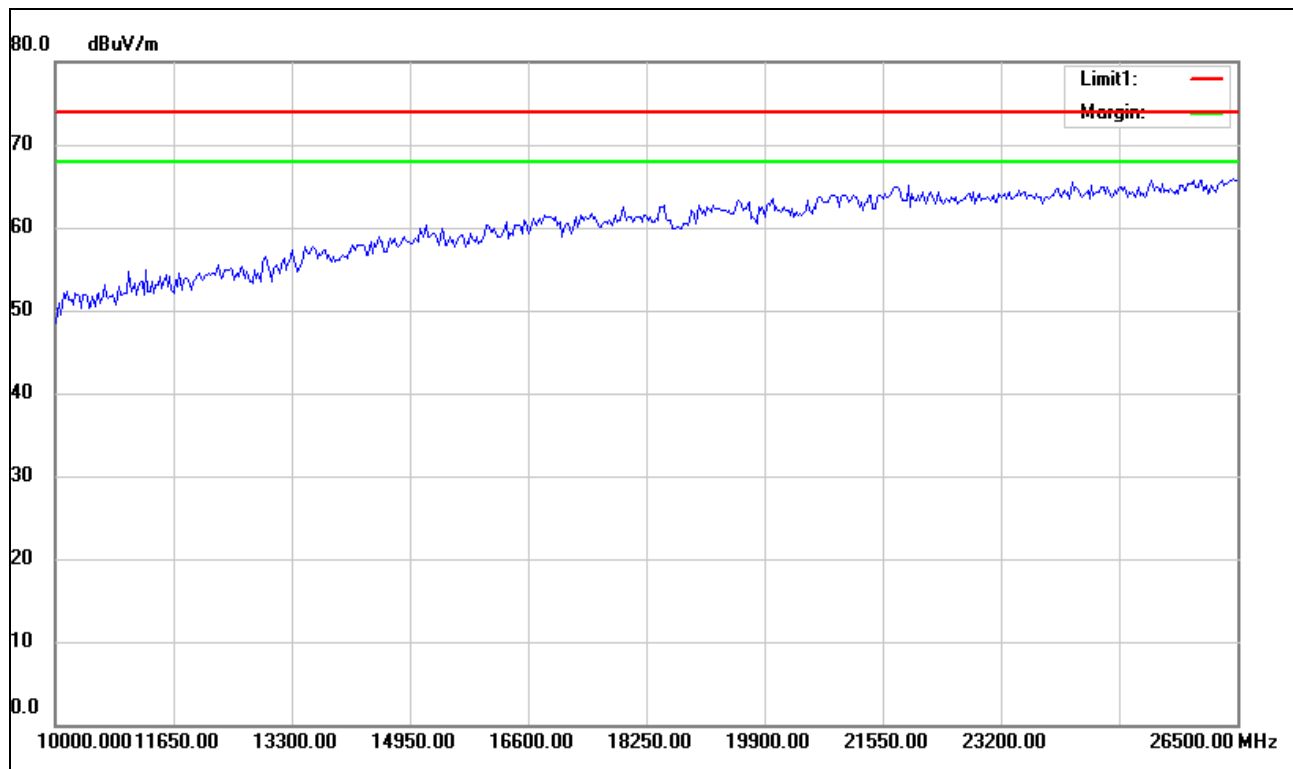
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

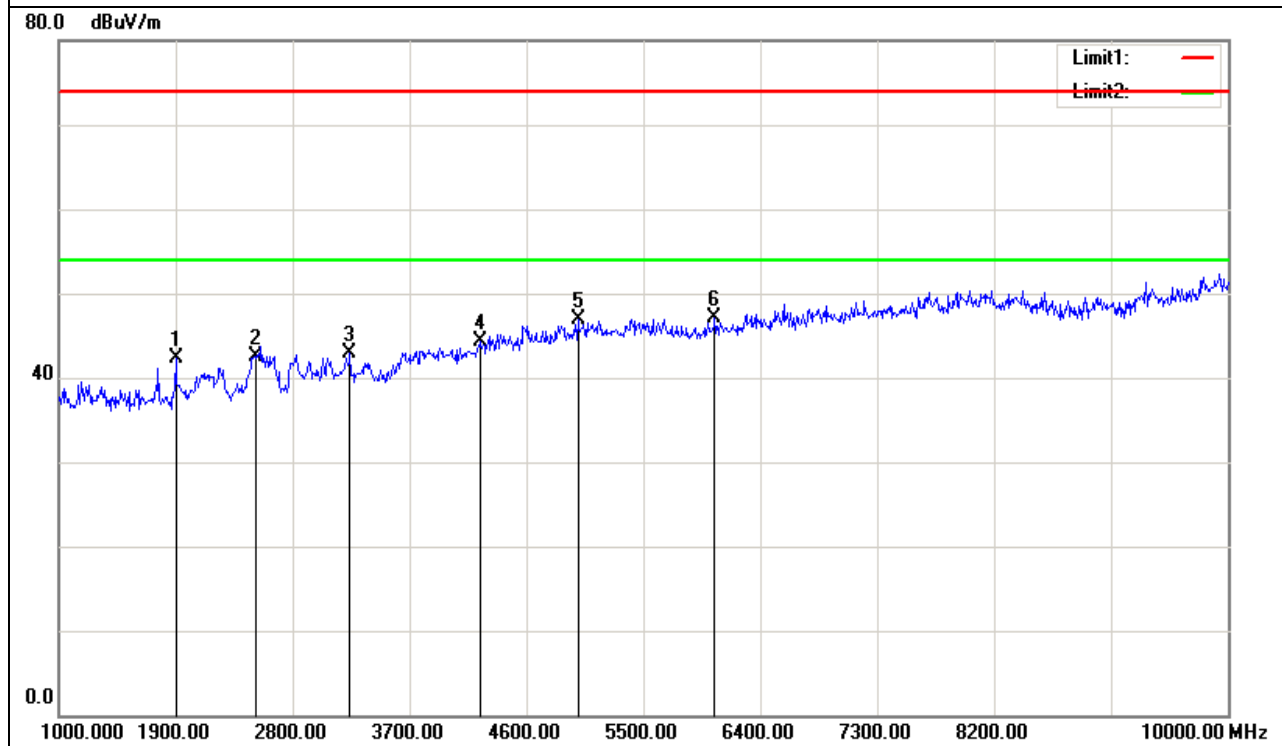


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2402MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	47.85	-5.63	42.22	74.00	-31.78	peak
2521.000	44.80	-2.22	42.58	74.00	-31.42	peak
3241.000	43.85	-0.96	42.89	74.00	-31.11	peak
4249.000	41.80	2.47	44.27	74.00	-29.73	peak
4996.000	41.95	4.97	46.92	74.00	-27.08	peak
6049.000	41.03	6.16	47.19	74.00	-26.81	peak

Remark:

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

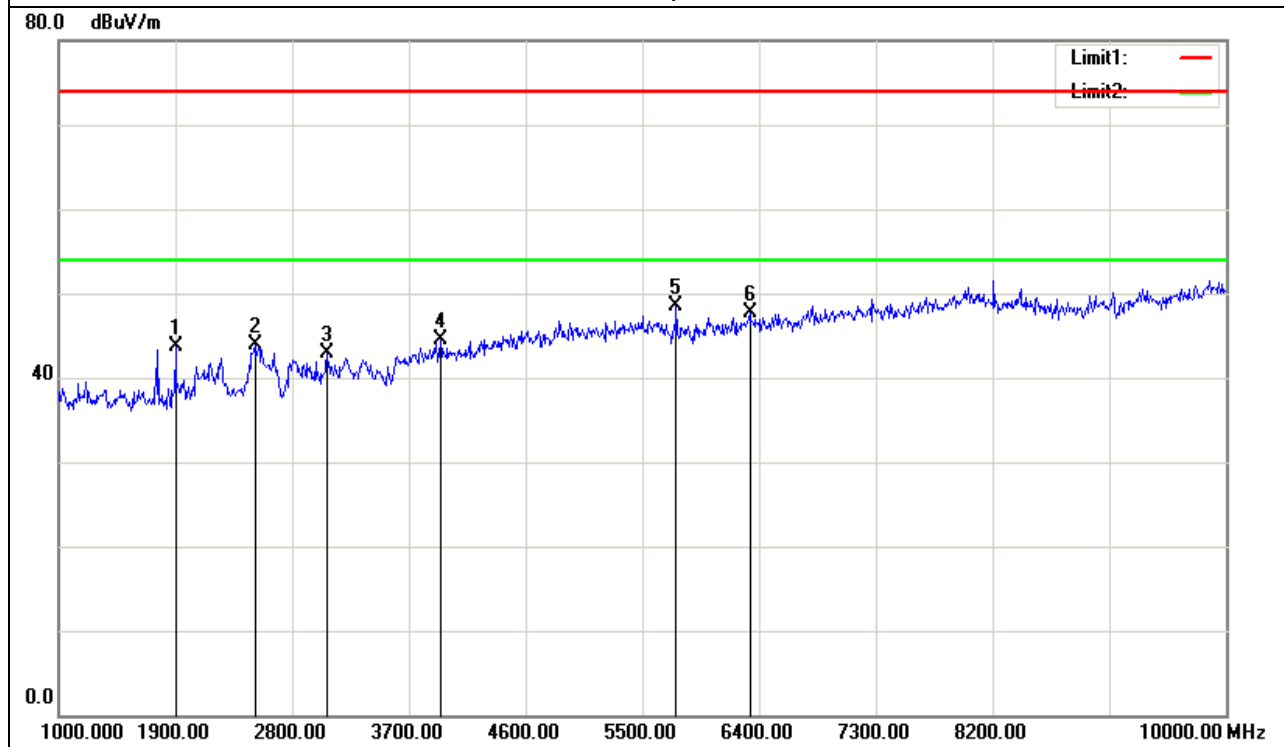


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2402MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	49.26	-5.63	43.63	74.00	-30.37	peak
2512.000	46.13	-2.24	43.89	74.00	-30.11	peak
3070.000	44.17	-1.24	42.93	74.00	-31.07	peak
3943.000	43.13	1.35	44.48	74.00	-29.52	peak
5761.000	42.44	5.98	48.42	74.00	-25.58	peak
6328.000	41.13	6.61	47.74	74.00	-26.26	peak

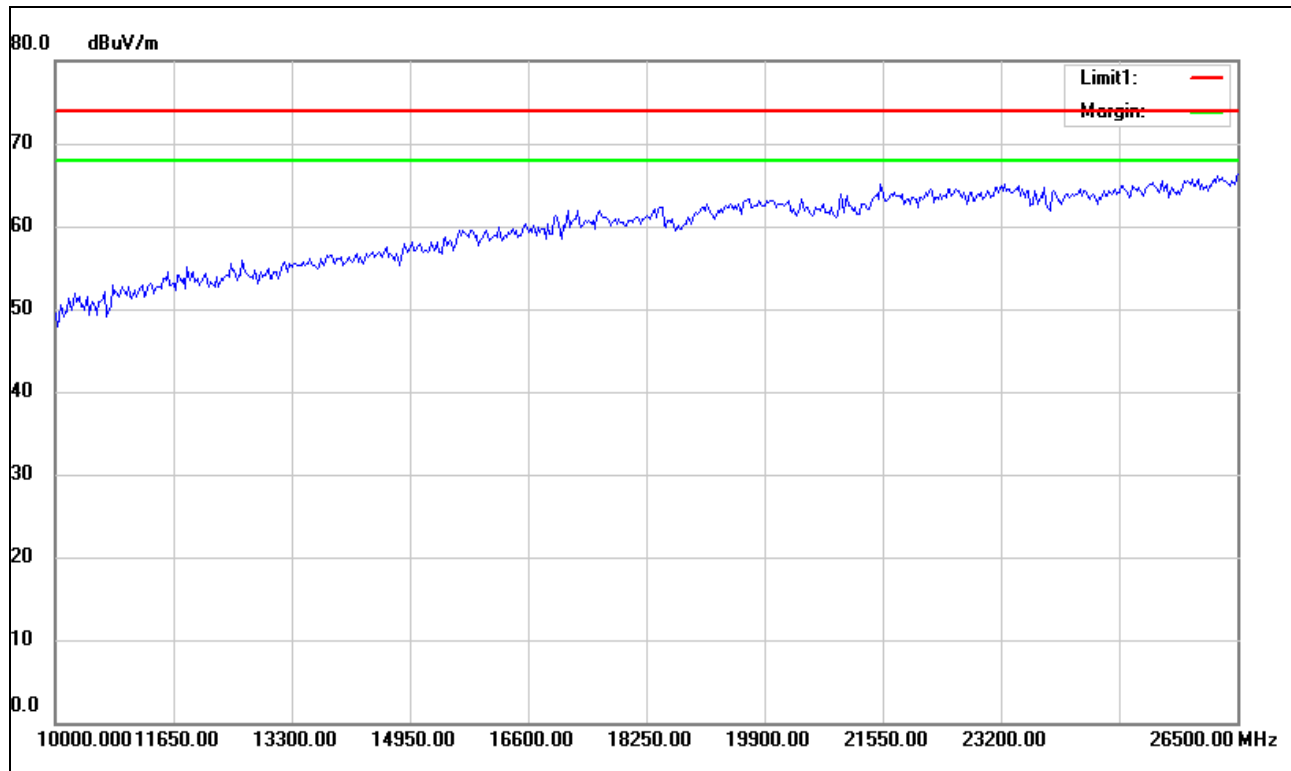
Remark:

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



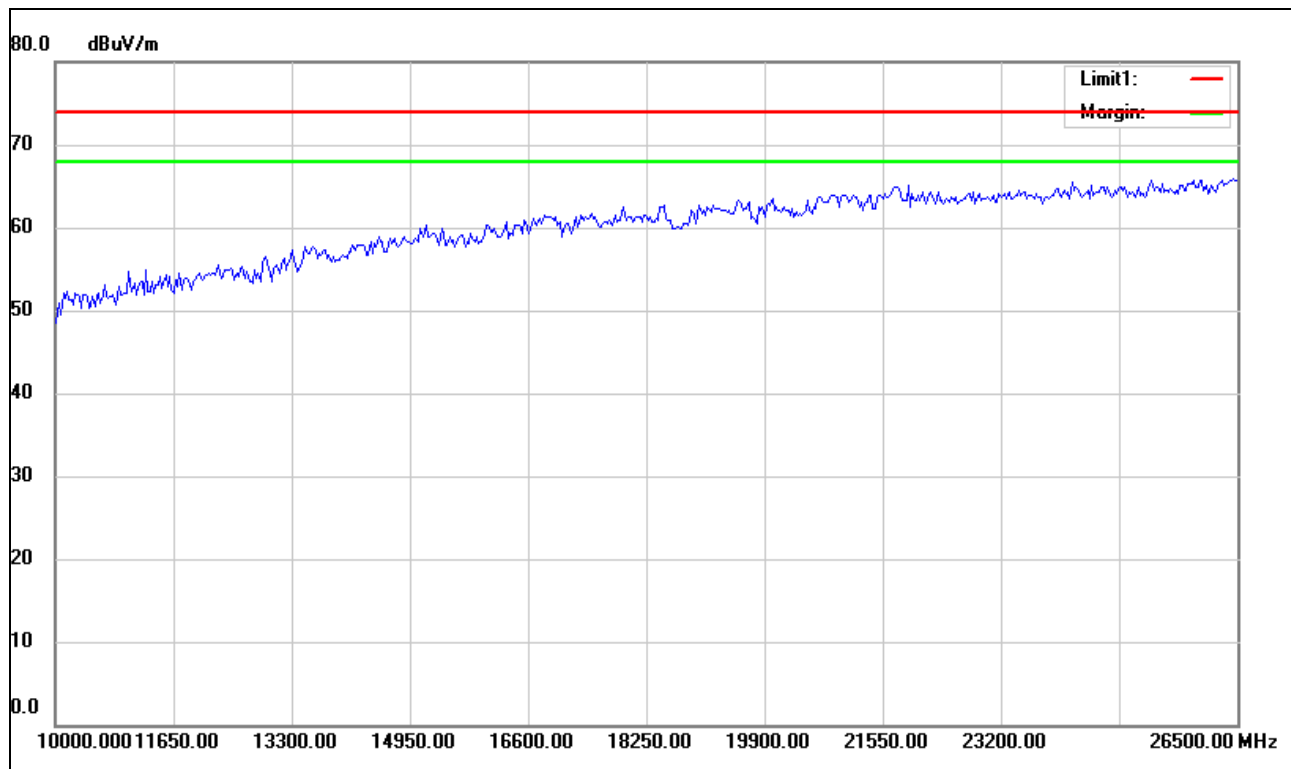
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

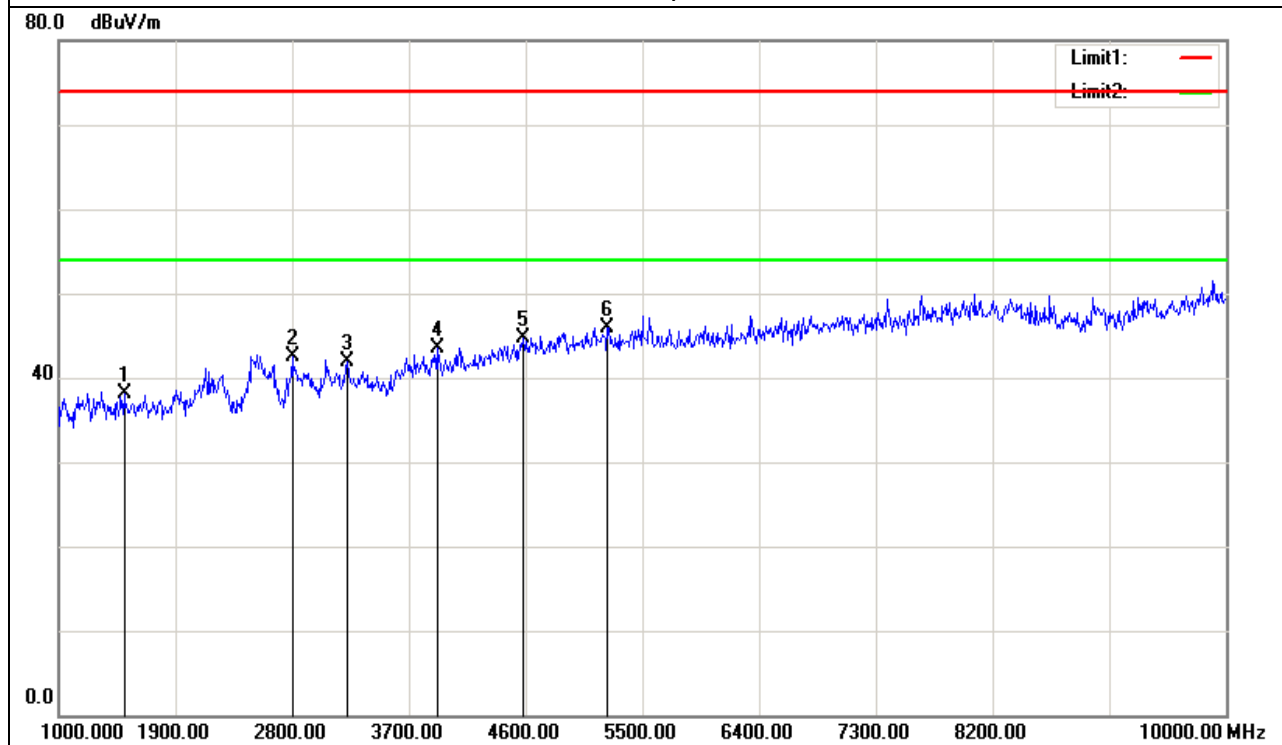


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2441MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1504.000	44.95	-6.87	38.08	74.00	-35.92	peak
2800.000	44.25	-1.72	42.53	74.00	-31.47	peak
3223.000	42.95	-0.99	41.96	74.00	-32.04	peak
3916.000	42.29	1.24	43.53	74.00	-30.47	peak
4582.000	41.06	3.62	44.68	74.00	-29.32	peak
5230.000	40.59	5.39	45.98	74.00	-28.02	peak

Remark:

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

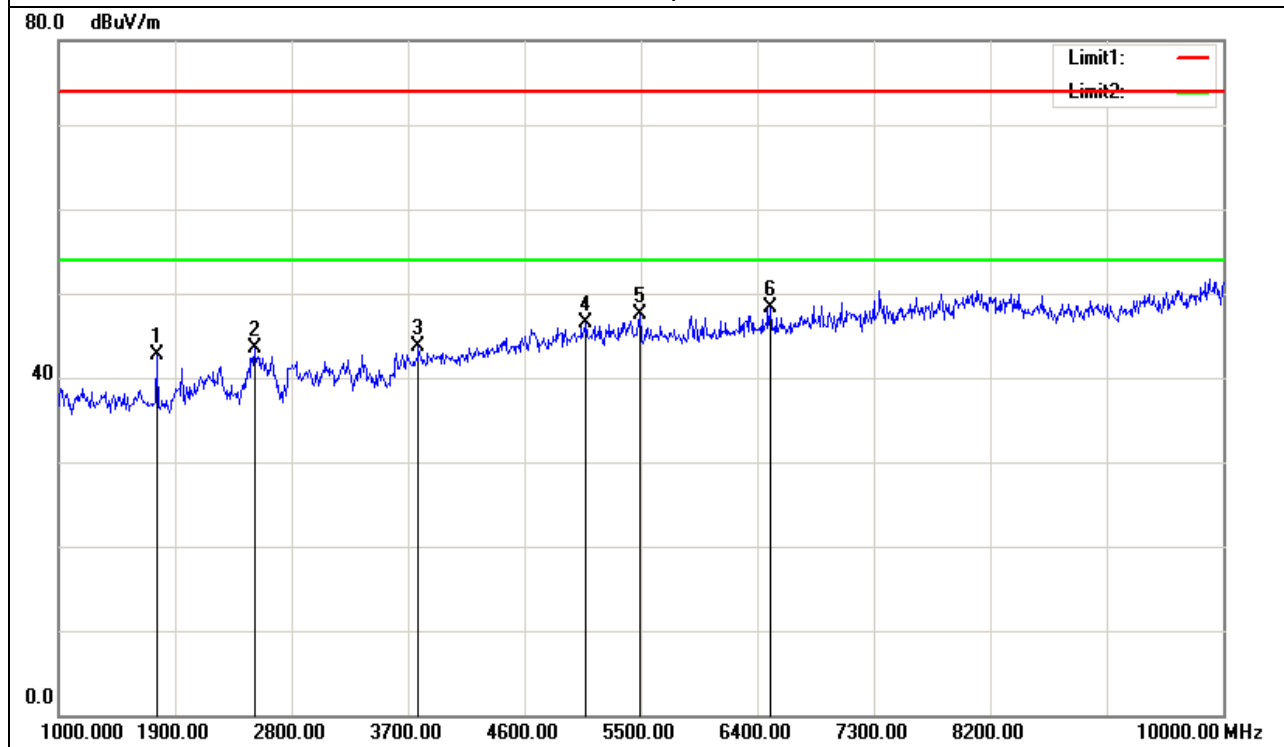


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2441MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1756.000	48.98	-6.36	42.62	74.00	-31.38	peak
2512.000	45.77	-2.24	43.53	74.00	-30.47	peak
3781.000	43.10	0.67	43.77	74.00	-30.23	peak
5077.000	41.36	5.12	46.48	74.00	-27.52	peak
5491.000	41.58	5.85	47.43	74.00	-26.57	peak
6499.000	41.44	6.89	48.33	74.00	-25.67	peak

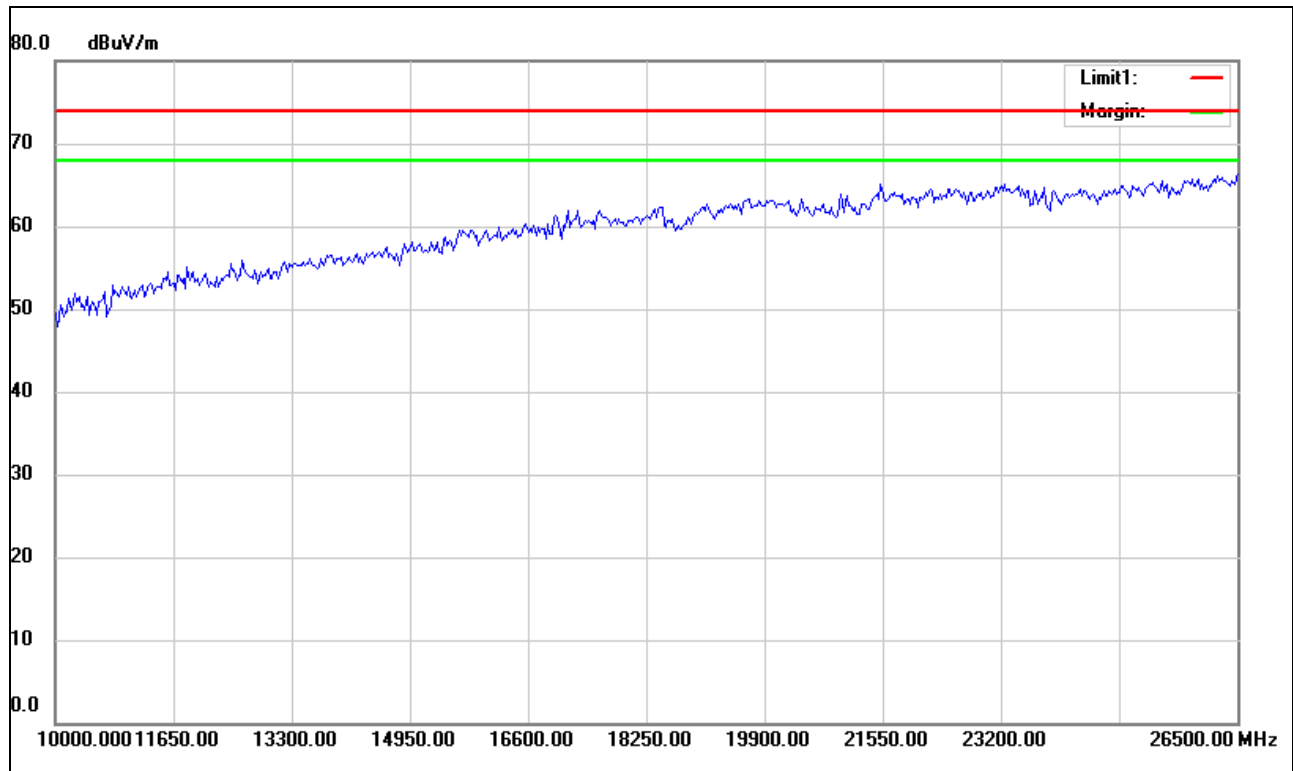
Remark:

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



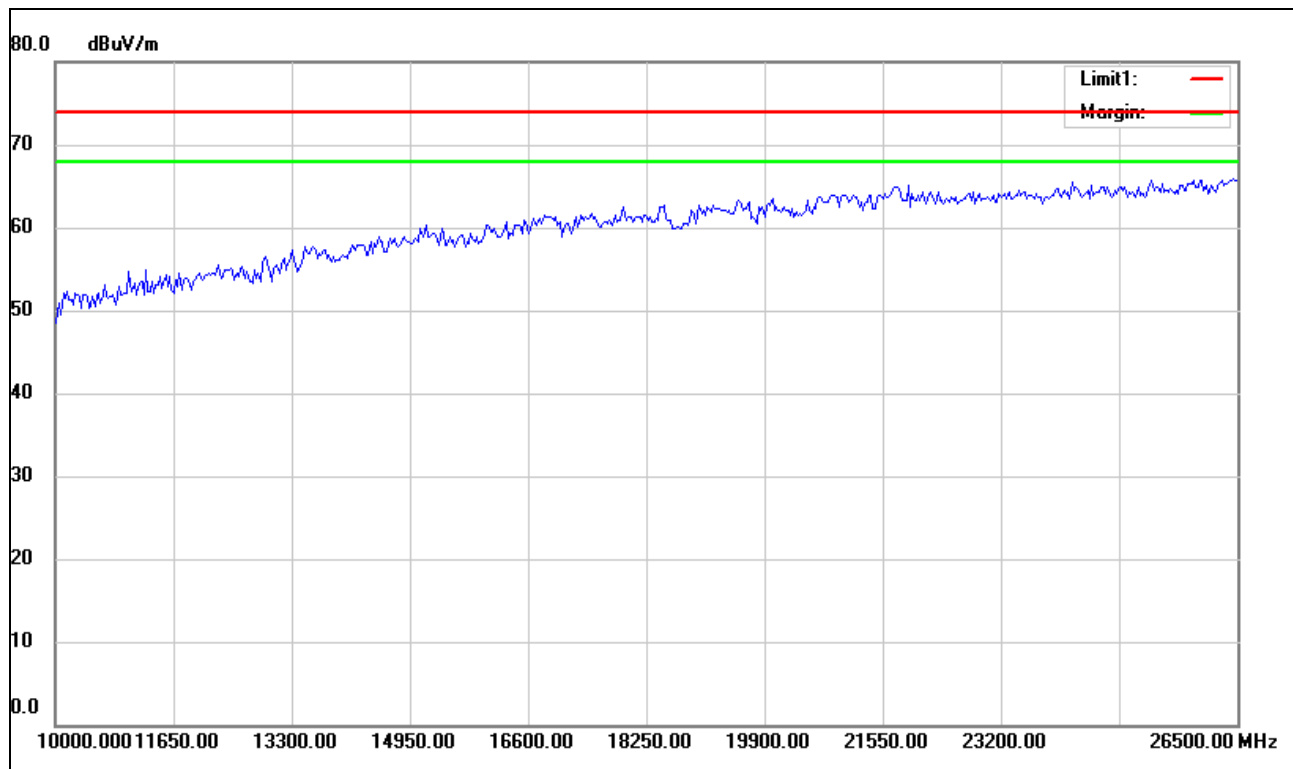
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz

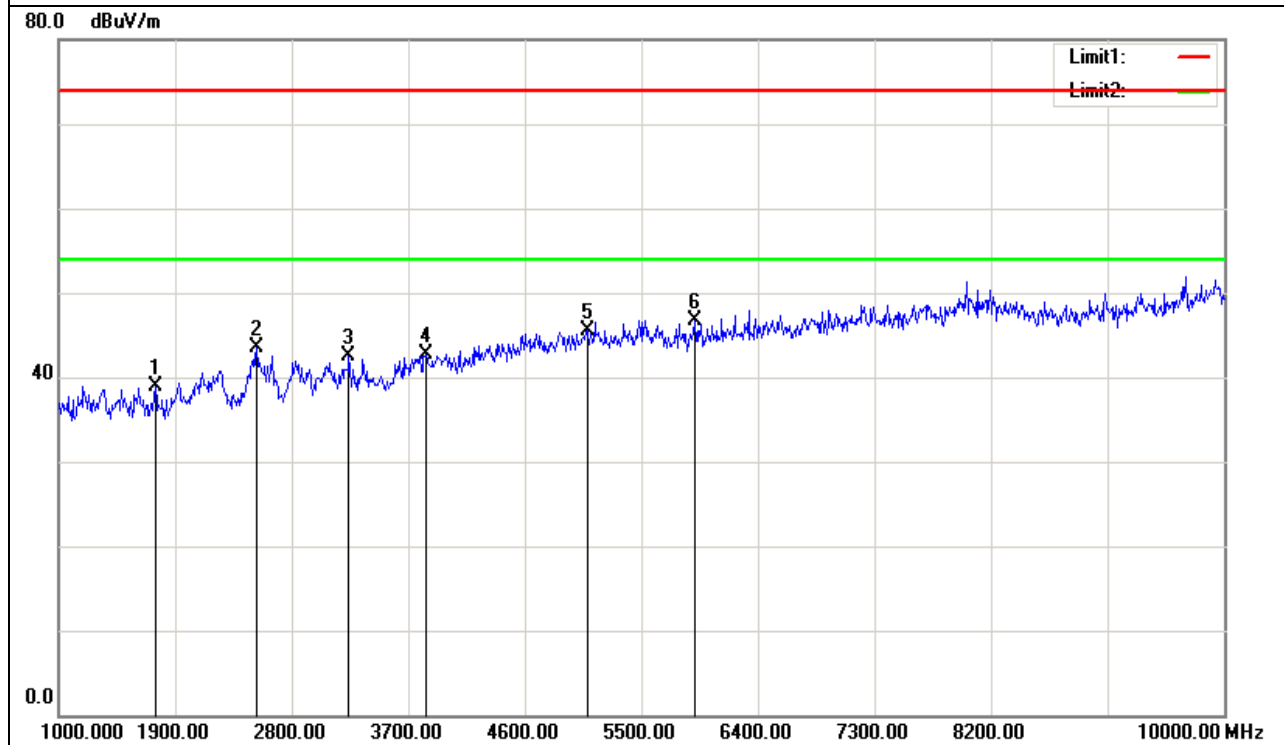


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2480MHz (1Mbps-worst case)	Polarization :	Horizontal
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1747.000	45.21	-6.38	38.83	74.00	-35.17	peak
2530.000	45.66	-2.21	43.45	74.00	-30.55	peak
3241.000	43.55	-0.96	42.59	74.00	-31.41	peak
3835.000	41.79	0.89	42.68	74.00	-31.32	peak
5086.000	40.34	5.13	45.47	74.00	-28.53	peak
5914.000	40.57	6.04	46.61	74.00	-27.39	peak

Remark:

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

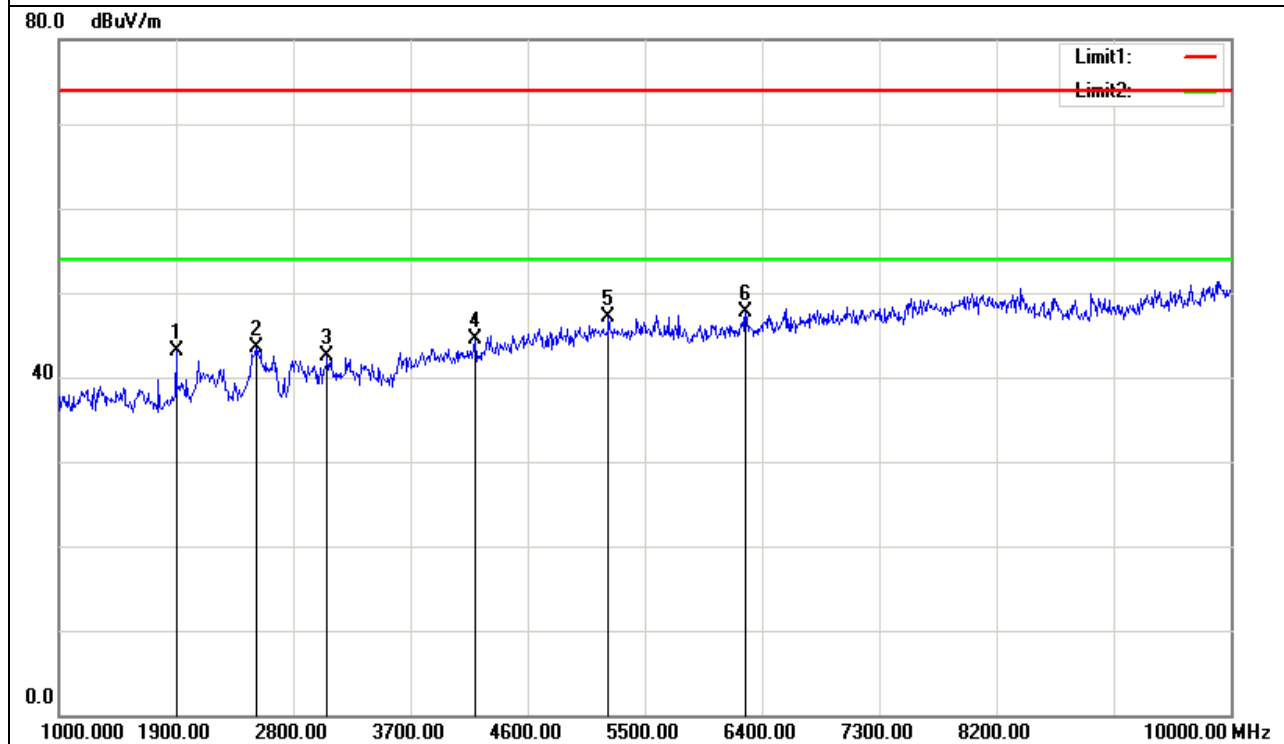


EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-09-03
Test Mode :	RX 2480MHz (1Mbps-worst case)	Polarization :	Vertical
Test Power :	DC 3.7V from battery		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1900.000	48.83	-5.63	43.20	74.00	-30.80	peak
2512.000	45.73	-2.24	43.49	74.00	-30.51	peak
3061.000	43.75	-1.26	42.49	74.00	-31.51	peak
4195.000	42.15	2.28	44.43	74.00	-29.57	peak
5221.000	41.75	5.37	47.12	74.00	-26.88	peak
6274.000	41.11	6.52	47.63	74.00	-26.37	peak

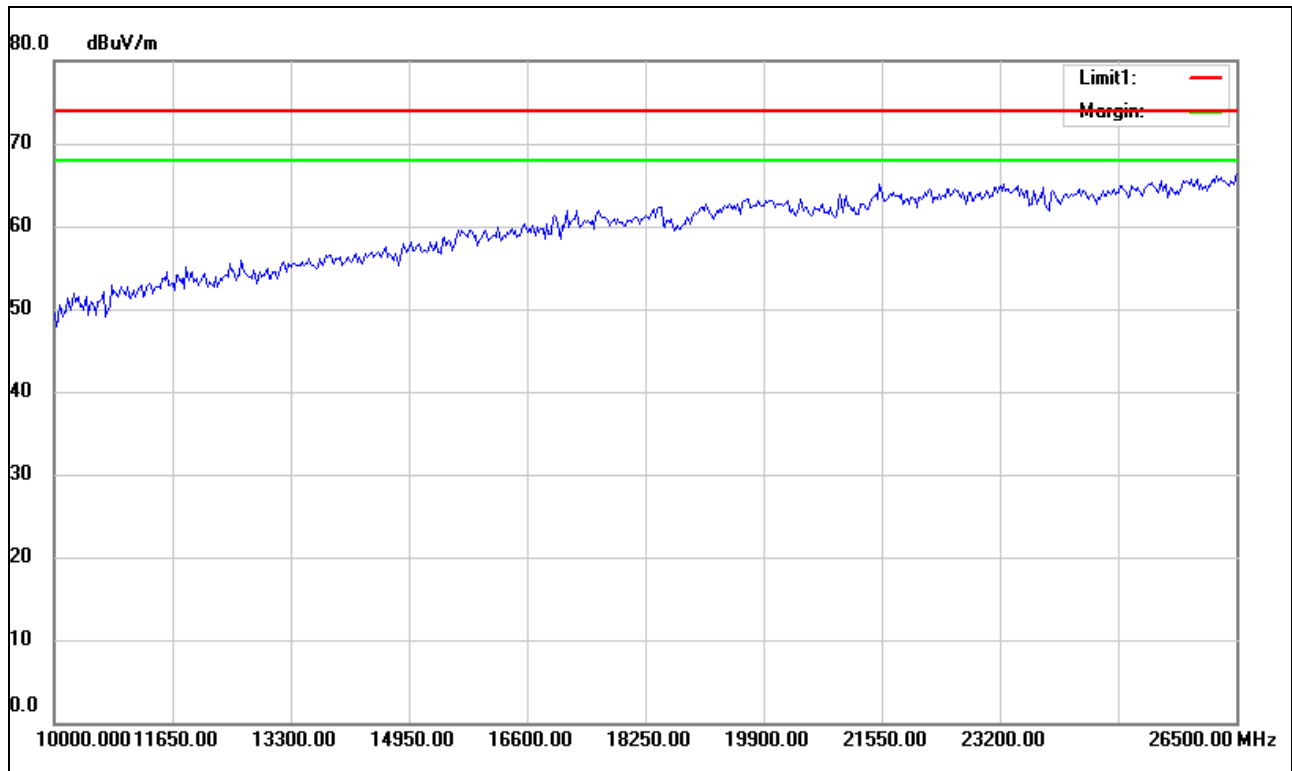
Remark:

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



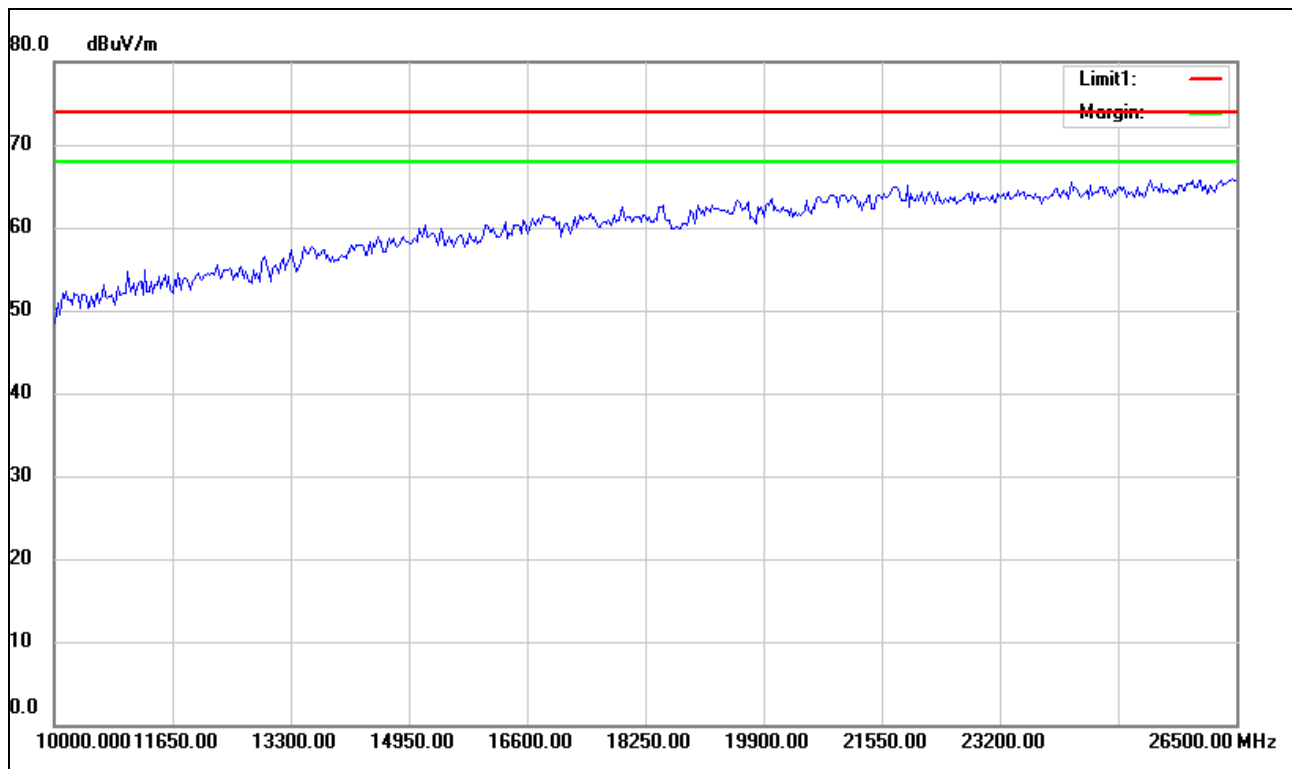
Horizontal

Detect: 10GHz -26.5GHz



Vertical

Detect: 10GHz -26.5GHz



Test result: The unit does meet the NCC requirements.

3.2.7 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Test Data	2019-09-03
Pressure :	1010 hPa	Relative Humidity :	60%
Test Mode :	TX 1Mbps	Test Voltage :	DC 3.7V from battery
Note :	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Freq. (MHz) (Peak)	Freq. (MHz) (AV)	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)	
2390.000	2390.000	V	54.03	41.71	-5.79	48.24	35.92	74.00	54.00	CH00
2402.000	2402.100	V	95.23	93.96	-5.71	---	---	---	---	CH00
2390.000	2390.000	H	54.94	43.36	-5.79	49.15	37.57	74.00	54.00	CH00
2401.800	2402.000	H	108.9 3	109.2 0	-5.71	---	---	---	---	CH00
2480.025	2480.000	V	93.68	93.77	-4.98	---	---	---	---	CH78
2483.500	2483.500	V	52.24	41.77	-4.96	47.28	36.81	74.00	54.00	CH78
2479.975	2480.025	H	108.3 6	107.4 1	-4.98	---	---	---	---	CH78
2483.500	2483.500	H	55.39	44.95	-4.96	50.43	39.99	74.00	54.00	CH78

Remark :

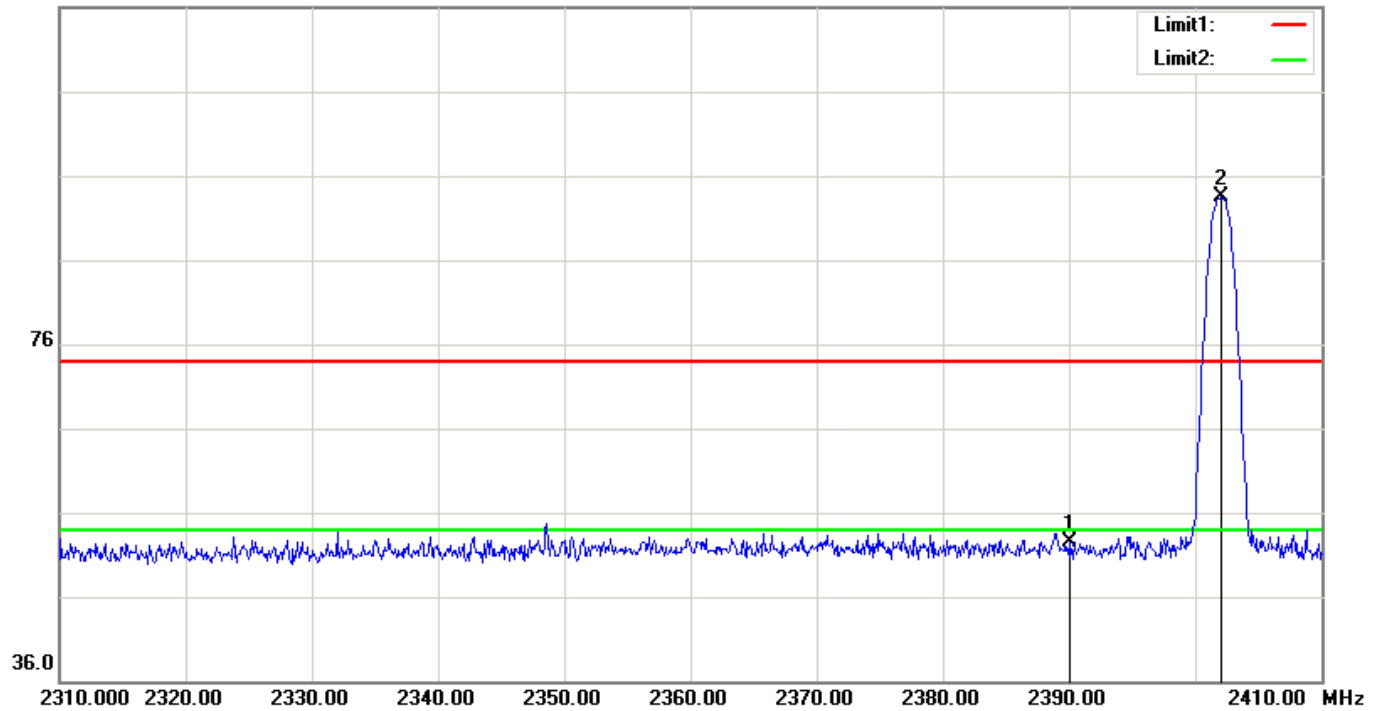
- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that 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.

CH-Low (CH00)

Detector mode: Peak

116.0 dBuV/m

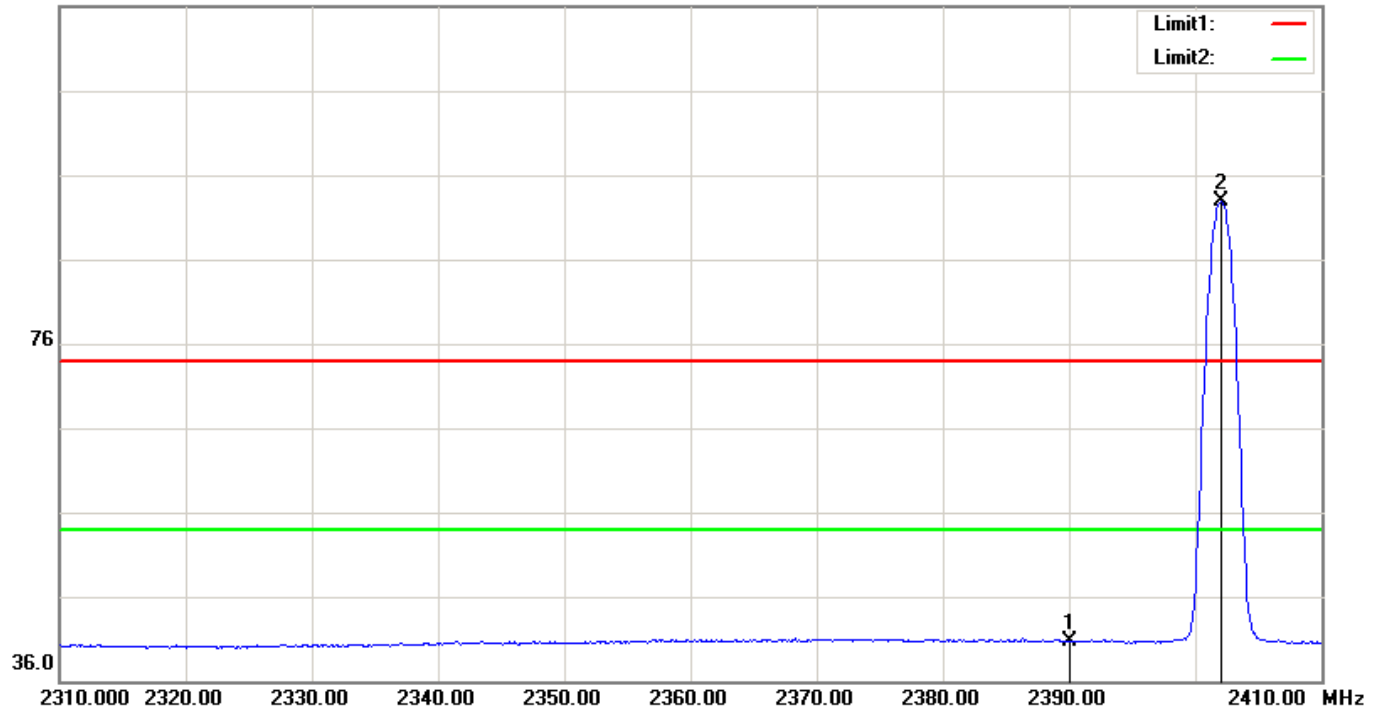
Polarity: Vertical



Detector mode: Average

116.0 dBuV/m

Polarity: Vertical

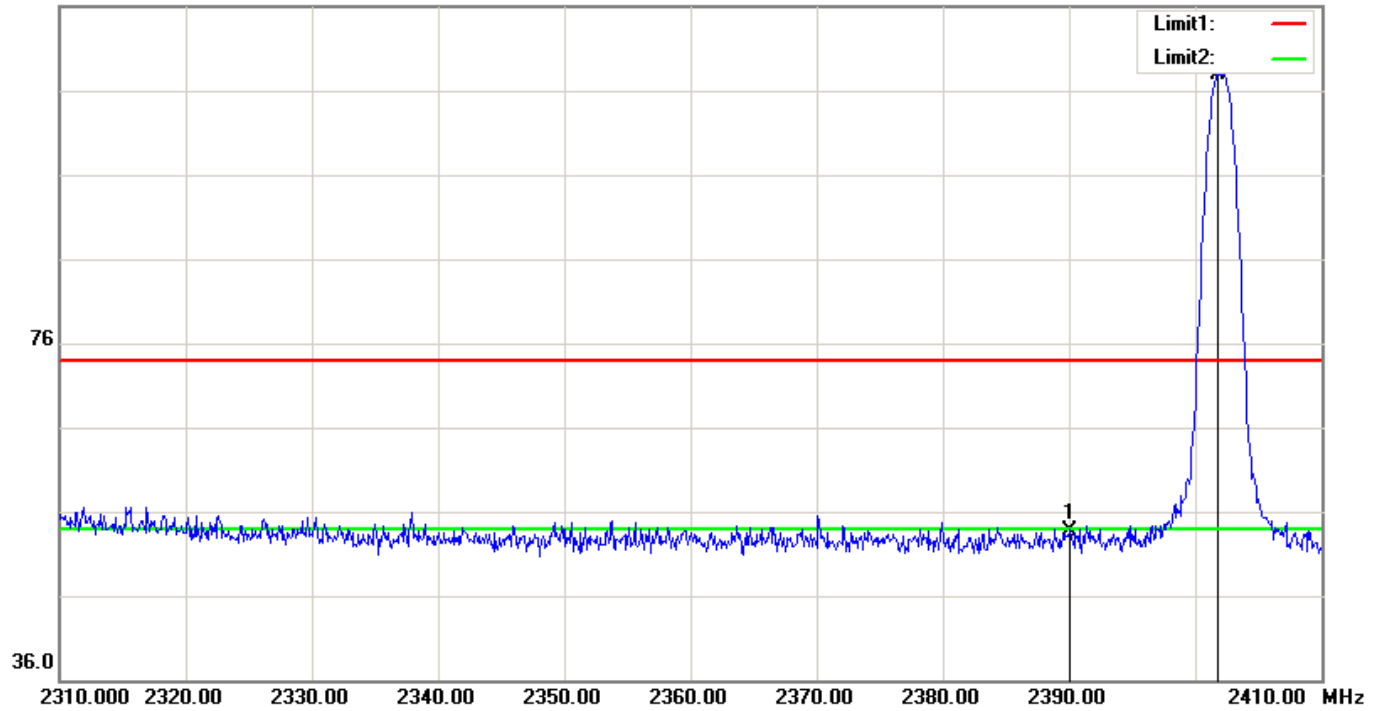


CH-Low (CH00)

Detector mode: Peak

Polarity: Horizontal

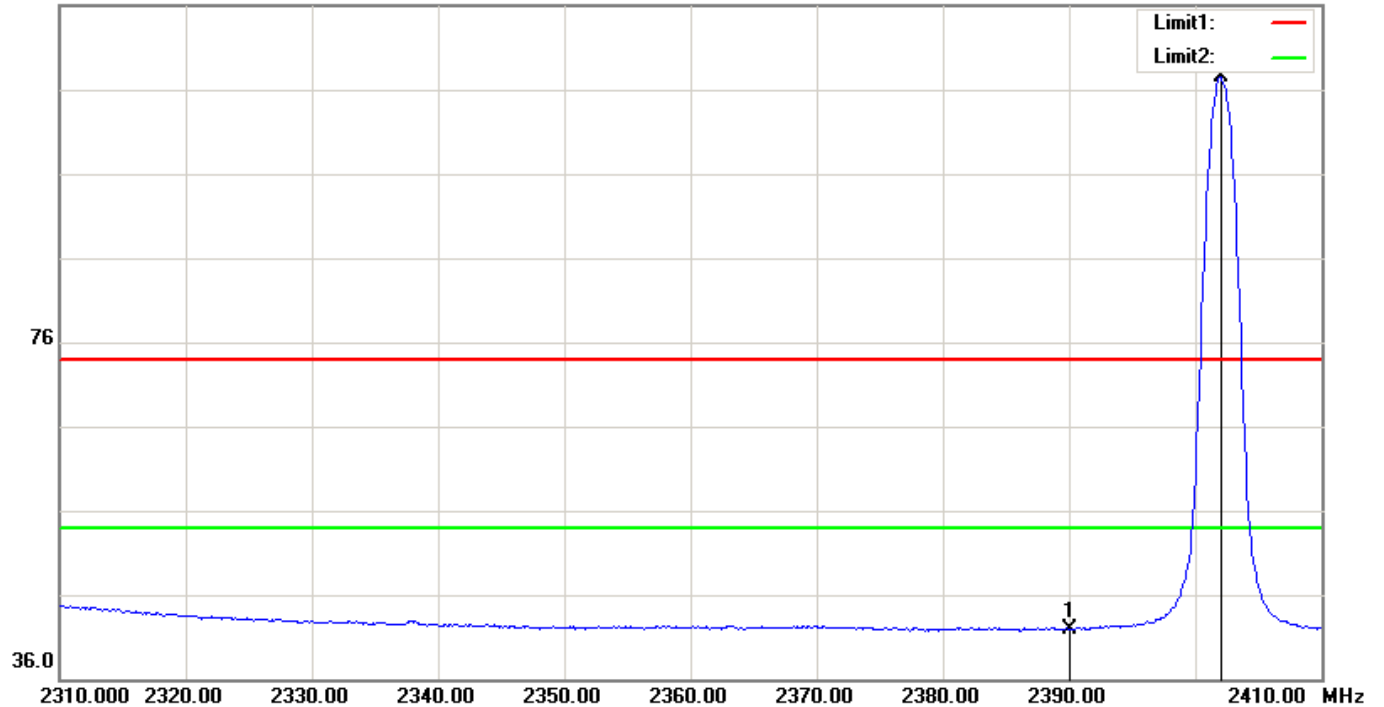
116.0 dBuV/m



Detector mode: Average

Polarity: Horizontal

116.0 dBuV/m

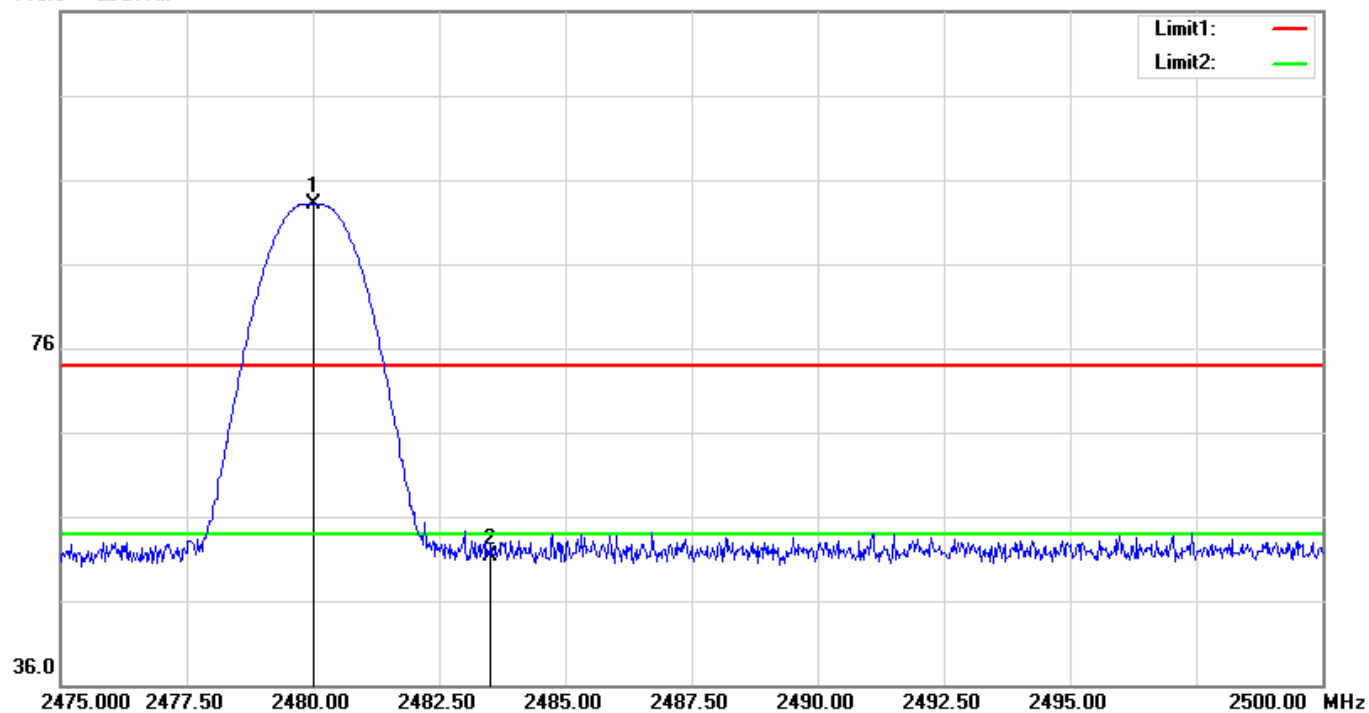


CH-High (CH78)

Detector mode: Peak

Polarity: Vertical

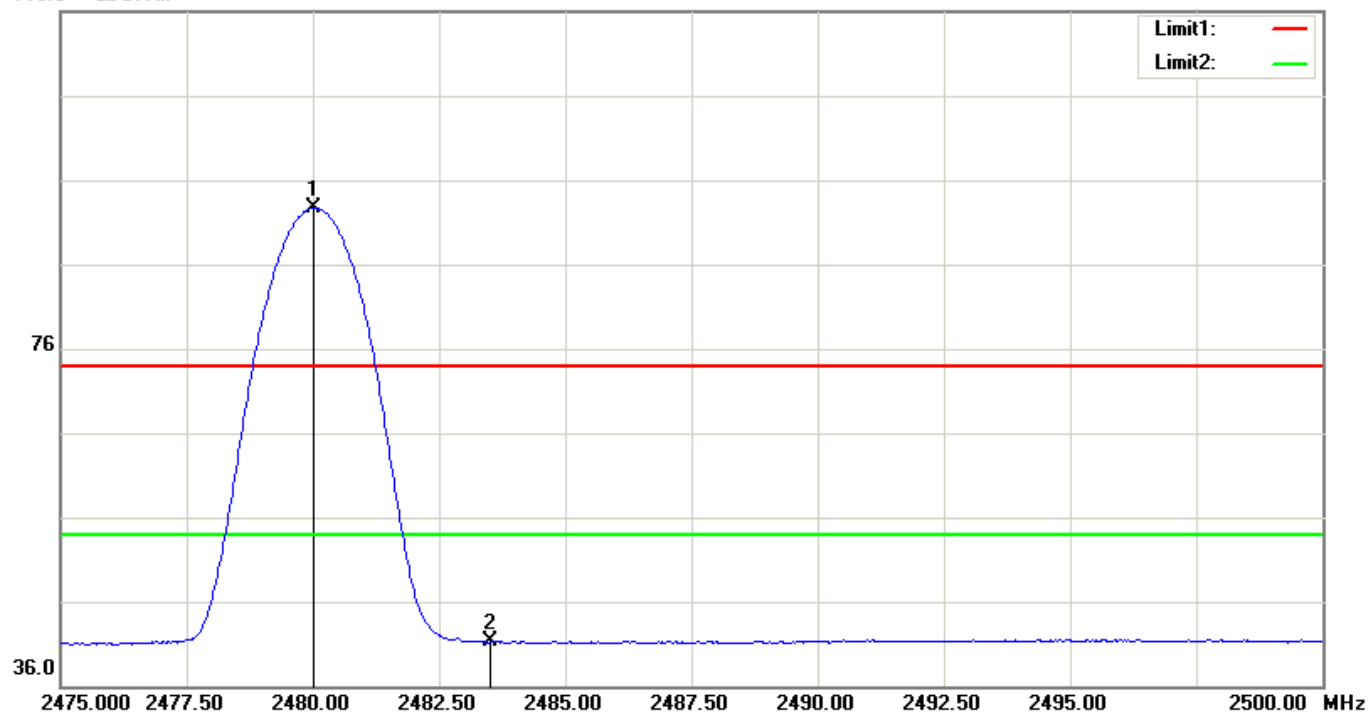
116.0 dBuV/m



Detector mode: Average

Polarity: Vertical

116.0 dBuV/m

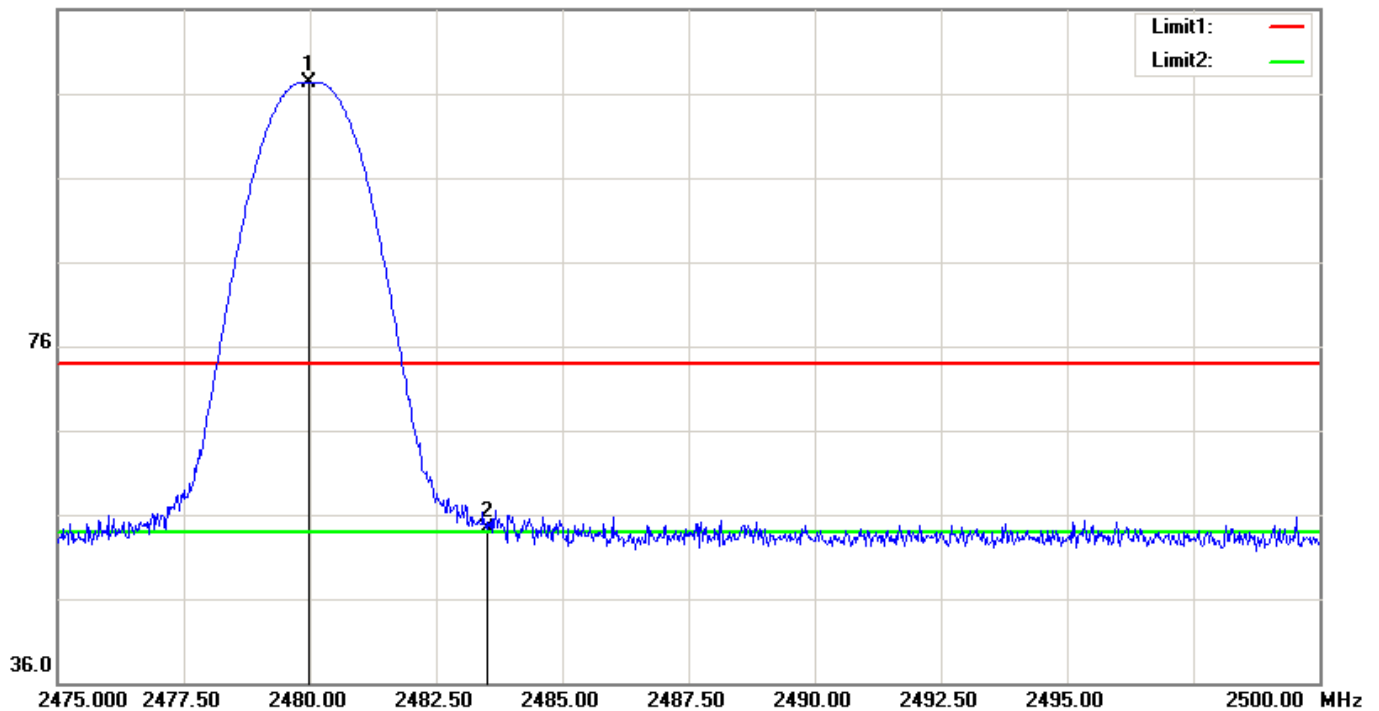


CH-High (CH78)

Detector mode: Peak

Polarity: Horizontal

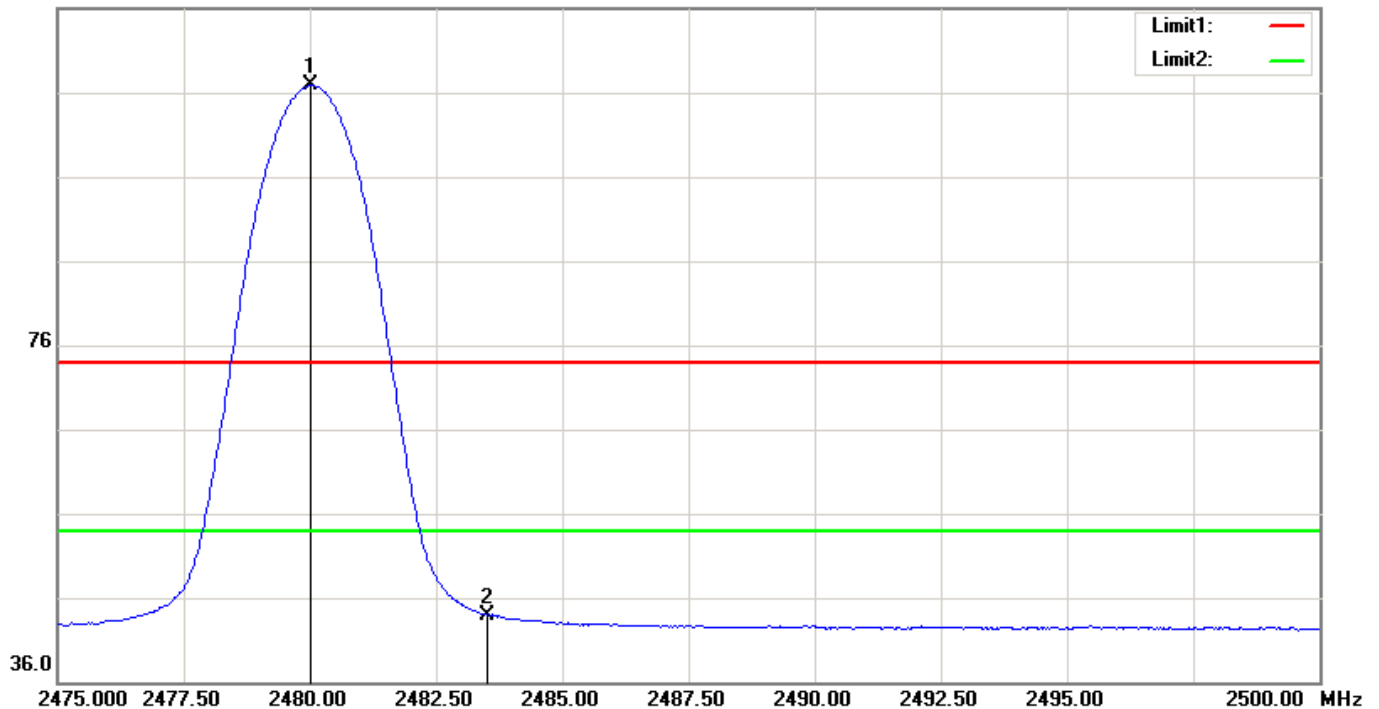
116.0 dBuV/m



Detector mode: Average

Polarity: Horizontal

116.0 dBuV/m



EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Test Data	2019-09-03
Pressure :	1010 hPa	Relative Humidity :	60%
Test Mode :	TX 1Mbps	Test Voltage :	DC 3.7V from battery
Note :	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Freq. (MHz) (Peak)	Freq. (MHz) (AV)	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)	
2390.000	2390.000	V	52.66	41.99	-5.79	46.87	36.20	74.00	54.00	CH00
2402.000	2402.000	V	95.48	91.47	-5.71	---	---	---	---	CH00
2390.000	2390.000	H	53.45	43.02	-5.79	47.66	37.23	74.00	54.00	CH00
2402.000	2402.000	H	110.2 7	105.6 7	-5.71	---	---	---	---	CH00
2480.025	2480.025	V	94.42	90.87	-4.98	---	---	---	---	CH78
2483.500	2483.500	V	52.85	42.22	-4.96	47.89	37.26	74.00	54.00	CH78
2480.000	2480.025	H	109.7 5	105.0 0	-4.98	---	---	---	---	CH78
2483.500	2483.500	H	53.96	45.04	-4.96	49.00	40.08	74.00	54.00	CH78

Remark :

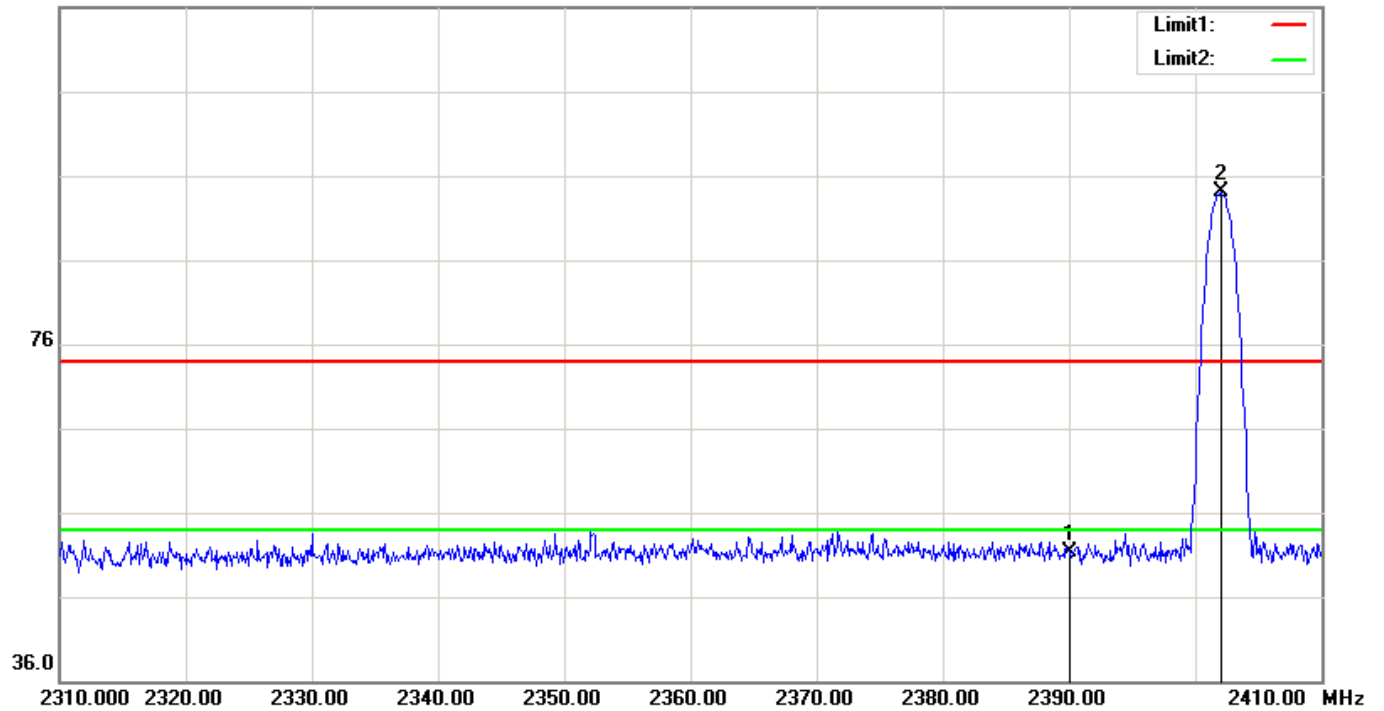
- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that 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.

CH-Low (CH00)

Detector mode: Peak

116.0 dBuV/m

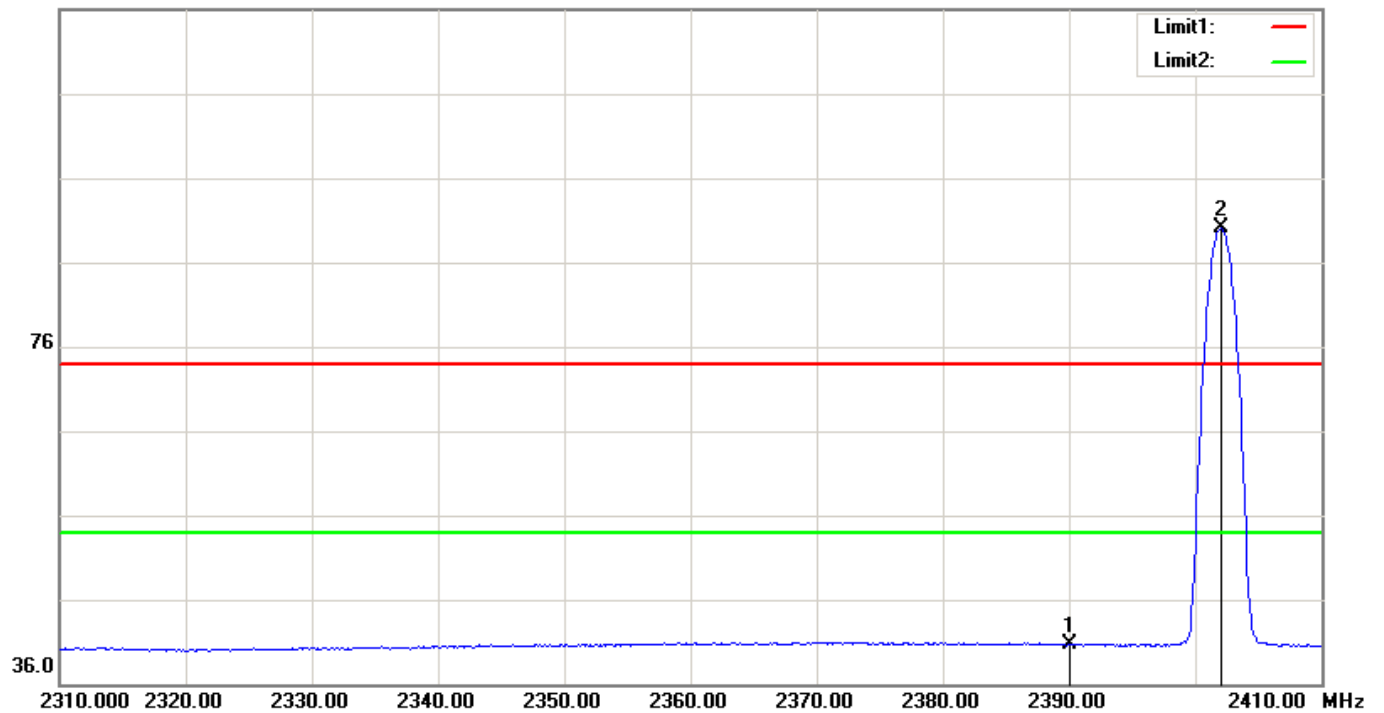
Polarity: Vertical



Detector mode: Average

116.0 dBuV/m

Polarity: Vertical

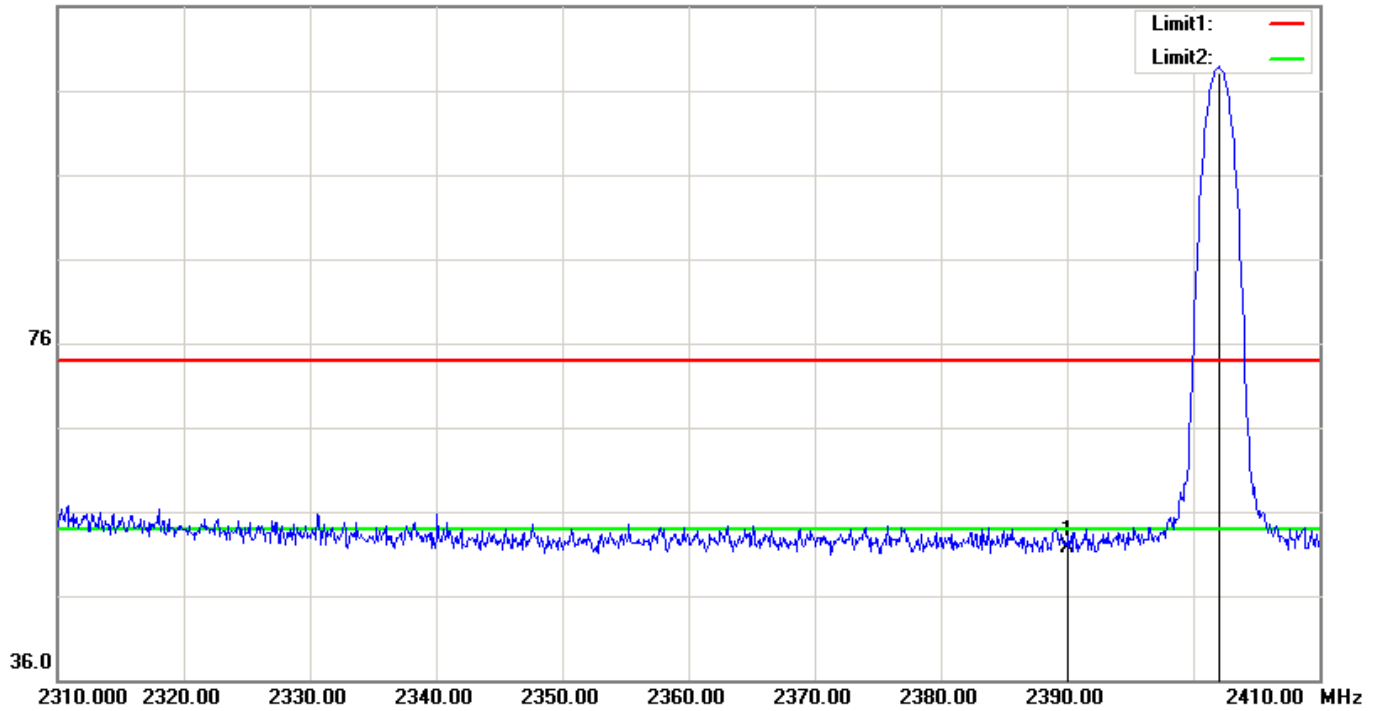


CH-Low (CH00)

Detector mode: Peak

Polarity: Horizontal

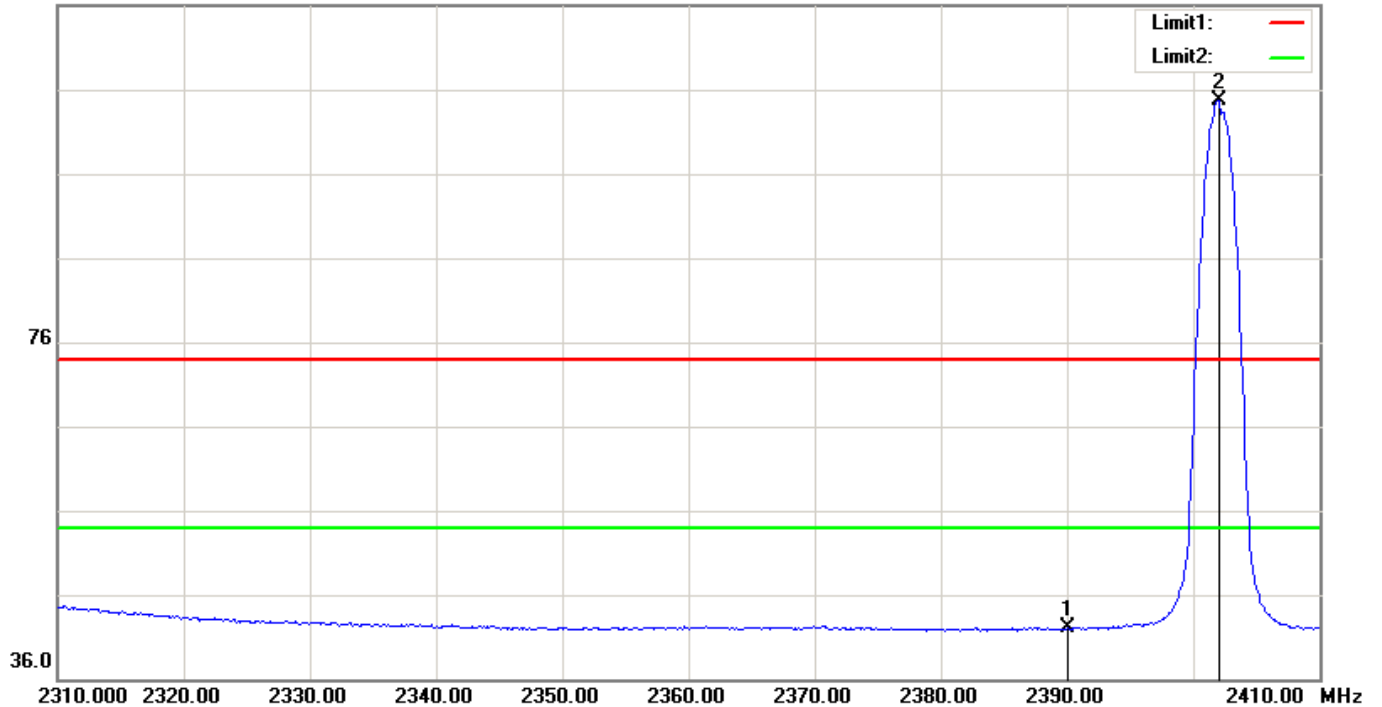
116.0 dBuV/m



Detector mode: Average

Polarity: Horizontal

116.0 dBuV/m

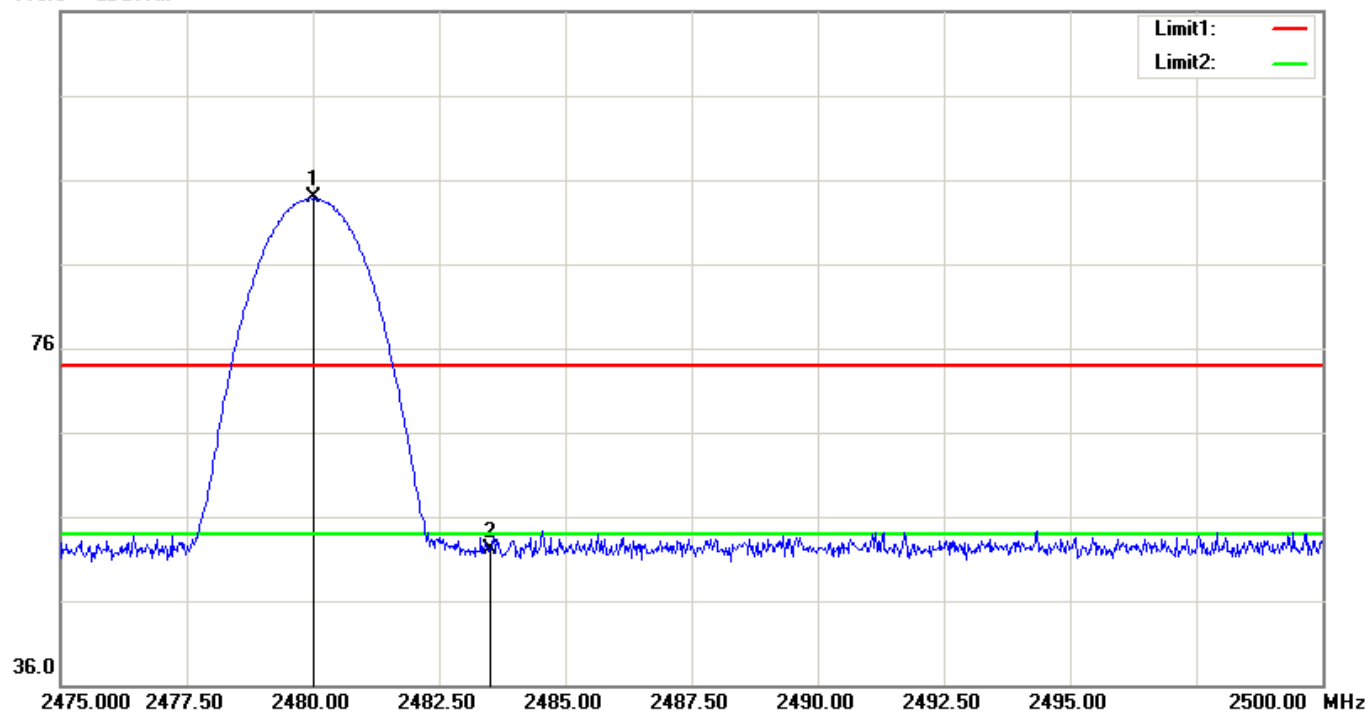


CH-High (CH78)

Detector mode: Peak

Polarity: Vertical

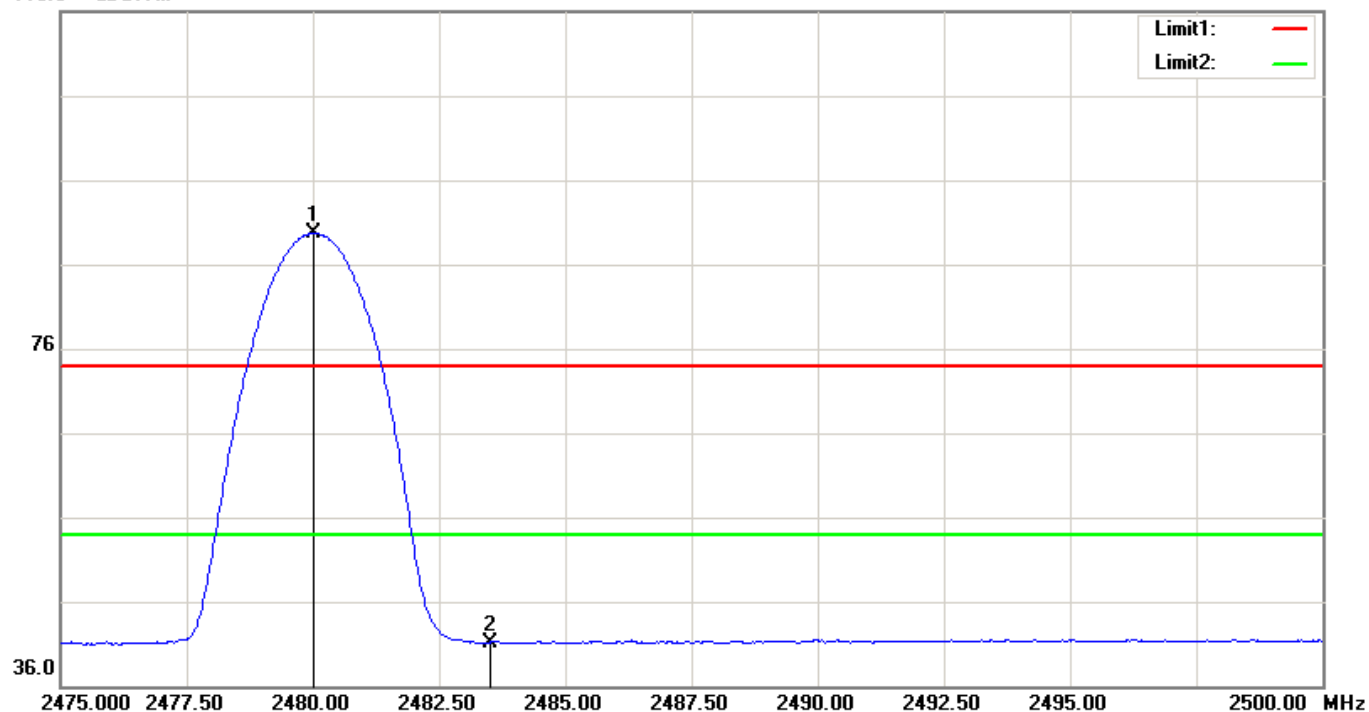
116.0 dBuV/m



Detector mode: Average

Polarity: Vertical

116.0 dBuV/m

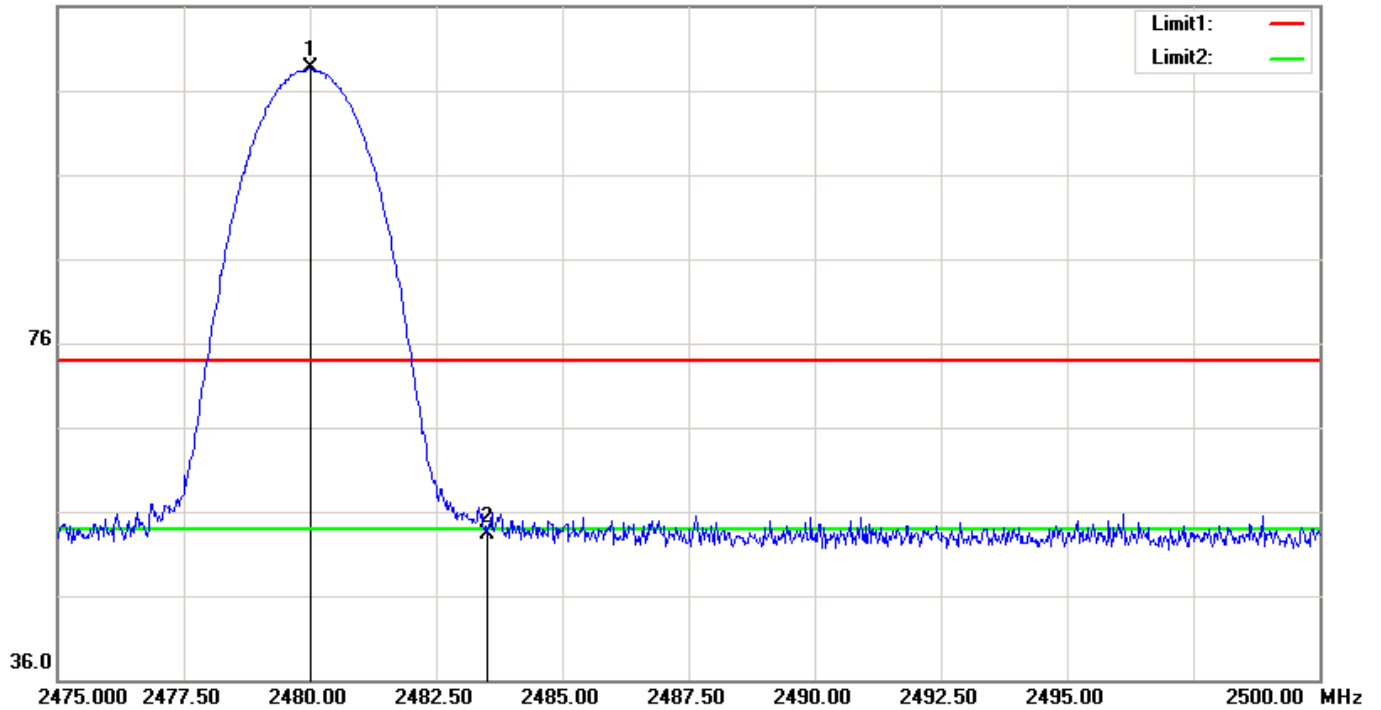


CH-High (CH78)

Detector mode: Peak

Polarity: Horizontal

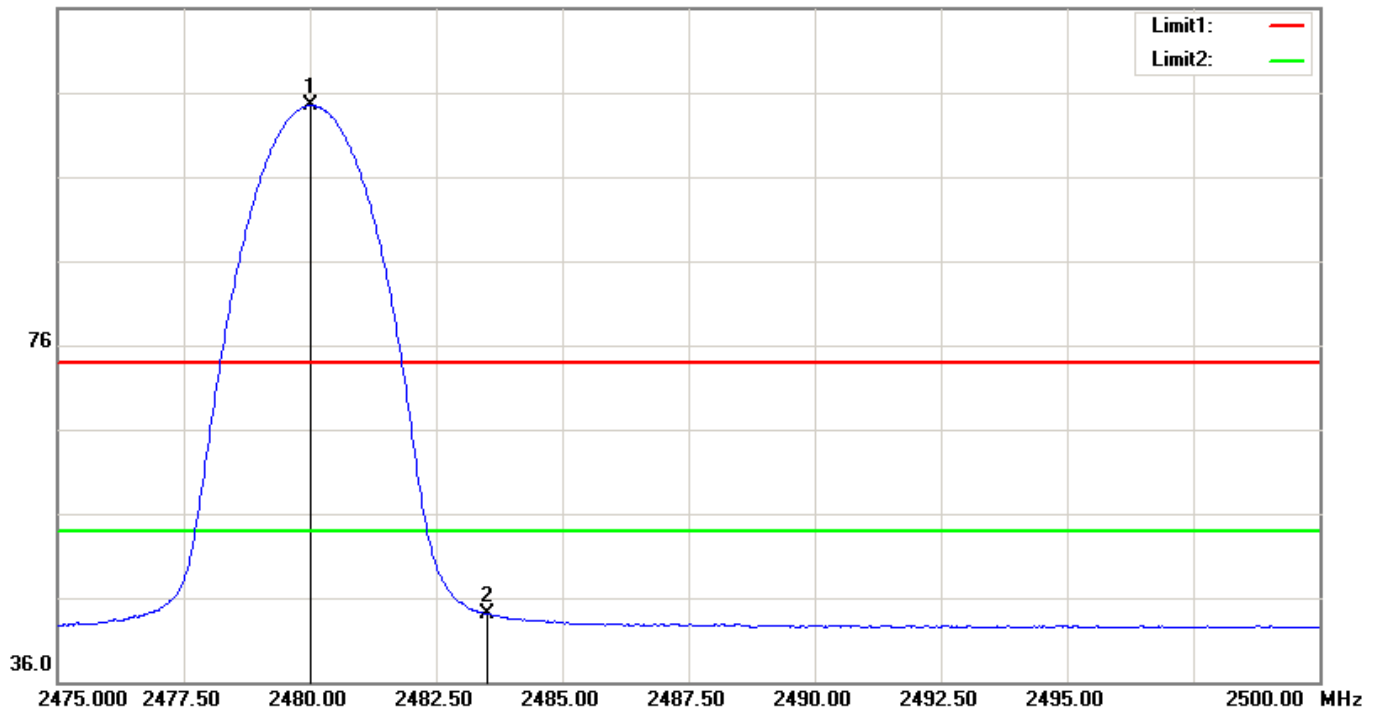
116.0 dBuV/m



Detector mode: Average

Polarity: Horizontal

116.0 dBuV/m



4. OCCUPIED BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

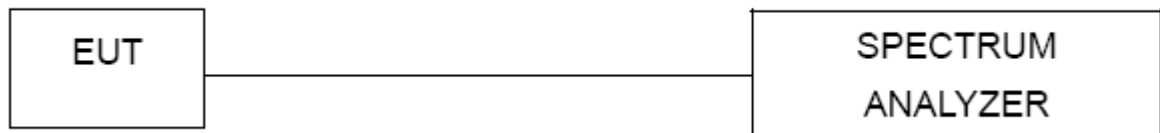
LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(6.1.1)	Bandwidth	N/A	2402-2480	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.1.1 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=300KHz, Sweep time = Auto.

4.1.2 TEST SETUP



4.1.3 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.

4.1.4 TEST RESULTS

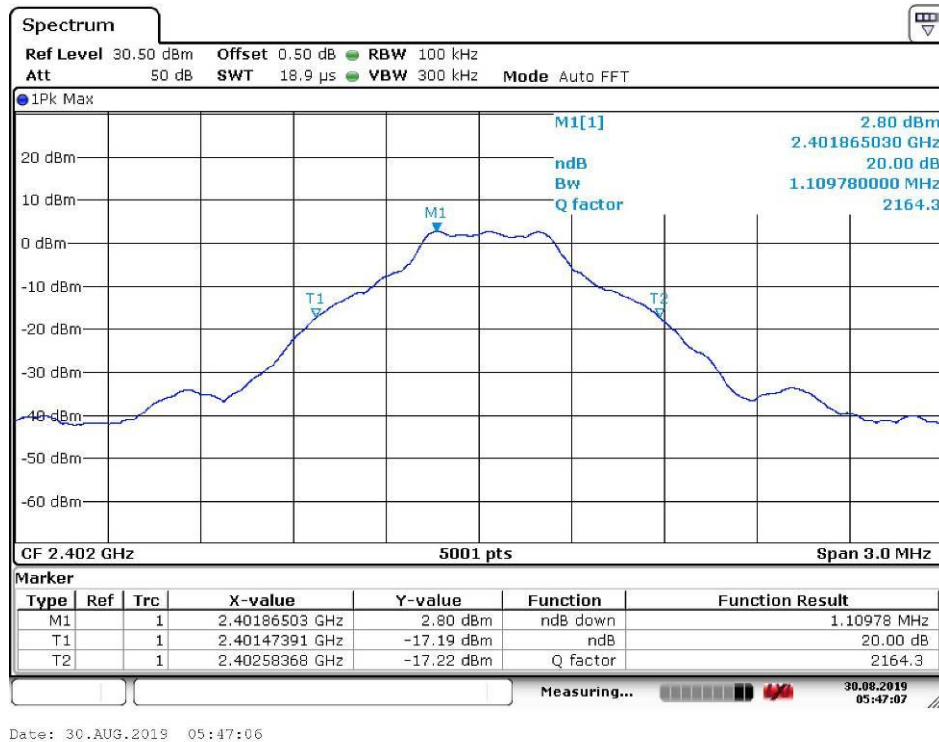
EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00 / CH39 /CH78		
Test Date :	2019-08-30		

Modulation Standard	Channel	Frequency (MHz)	20dB Bandwidth (KHz)
GFSK	0	2402	1109.78
	39	2441	1103.18
	79	2480	1096.58
8- DPSK	0	2402	1104.98
	39	2441	1092.98
	78	2480	1101.98

Result plot as follows:

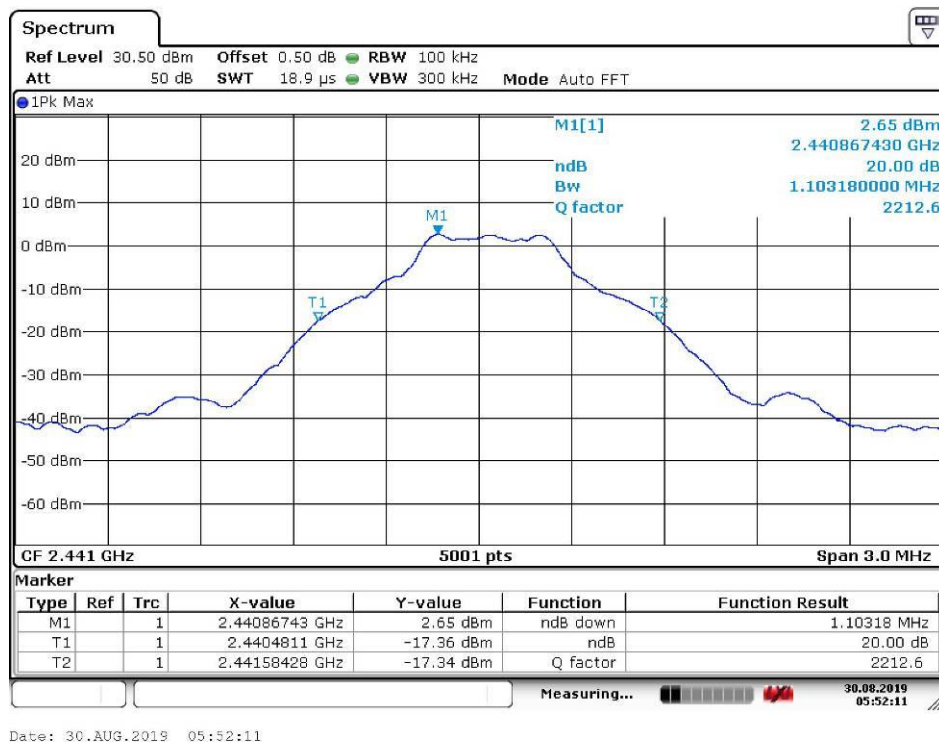
Modulation Standard: GFSK

Channel: 0

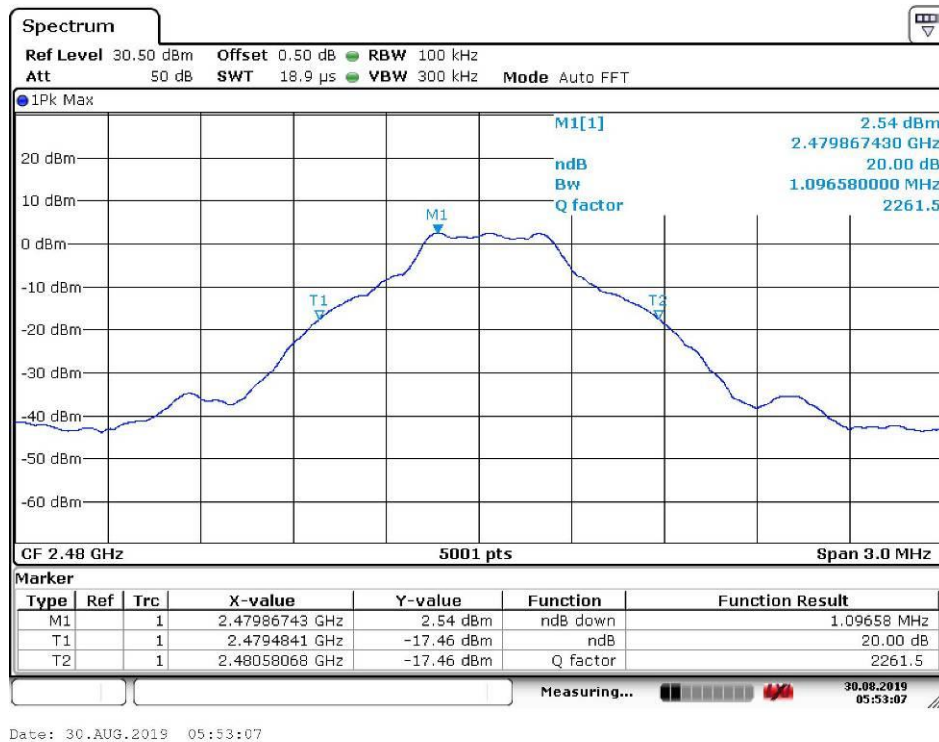


Modulation Standard: GFSK

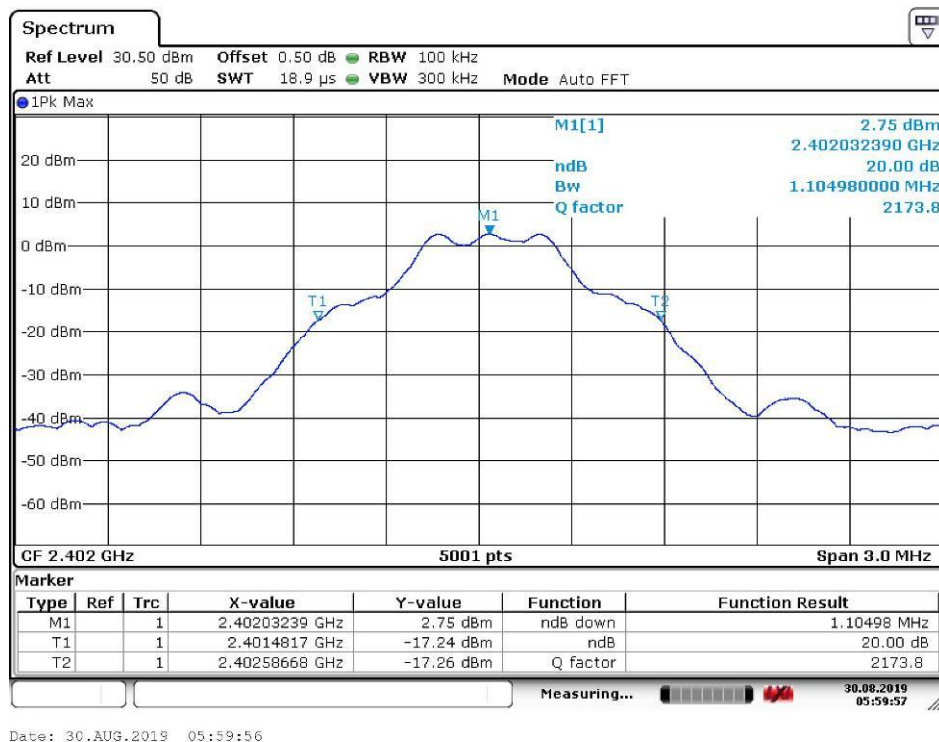
Channel: 39



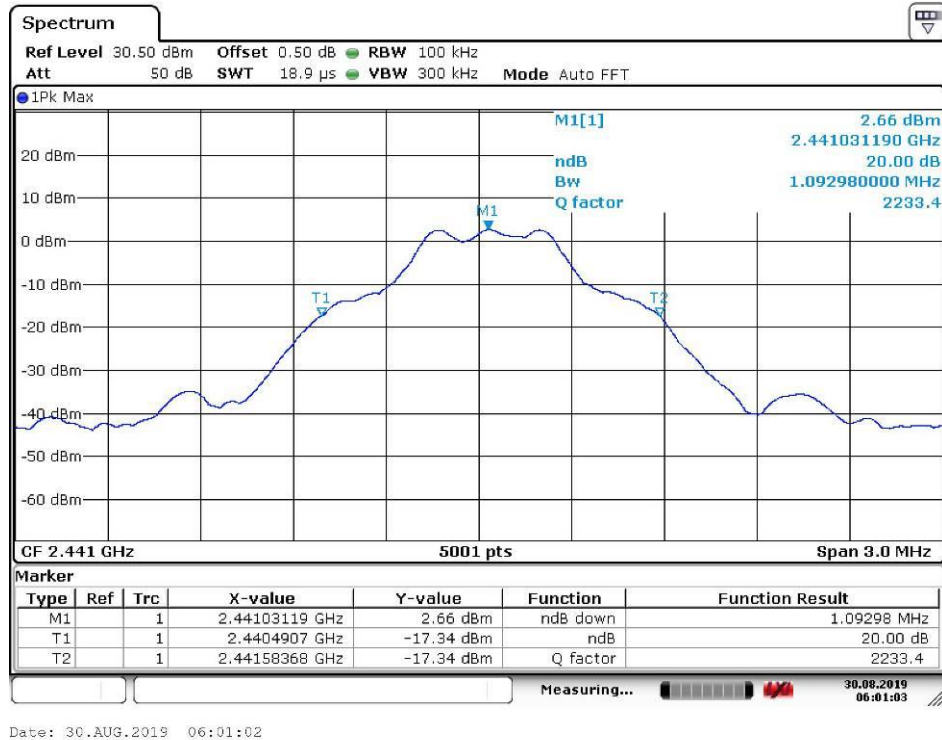
Modulation Standard: GFSK
Channel: 78



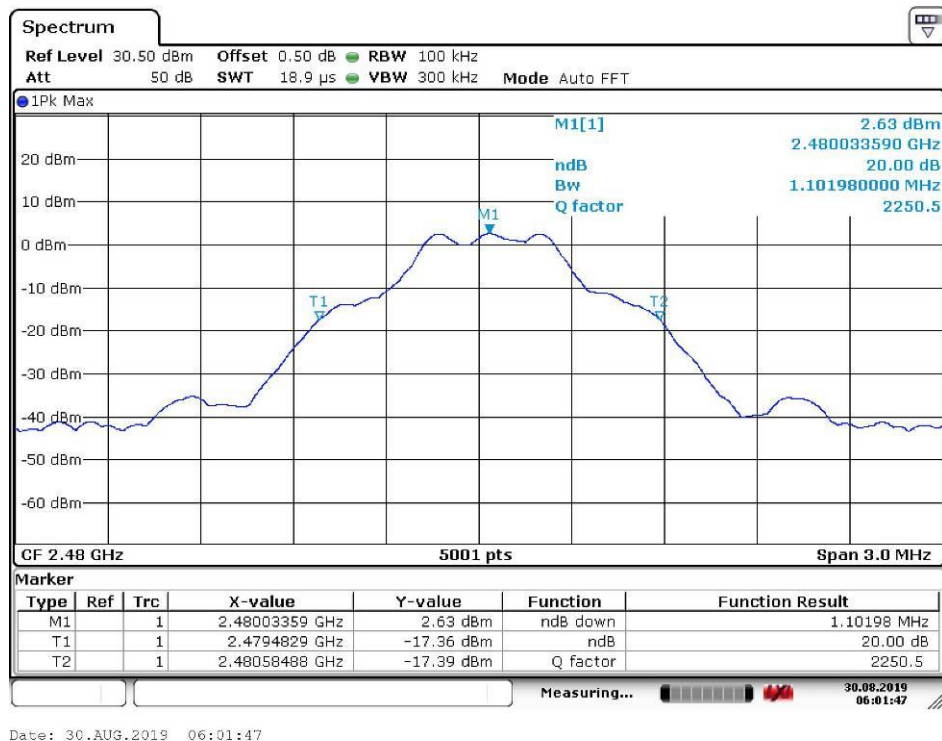
Modulation Standard: 8- DPSK
Channel: 0



Modulation Standard: 8- DPSK
Channel: 39



Modulation Standard: 8- DPSK
Channel: 78



5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES / LIMIT

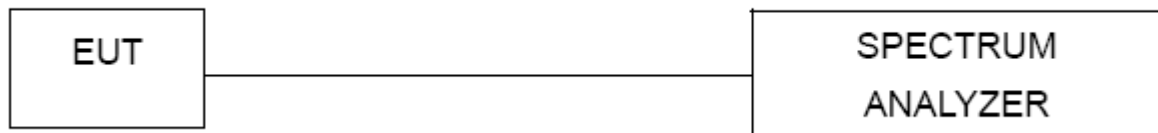
LP0002			
Section	Test Item	Frequency Range (MHz)	Result
3.10.1(6.1.1)	Number of Hopping Channel	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	1 MHz
VB	1 MHz
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= 1 MHz, VBW=1 MHz, Sweep time = Auto.

5.1.2 TEST SETUP



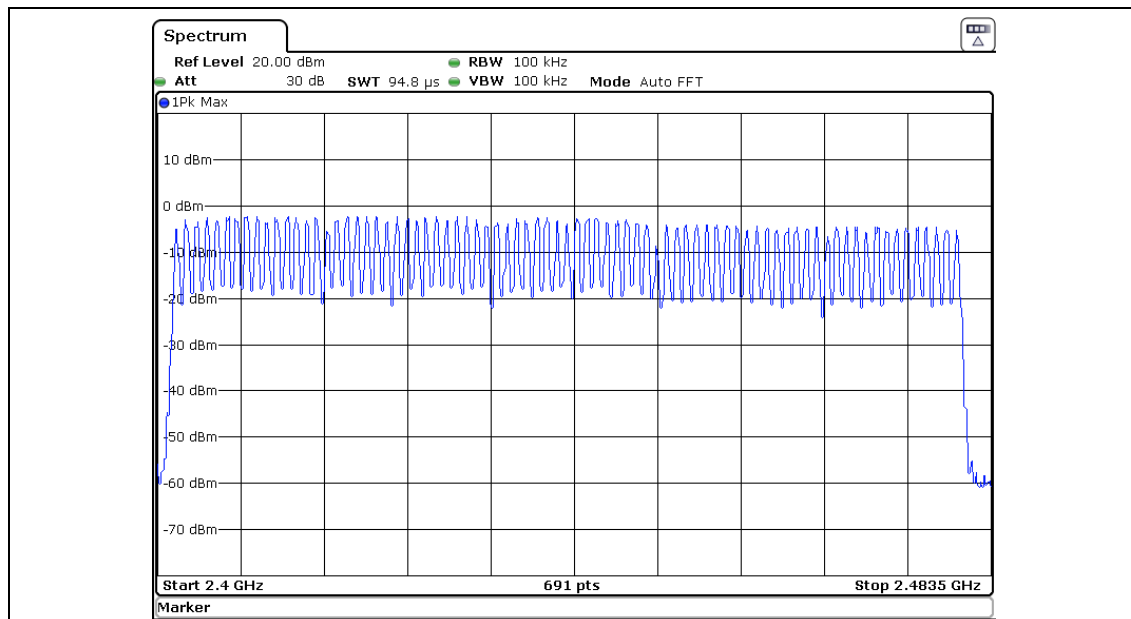
5.1.3 EUT OPERATION CONDITIONS

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

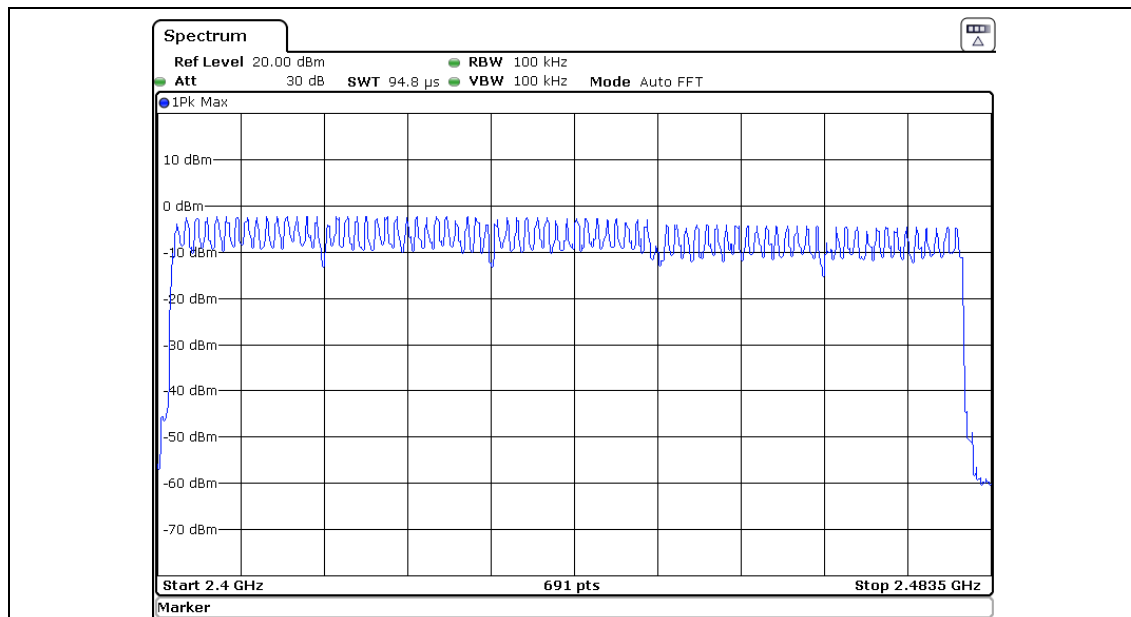
EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	Hopping Mode –1Mbps mode		
Test Date :	2019-08-30		

Number of Hopping Channel	79
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EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	Hopping Mode –3Mbps mode		
Test Date :	2019-08-30		

Number of Hopping Channel	79
---------------------------	----



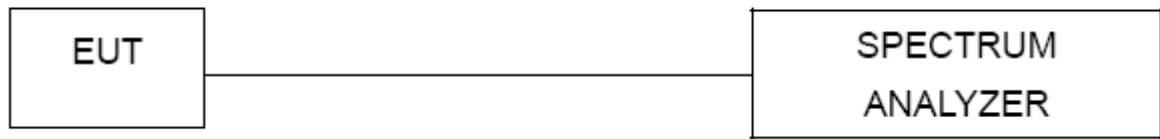
6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(6.1.2)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

6.1.1 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.

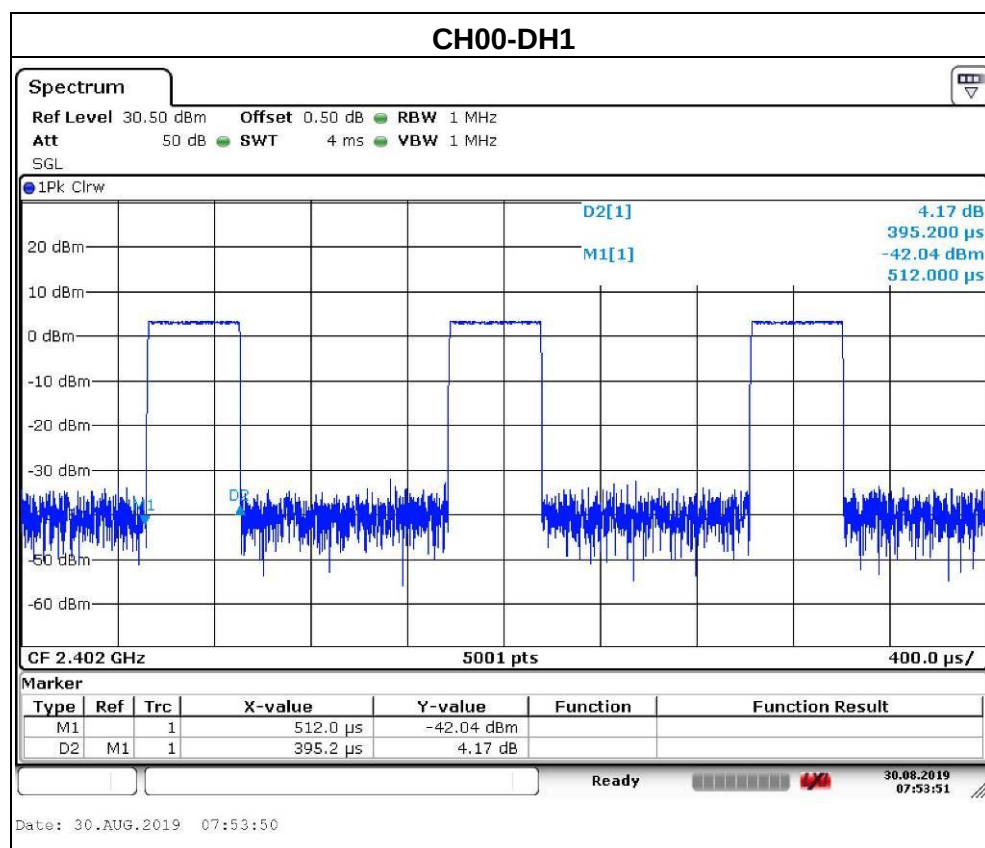
6.1.2 TEST SETUP**6.1.3 EUT OPERATION CONDITIONS**

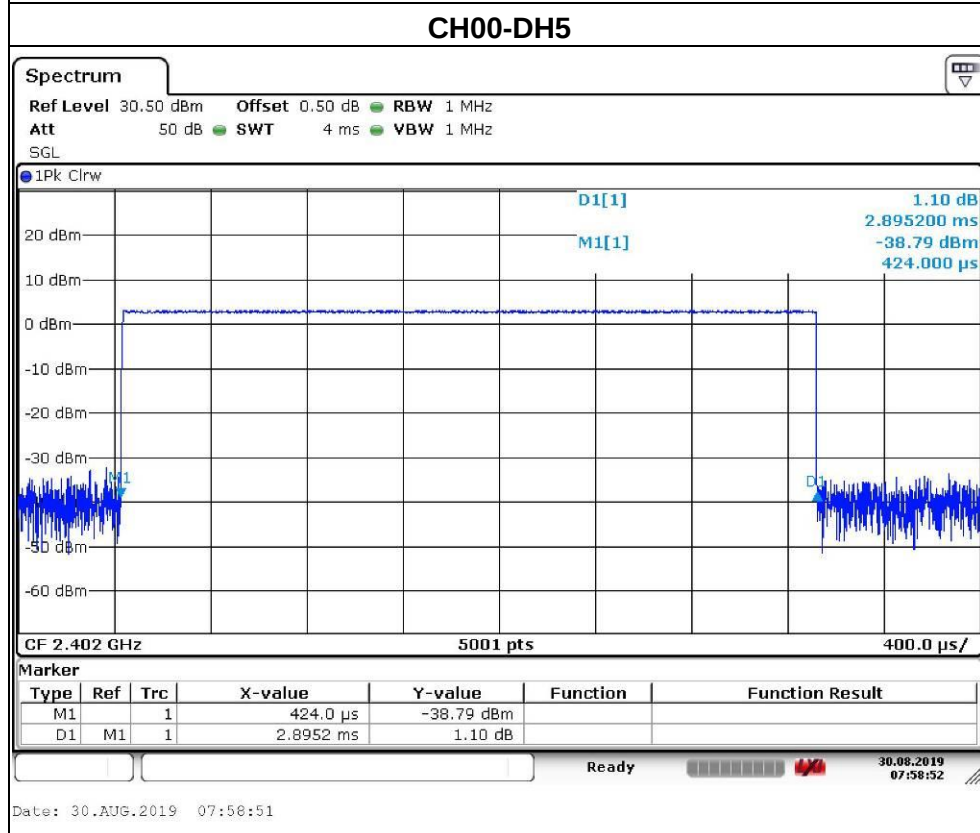
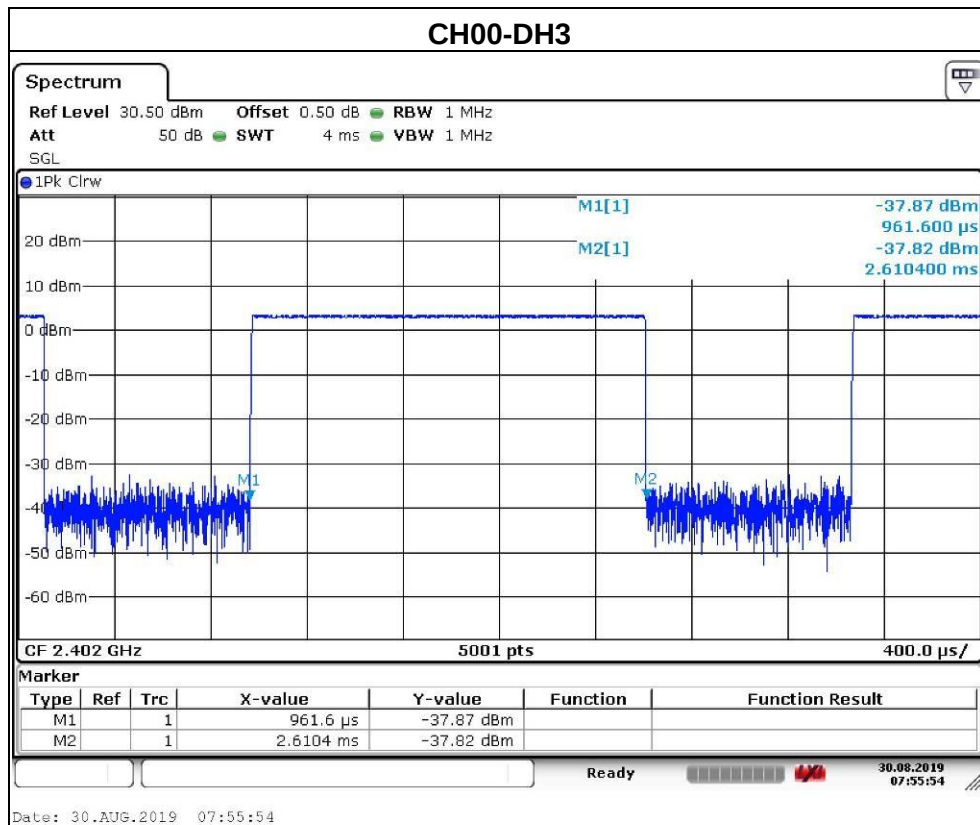
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.4 TEST RESULTS

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00-DH1/DH3/DH5 (1Mbps Mode)		
Test Date :	2019-08-30		

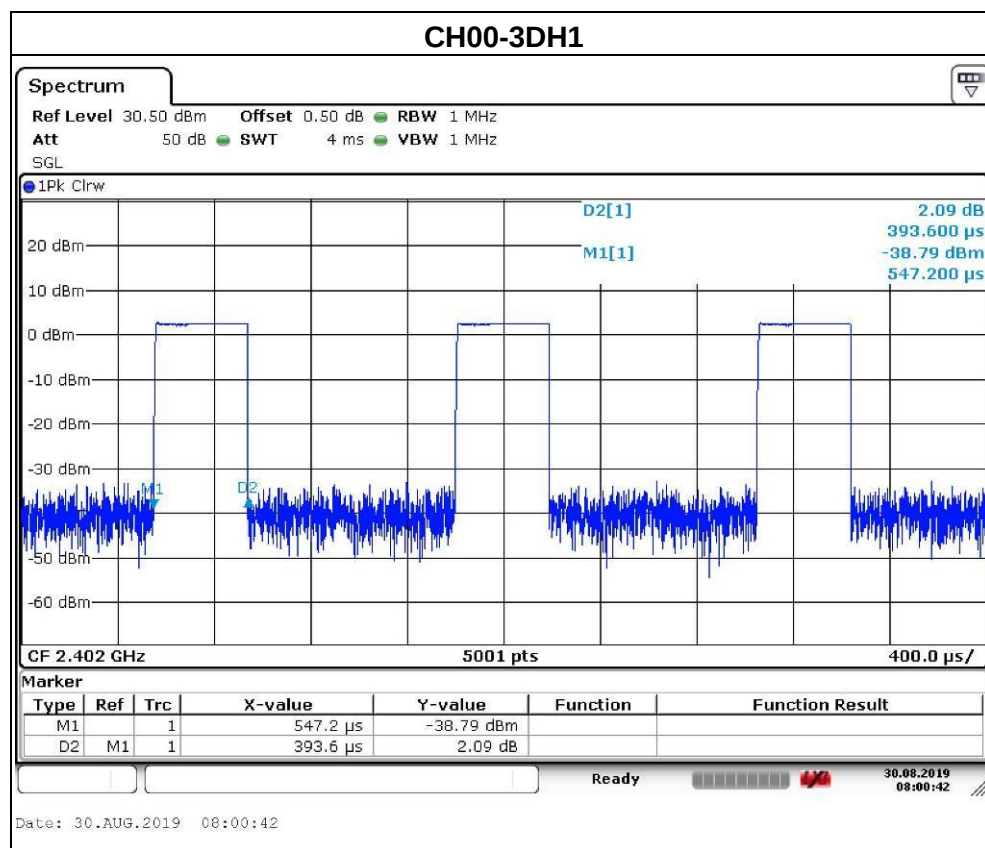
Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (ms)	Limits (s)
DH1	2402 MHz	0.512	163.840	0.4000
DH3	2402 MHz	1.649	263.840	0.4000
DH5	2402 MHz	2.895	308.800	0.4000

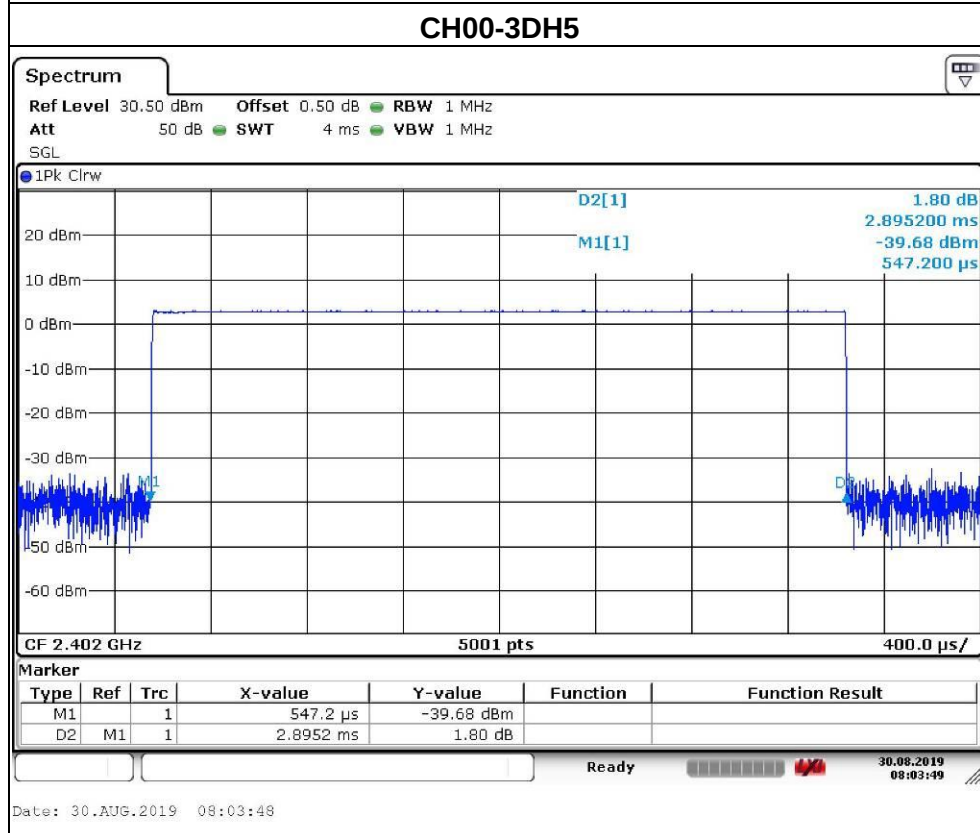
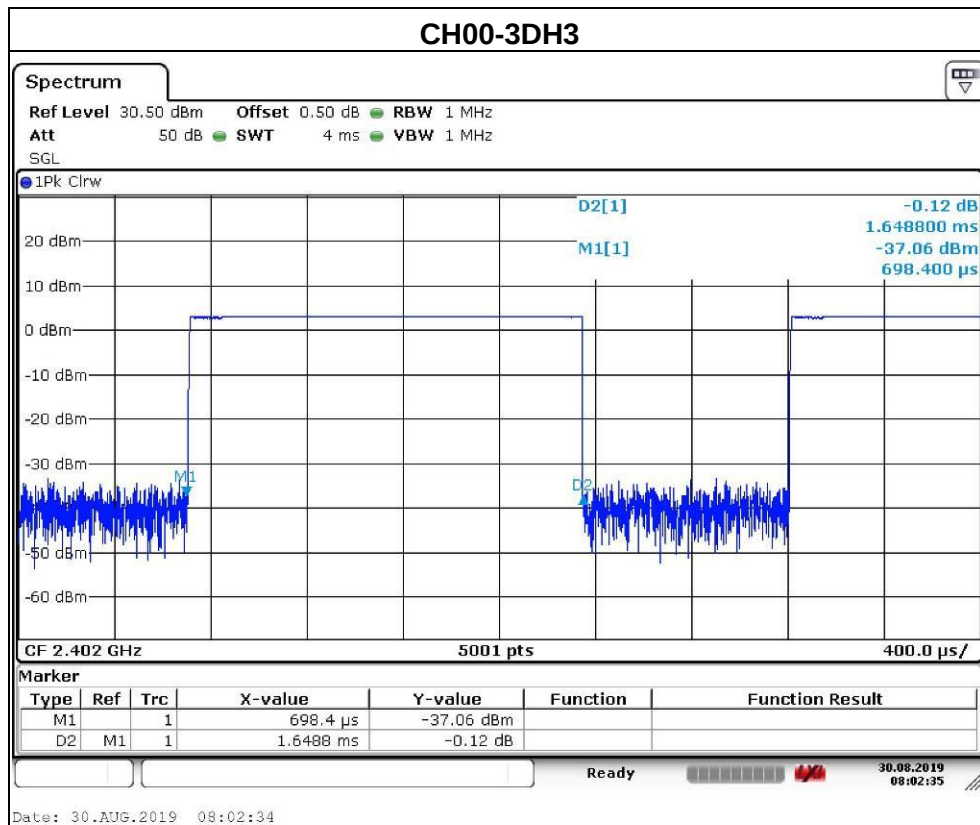




EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00-3DH1/3DH3/3DH5 (3Mbps Mode)		
Test Date :	2019-08-30		

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (ms)	Limits (s)
3DH1	2402 MHz	0.394	126.080	0.4000
3DH3	2402 MHz	1.649	263.840	0.4000
3DH5	2402 MHz	2.895	308.800	0.4000





7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

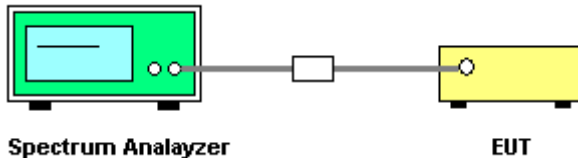
Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

7.1.1 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 100 kHz and the video bandwidth of 300 kHz were utilised for channel separation measurement.

7.1.2 TEST SETUP



7.1.3 EUT OPERATION CONDITIONS

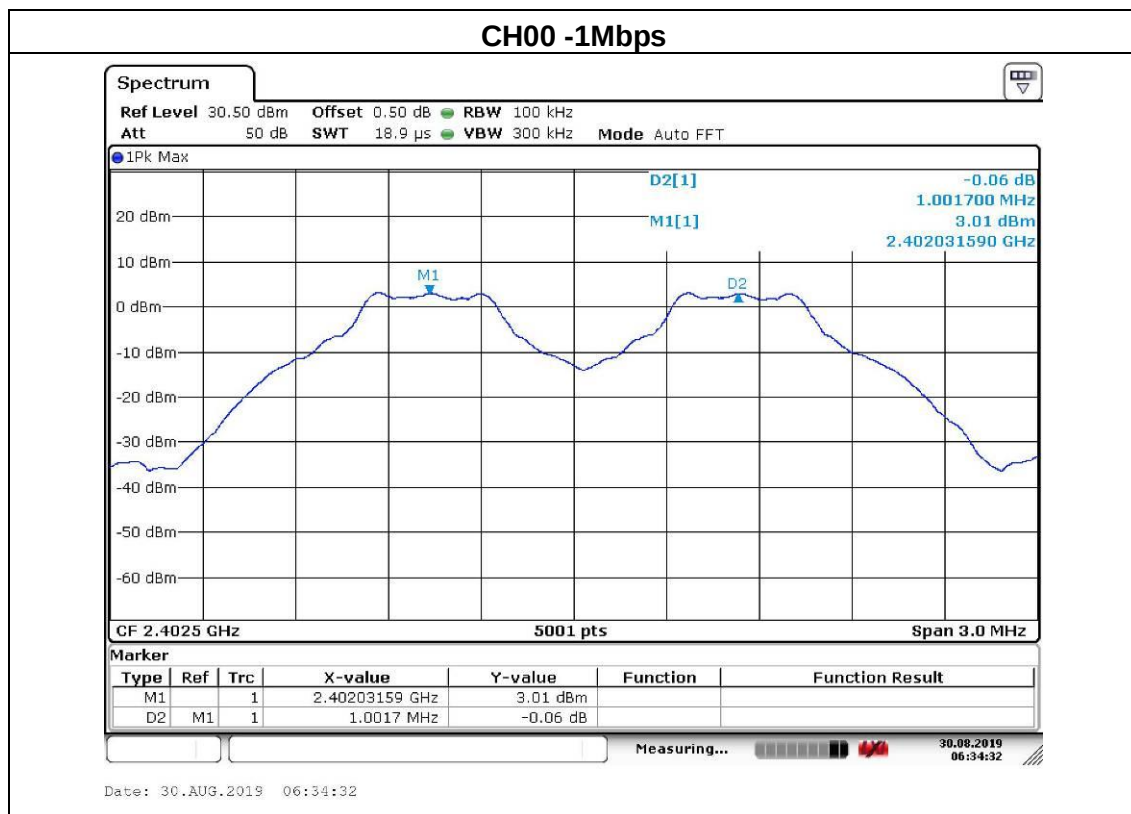
The EUT was programmed to be in continuously transmitting mode.

7.1.4 TEST RESULTS

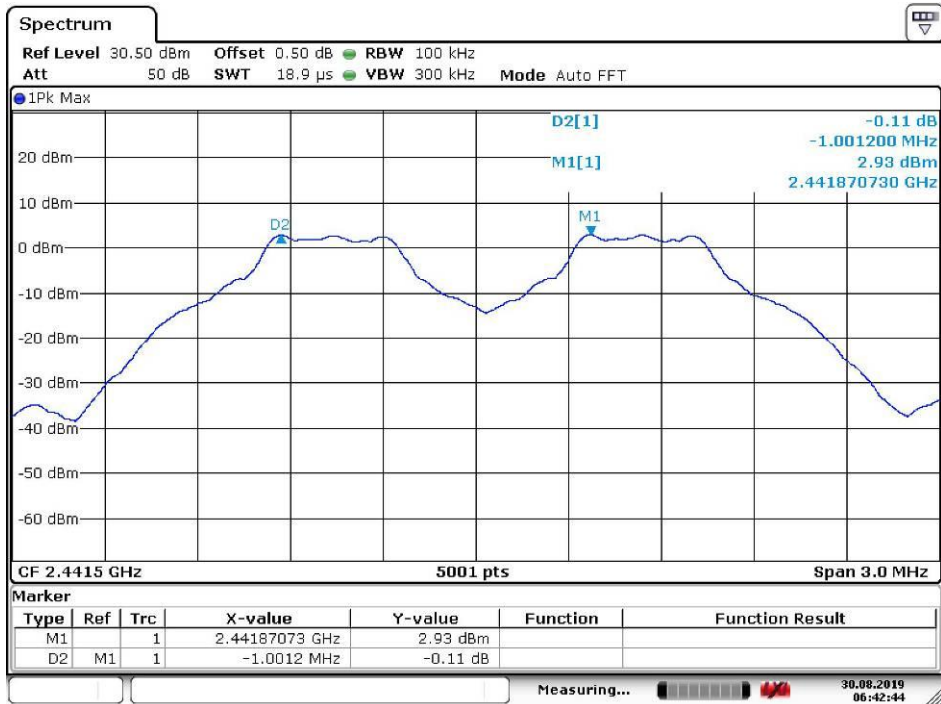
EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (1Mbps Mode)		
Test Date :	2019-08-30		

Frequency	Ch. Separation (MHz)	2/3 of the 20 dB Bandwidth (MHz)	Result
2402 MHz	1.0017	0.7399	PASS
2441 MHz	1.0012	0.7355	PASS
2480 MHz	0.9994	0.7311	PASS

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



CH39 -1Mbps



Date: 30.AUG.2019 06:42:44

CH78 -1Mbps

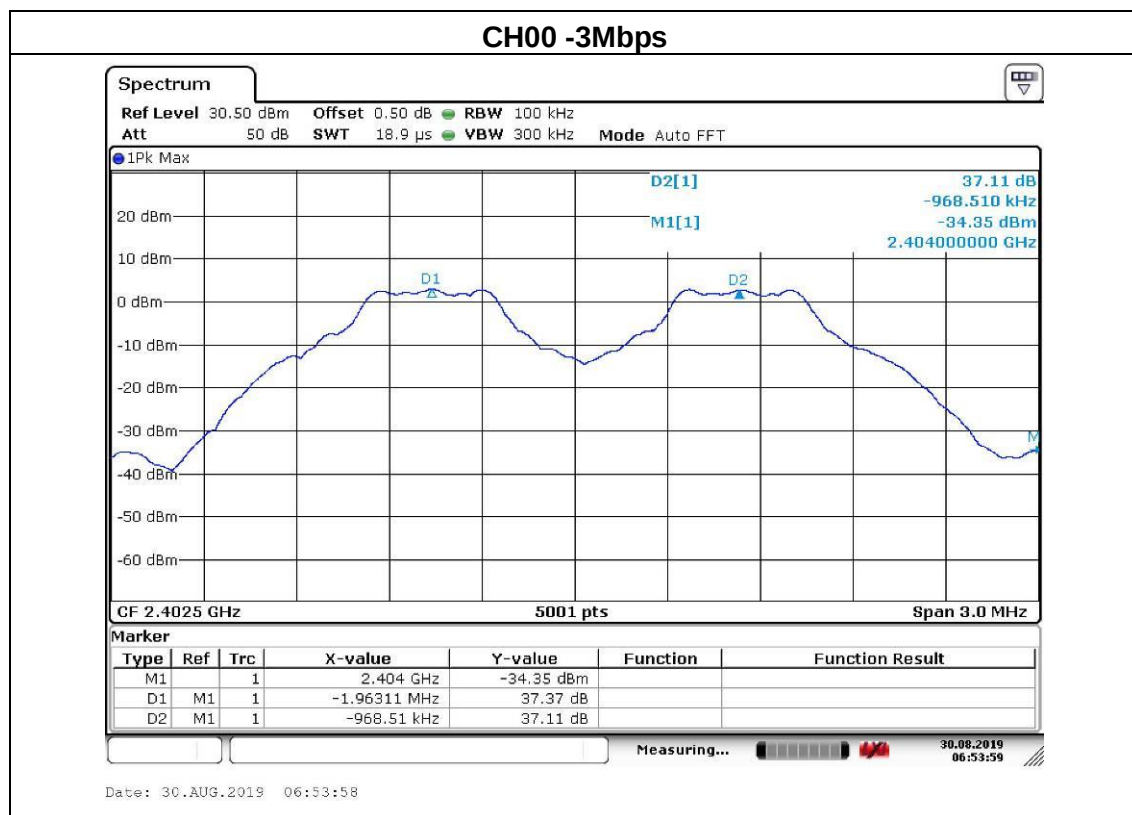


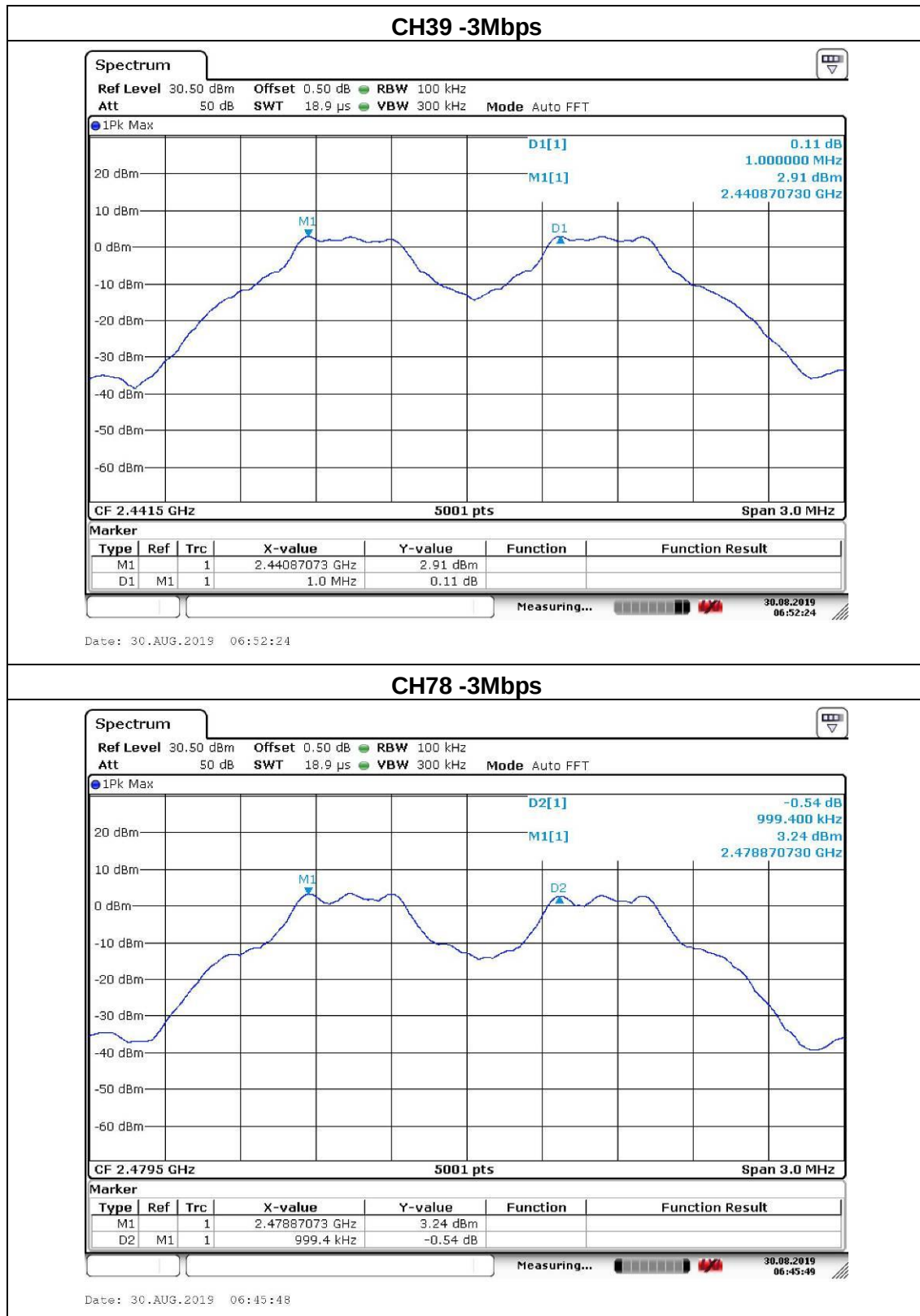
Date: 30.AUG.2019 06:44:21

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00 / CH39 /CH78 (3Mbps Mode)		

Frequency	Ch. Separation (MHz)	2/3 of the 20 dB Bandwidth (MHz)	Result
2402 MHz	0.9685	0.7367	PASS
2441 MHz	1.0000	0.7287	PASS
2480 MHz	0.9994	0.7347	PASS

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





8. PEAK OUTPUT POWER TEST

8.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(2)	Peak Output Power	0.125 watt or 21dBm	2400-2483.5	PASS

8.1.1 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= 3MHz, VBW= 3MHz, Sweep time = Auto.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



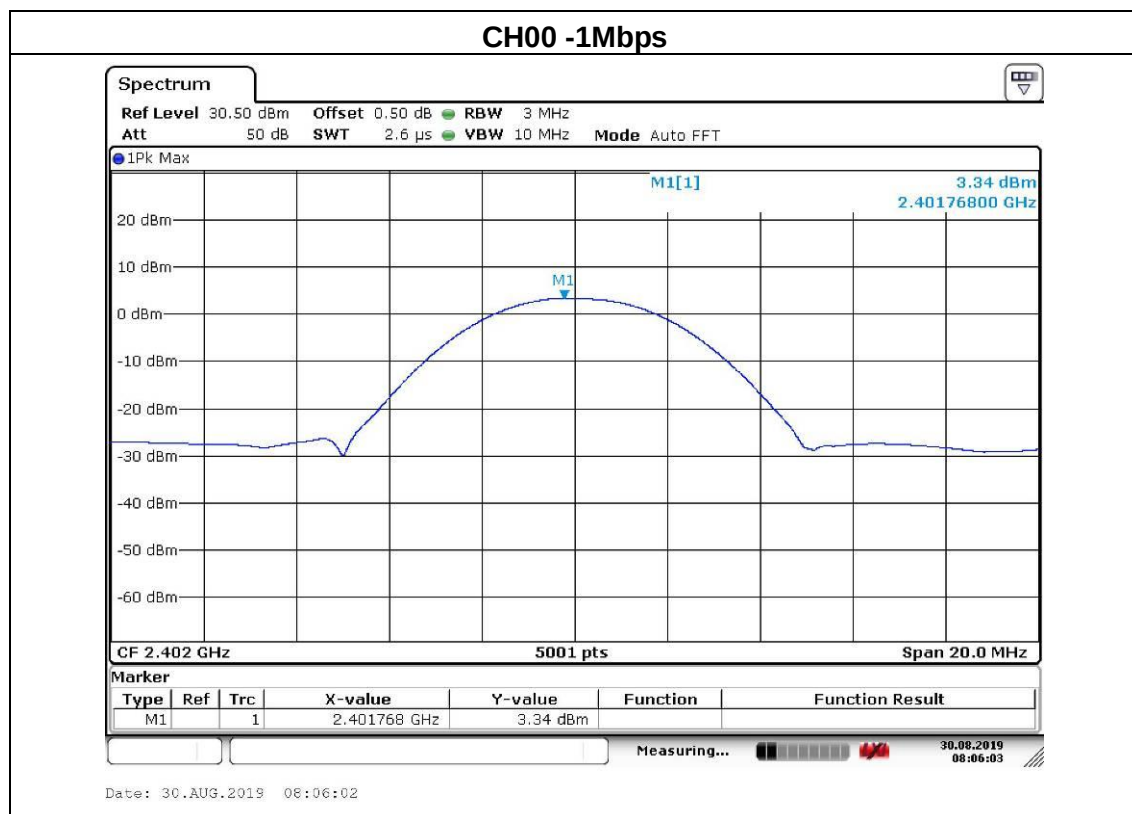
8.1.4 EUT OPERATION CONDITIONS

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.

8.1.5 TEST RESULTS

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00/ CH39 /CH78 (1Mbps Mode)		
Test Date :	2019-08-30		

Frequency (MHz)	Reading Power (dBm)	Cable Loss (dB)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	3.34	0.5	3.84	30	1
2441	3.32	0.5	3.82	30	1
2480	3.40	0.5	3.90	30	1

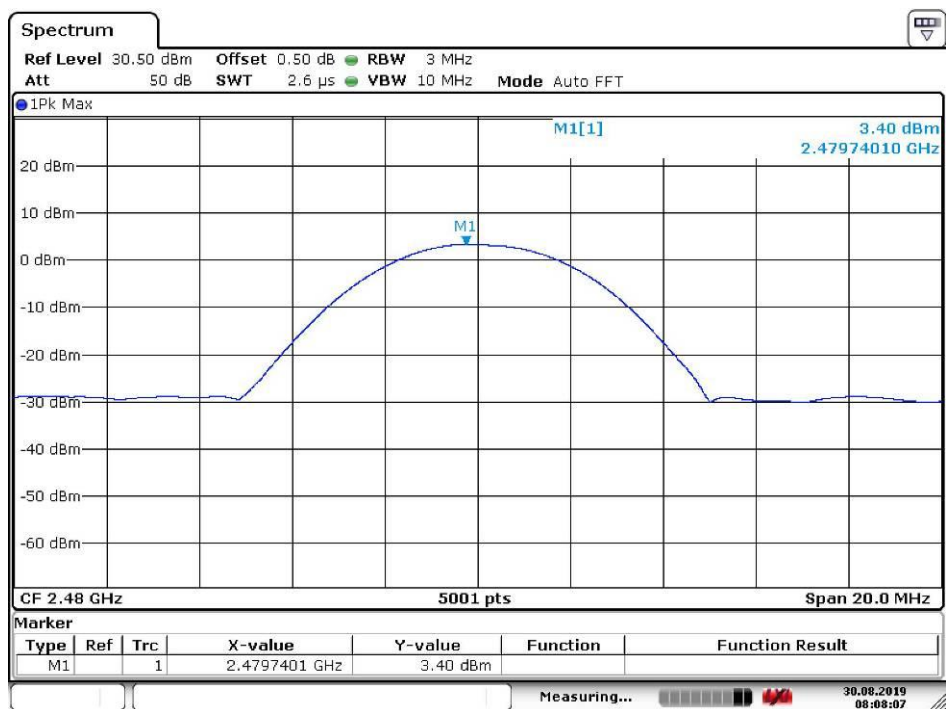


CH39 -1Mbps



Date: 30.AUG.2019 08:07:30

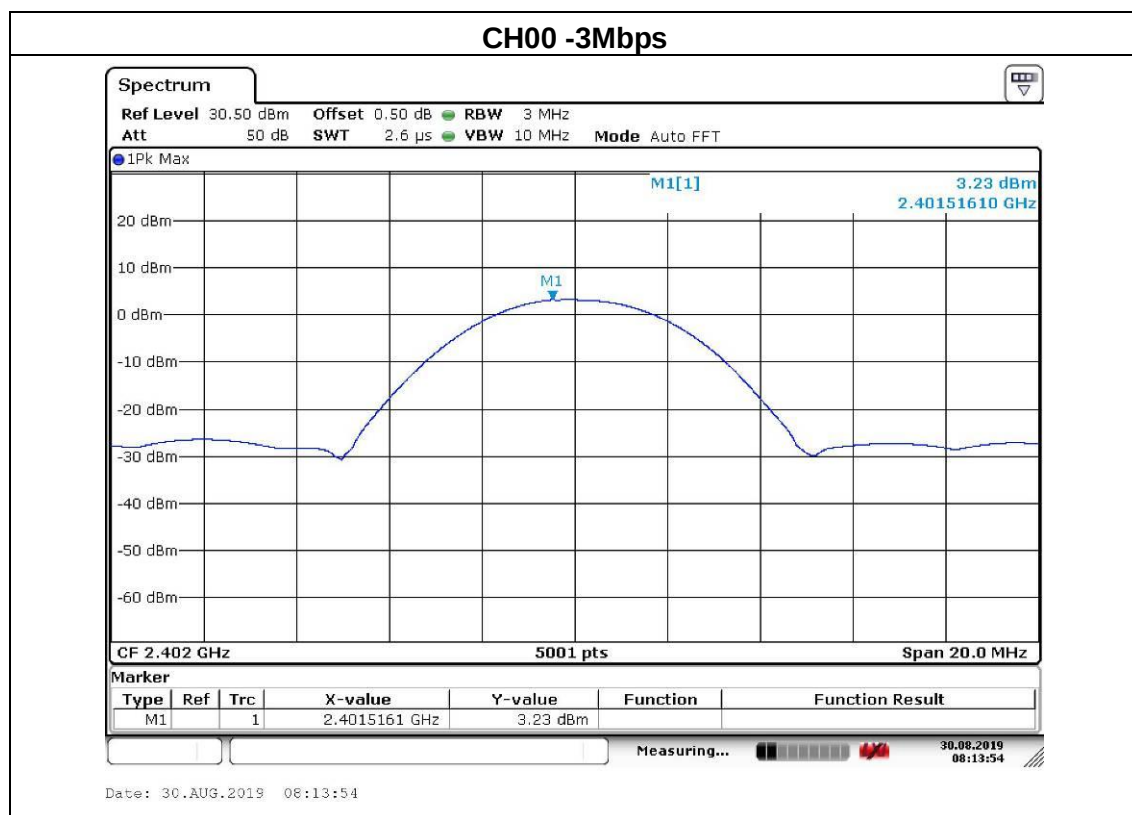
CH78 -1Mbps

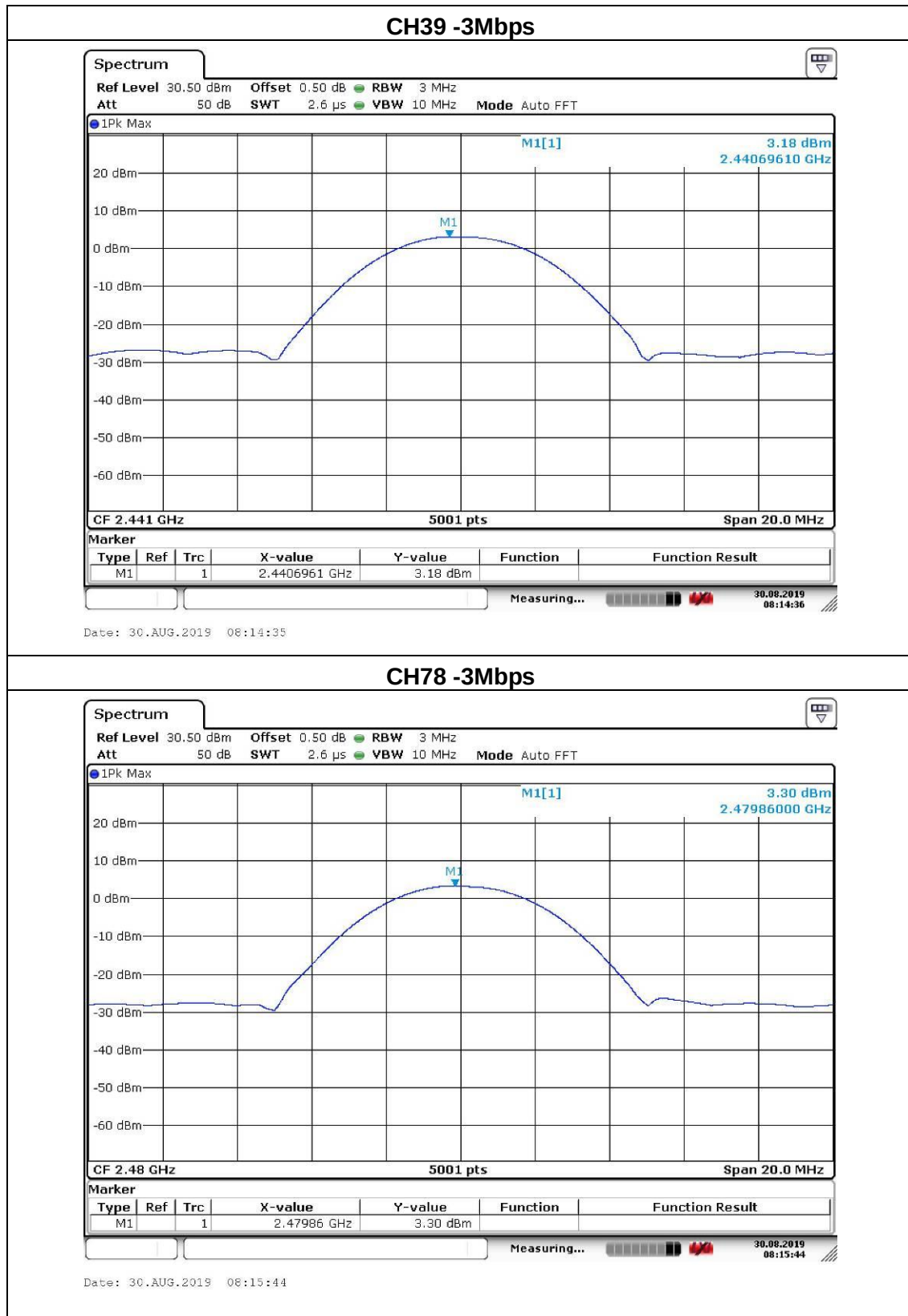


Date: 30.AUG.2019 08:08:06

EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00/ CH39 /CH78 (3Mbps Mode)		
Test Date :	2019-08-30		

Frequency (MHz)	Reading Power (dBm)	Cable Loss (dB)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
2402	3.23	0.5	3.73	30	1
2441	3.18	0.5	3.68	30	1
2480	3.30	0.5	3.80	30	1





9. ANTENNA CONDUCTED SPURIOUS EMISSION

9.1 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 2.8.

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

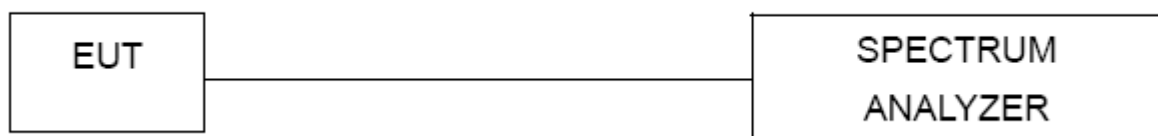
The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

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 : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

9.1.2 TEST SETUP



9.1.3 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.

9.1.4 TEST RESULTS

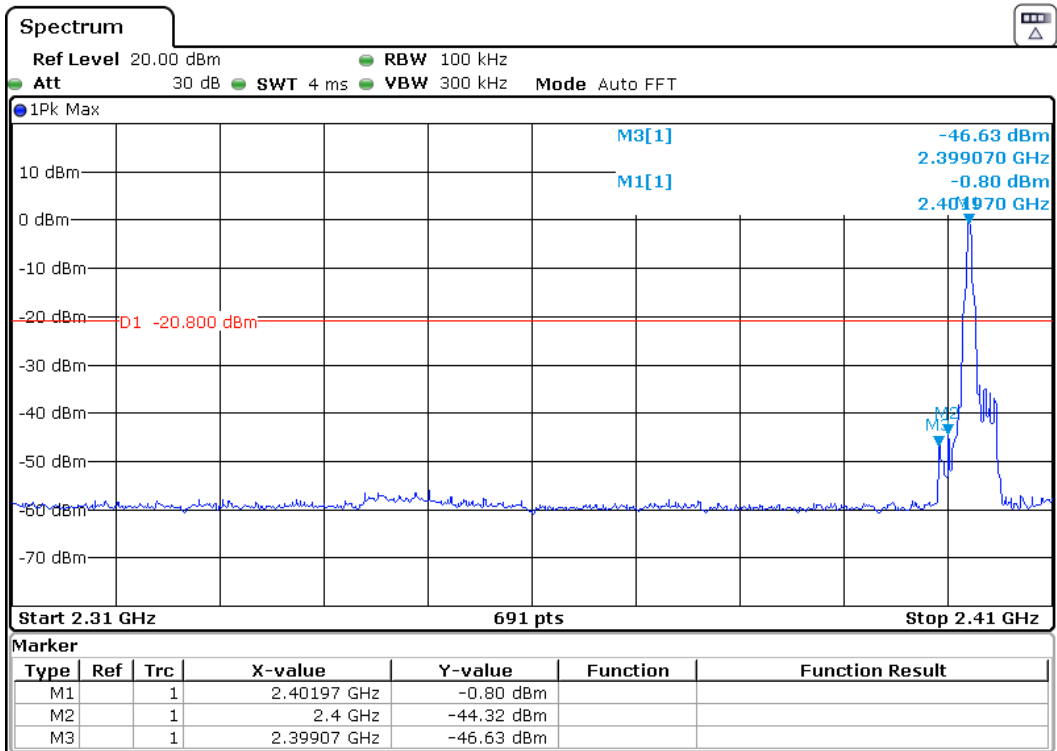
EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00 / CH78 (1Mbps)		
Test Date :	2019-08-30		

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.	

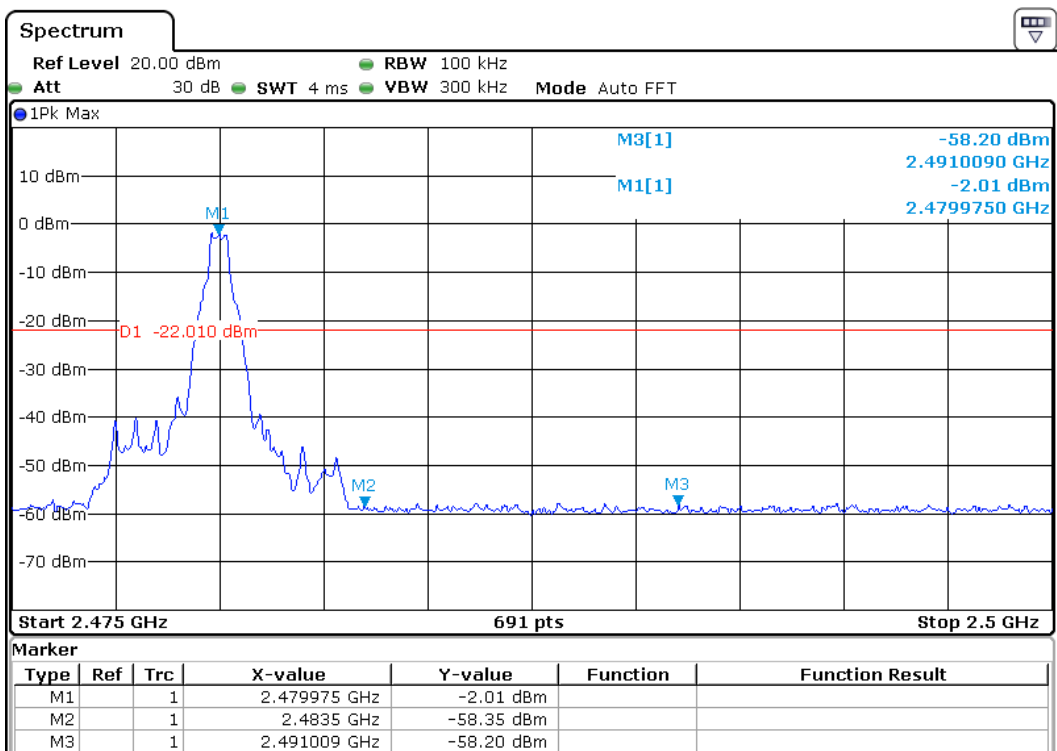
Remark :

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

CH00 (Lower) -1Mbps



CH 78 (Upper) -1Mbps



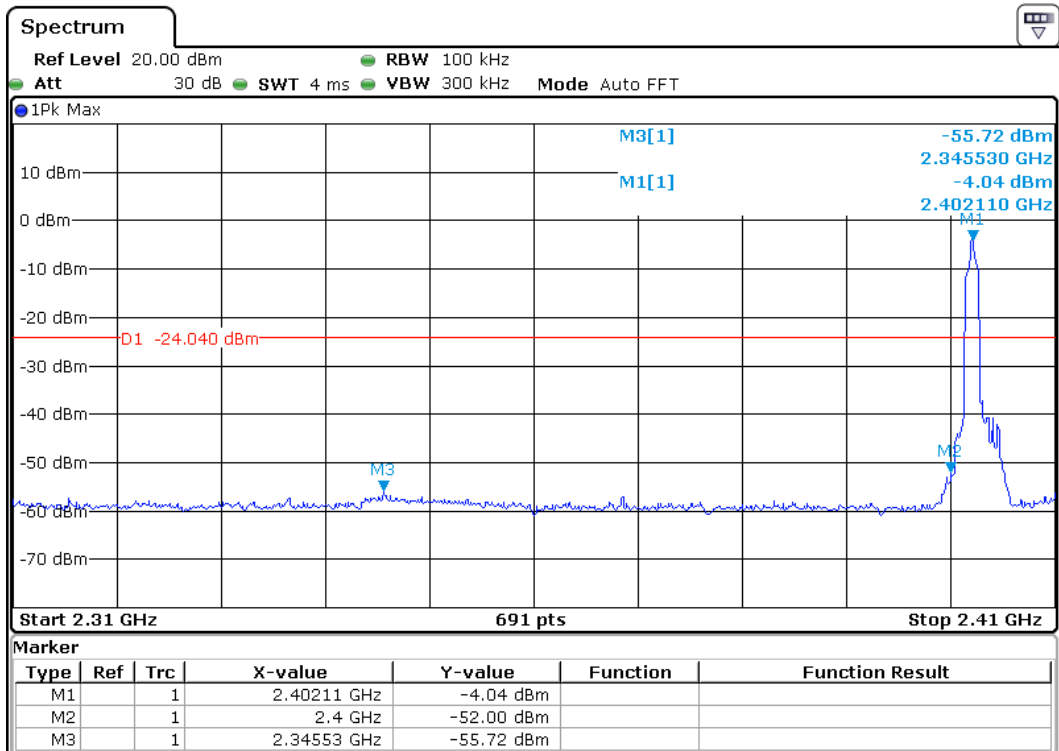
EUT :	Creative Outlier Air	Model Name :	EF0830
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V from battery
Test Mode :	CH00 / CH78 (3Mbps)		
Test Date :	2019-08-30		

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.	

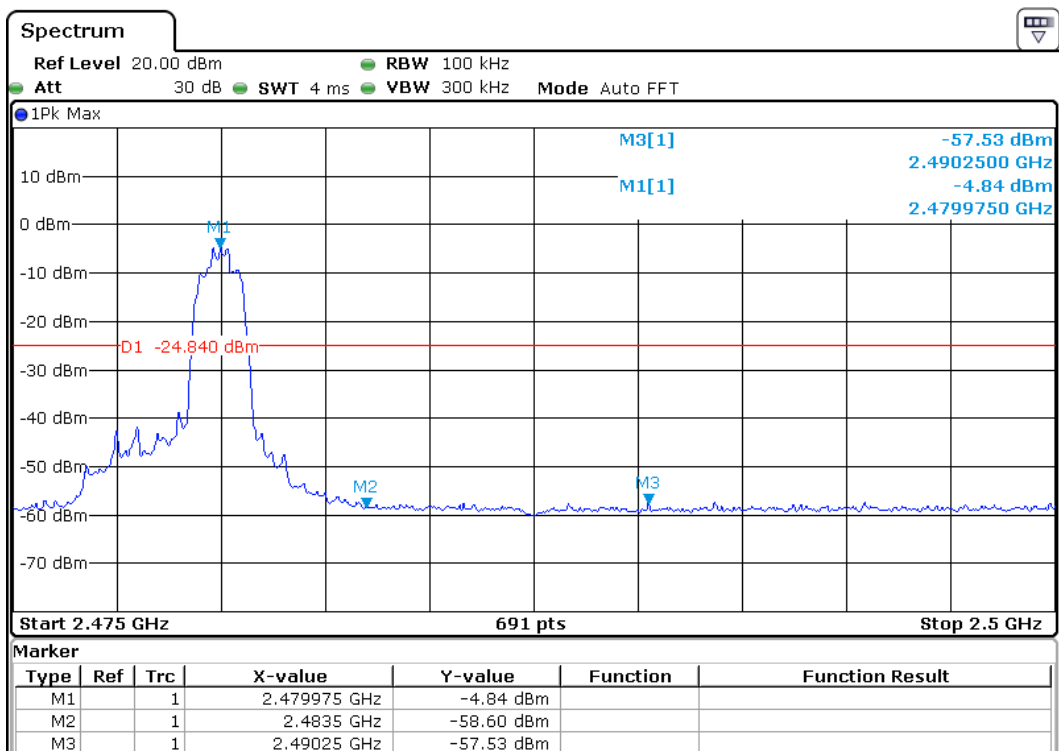
Remark :

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

CH00 (Lower) -3Mbps



CH 78 (Upper) -3Mbps



10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

3.10.3.1.1 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 FPC Antenna and no consideration of replacement. Antenna max gain is 1.89dBi from 2.4GHz to 2.5GHz.

11. EUT TEST PHOTO**Conducted Measurement Photos**

**Radiated Measurement Photos
30MHz-1GHz**



**Radiated Measurement Photos
Above 1GHz**

