



FCC PART 15.247

TEST REPORT

For

Thundercomm Technology Co., Ltd

Building 4, No. 99, Data Valley Middle Road Xiantao District, Yubei District,
Chongqing, China

FCC ID: 2AOHHTURBOXSOMD845

Report Type: Class II Permissive Change	Product Type: Thundersoft TurboX D845 SOM
Report Number: SZ1210330-09079E-00CA1	
Report Date: 2021-04-25	
Reviewed By: RF Engineer	Jacob Kong 
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Thundersoft TurboX D845 SOM
Tested Model	TurboX-D845-SOM
Frequency Range	BLE: 2402-2480MHz Wi-Fi: 2412-2462MHz
Maximum Conducted Peak Output Power	BLE: 5.93Bm(LE 1M), 6.03dBm(LE 2M) Wi-Fi: 16.65dBm(802.11b), 21.33dBm(802.11g), 24.14dBm(802.11n-HT20), 22.10dBm(802.11ax20)
Modulation Technique	BLE: GFSK Wi-Fi: DSSS, OFDM
Antenna Specification*	PCB Antenna: 1.5dBi(It is provided by the applicant)
Voltage Range	DC 3.8 V
Date of Test	2021-04-09 to 2021-04-15
Sample serial number	SZ1210330-09079E-RF-A1-S1(Assigned by BACL, Shenzhen)
Received date	2021-03-30
Sample/EUT Status	Good condition

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

This is a CIIPC application of the device; the differences between the original device and the current one are as follows:

- (1) Add a kind of antenna.
- (2) Changing the company address to "Building 4, No. 99, Data Valley Middle Road Xiantao District, Yubei District, Chongqing, China".

Based on above difference listed, the modifications will impact the test item of "Radiated Emissions", "Antenna Requirement" and "Maximum Permissible Exposure(MPE)", so in this report, we will updated those items and related photos, the other test data and photos please refer to the original report.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

And KDB 558074 D01 15.247 Meas Guidance v05.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1℃
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) ,6F,7F,the 3rd Phase of Wan Li Industrial Building D,Shihua Rd, FuTian Free Trade Zone, Shenzhen, China .

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b, 802.11g and 802.11n-HT20 mode, 13 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442	/	/

EUT was tested with Channel 1, 7, 11, 12 and 13.

For 802.11n-HT40 mode, 9 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2422	6	2447
2	2427	7	2452
3	2432	8	2457
4	2437	9	2462
5	2442	/	/

EUT was tested with Channel 1, 5, 7, 8 and 9.

For BLE mode, 40 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

EUT was tested with Channel 0, 19 and 39.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

BLE & Wi-Fi test in the engineer mode. Software “QRCT”* was used for testing.

The device was tested with the worst case was performed as below:

Mode	Data rate	Power level*				
		2412MHz	2442MHz	2462MHz	2467MHz	2472MHz
802.11b	1 Mbps	15	15	15	14	1
802.11g	6 Mbps	15	12	15	14	1
802.11n-HT20	MCS0	13	13	15	14	1
Mode	Data rate	2422MHz	2442MHz	2452MHz	2457MHz	2462MHz
802.11n-HT40	MCS0	13	13	13	13	7

The software and power level was provided by the applicant.

BLE power level is default by software.

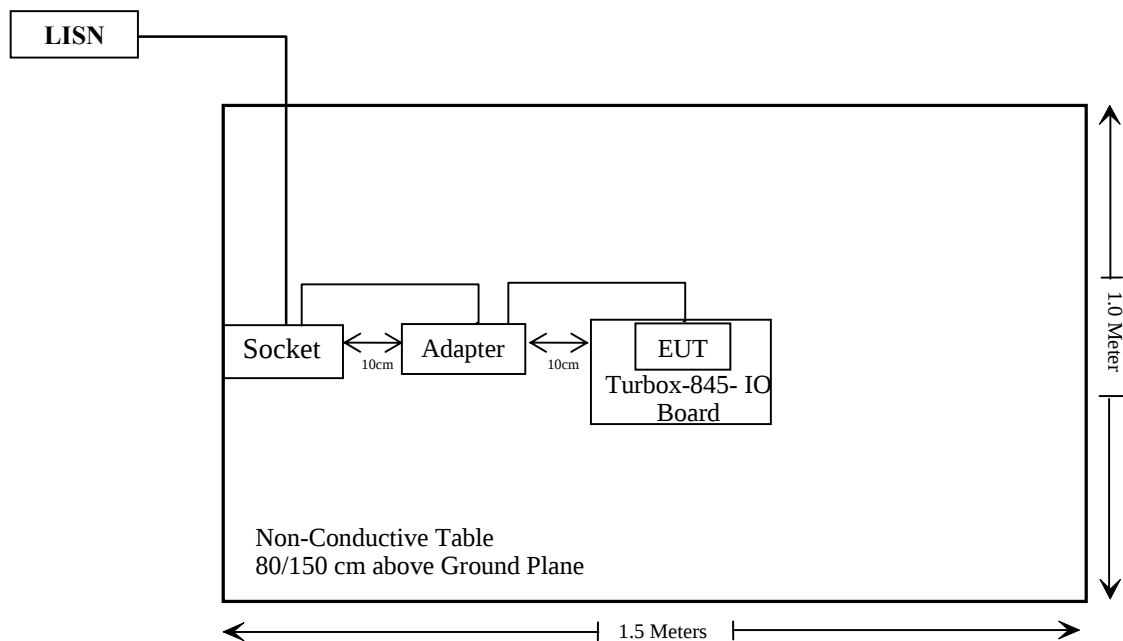
Pre-scan with all the data rates, the above data rate is the worst case for Wi-Fi test.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Thundercomm Technology CO.,Ltd	Turbox-845- IO Board	V02	V02
Thundercomm Technology CO.,Ltd	Adapter	TurboX D845SOM	TurboX D845SOM

External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielding Un-Detachable DC Cable	1.2	Turbox-845- IO Board	Adapter

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1091	Maximum Permissible Exposure(MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance*
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance*
§15.247(b)(3)	Maximum Conducted Output Power	Compliance*
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance*
§15.247(e)	Power Spectral Density	Compliance*

Compliance*: Please refer to the original report RSZ181105003-00C with FCC ID: 2AOHHTURBOXSOMD845, issued by Bay Area Compliance Laboratories Corp. (Shenzhen).

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 1	F-03-EM236	2020/11/29	2021/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	3115	9107-3694	2021/01/15	2024/01/14
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
SNSD	Band Reject filter	BSF2402-2480MN-0898-001	2.4G filter	2020/04/20	2021/04/20
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
BT	2402-2480	1.5	1.41	2	1.58	20	0.00044	1.0
BLE	2402-2480	1.5	1.41	6.5	4.47	20	0.0013	1.0
2.4GHz Wi-Fi	2412-2472	1.5	1.41	24.5	281.84	20	0.079	1.0
	2422-2462	1.5	1.41	22.5	177.83	20	0.050	1.0
5GHz Wi-Fi	5150-5250	5.7	3.72	15	31.62	20	0.023	1.0
	5250-5350	5.7	3.72	15	31.62	20	0.023	1.0
	5470-5725	5.7	3.72	14	25.12	20	0.019	1.0
	5725-5850	5.7	3.72	15	31.62	20	0.023	1.0

Note:

1) The conducted power is the tune-up power of the Max Conducted Output Power.

2) BT and Wi-Fi can transmit simultaneously, 2.4GHz Wi-Fi and 5GHz Wi-Fi can't transmit simultaneously for this device.

Simultaneous transmitting consideration:

The ratio= $MPE_{Wi-Fi}/limit + MPE_{BT}/limit = 0.079/1 + 0.0013/1 = 0.0803 < 1.0$

So simultaneous exposure comply with the limit.

Note: To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
 - b. Antenna must use a unique type of connector to attach to the EUT.
- Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has two PCB antennas arrangement for WIFI and one PCB antenna arrangement for BLE, they were attached to EUT use the MHF-Type connector and the antenna gain is 1.5dBi, fulfill the requirement of this section. Please refer to the EUT photos.

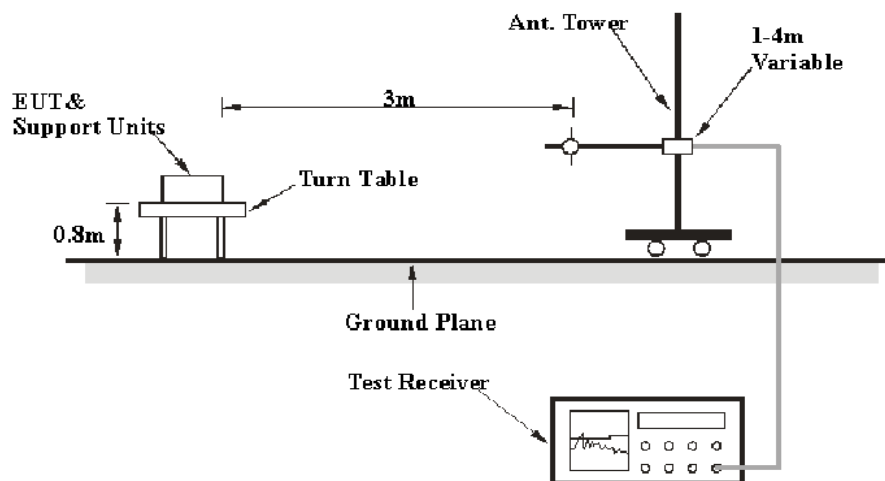
Result: Compliance.

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS**Applicable Standard**

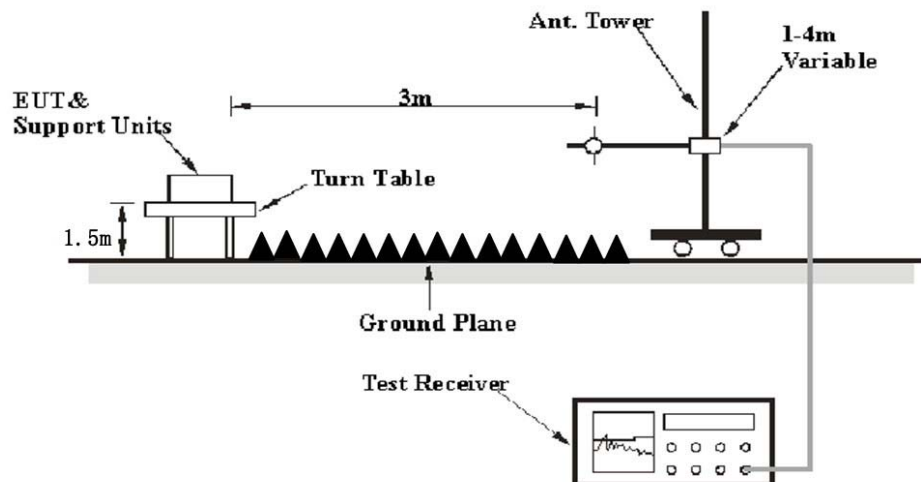
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz ^{Note 1}	/	Average
	1MHz	> 1/T ^{Note 2}	/	Average

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

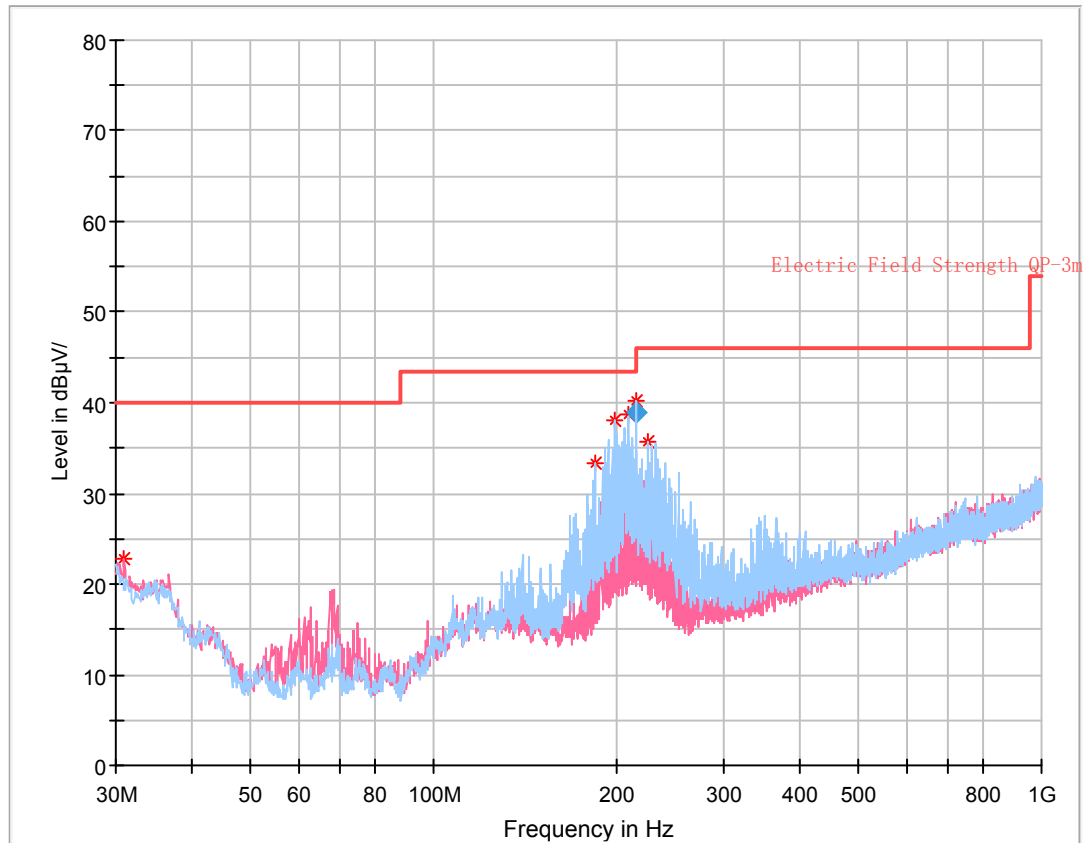
Test Data

Environmental Conditions

Temperature:	25~25.8 °C
Relative Humidity:	51~52 %
ATM Pressure:	101.0~101.2 kPa

The testing was performed by Kilroy Deng on 2021-04-09 for below 1GHz and Brace Lin on 2021-04-14 and 2021-04-15 for above 1GHz.

EUT operation mode: Transmitting

30 MHz~1 GHz: (BT&2.4G Wifi transmit)**Final_Result**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
197.939750	28.20	43.50	15.30	153.0	H	66.0	-11.3
208.876250	30.89	43.50	12.61	111.0	H	90.0	-11.2
215.985625	38.85	43.50	4.65	145.0	H	91.0	-11.3

Critical_Freqs

Frequency (MHz)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.970000	22.82	40.00	17.18	100.0	V	156.0	-4.3
184.593750	33.27	43.50	10.23	200.0	H	83.0	-12.2
224.970000	35.63	46.00	10.37	100.0	H	102.0	-11.5

Note: QP measurement not performed when the Peak value is more than 6dB lower than limit.

**BLE 1MHz mode:
1 GHz-25 GHz:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2402 MHz)									
2386.67	28.66	PK	256	1.3	H	31.87	60.53	74	13.47
2386.67	14.69	Ave.	256	1.3	H	31.87	46.56	54	7.44
2485.91	29.69	PK	75	1.6	H	32.13	61.82	74	12.18
2485.91	14.71	Ave.	75	1.6	H	32.13	46.84	54	7.16
4804.00	43.07	PK	31	2.4	H	6.28	49.35	74	24.65
4804.00	29.65	Ave.	31	2.4	H	6.28	35.93	54	18.07
Middle Channel (2440 MHz)									
4880.00	43.81	PK	98	1.3	H	6.76	50.57	74	23.43
4880.00	29.51	Ave.	98	1.3	H	6.76	36.27	54	17.73
High Channel (2480 MHz)									
2381.67	28.23	PK	21	2.2	H	31.87	60.10	74	13.90
2381.67	14.93	Ave.	21	2.2	H	31.87	46.80	54	7.20
2495.90	29.02	PK	343	1.3	H	32.13	61.15	74	12.85
2495.90	14.97	Ave.	343	1.3	H	32.13	47.10	54	6.90
4960.00	43.85	PK	267	1.1	H	6.80	50.65	74	23.35
4960.00	29.85	Ave.	267	1.1	H	6.80	36.65	54	17.35

BLE 2MHz mode:**1 GHz-25 GHz:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2402 MHz)									
2387.56	28.88	PK	193	2.5	H	31.87	60.75	74	13.25
2387.56	15.15	Ave.	193	2.5	H	31.87	47.02	54	6.98
2491.12	28.15	PK	241	2.1	H	32.13	60.28	74	13.72
2491.12	15.21	Ave.	241	2.1	H	32.13	47.34	54	6.66
4804.00	43.12	PK	169	1.9	H	6.28	49.40	74	24.60
4804.00	29.84	Ave.	169	1.9	H	6.28	36.12	54	17.88
Middle Channel (2440 MHz)									
4880.00	43.24	PK	186	2.5	H	6.76	50.00	74	24.00
4880.00	29.34	Ave.	186	2.5	H	6.76	36.10	54	17.90
High Channel (2480 MHz)									
2389.64	28.49	PK	143	1.2	H	31.87	60.36	74	13.64
2389.64	15.38	Ave.	143	1.2	H	31.87	47.25	54	6.75
2494.36	28.29	PK	151	1.6	H	32.13	60.42	74	13.58
2494.36	15.26	Ave.	151	1.6	H	32.13	47.39	54	6.61
4960.00	43.44	PK	205	2.4	H	6.80	50.24	74	23.76
4960.00	30.02	Ave.	205	2.4	H	6.80	36.82	54	17.18

Wi-Fi Mode:**1 GHz-25 GHz:****802.11b Mode, Chain 0: (Pre-scan with chain 0 and chain 1, the chain 0 is worst case)**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2381.39	28.49	PK	185	1.4	H	31.87	60.36	74	13.64
2381.39	14.01	Ave.	185	1.4	H	31.87	45.88	54	8.12
2487.52	28.48	PK	2	2.3	H	32.13	60.61	74	13.39
2487.52	13.75	Ave.	2	2.3	H	32.13	45.88	54	8.12
4824.00	44.75	PK	290	1.3	H	6.28	51.03	74	22.97
4824.00	35.3	Ave.	290	1.3	H	6.28	41.58	54	12.42
Middle Channel (2442MHz)									
4884.00	46.82	PK	68	1.8	H	6.76	53.58	74	20.42
4884.00	35.12	Ave.	68	1.8	H	6.76	41.88	54	12.12
2462 MHz									
2382.07	28.17	PK	109	1.8	H	31.87	60.04	74	13.96
2382.07	13.67	Ave.	109	1.8	H	31.87	45.54	54	8.46
2488.65	28.57	PK	279	2.3	H	32.13	60.70	74	13.30
2488.65	13.85	Ave.	279	2.3	H	32.13	45.98	54	8.02
4924.00	46.81	PK	221	1.7	H	6.76	53.57	74	20.43
4924.00	35.58	Ave.	221	1.7	H	6.76	42.34	54	11.66
2467 MHz									
2375.13	28.67	PK	354	1.7	H	31.87	60.54	74	13.46
2375.13	13.68	Ave.	354	1.7	H	31.87	45.55	54	8.45
2484.46	29.64	PK	13	1.5	H	32.13	61.77	74	12.23
2484.46	15.93	Ave.	13	1.5	H	32.13	48.06	54	5.94
4934.00	43.85	PK	214	1.7	H	6.76	50.61	74	23.39
4934.00	30.34	Ave.	214	1.7	H	6.76	37.10	54	16.90
High Channel (2472 MHz)									
2383.18	28.29	PK	18	1.5	H	31.87	60.16	74	13.84
2383.18	13.67	Ave.	18	1.5	H	31.87	45.54	54	8.46
2487.42	29.11	PK	351	1.4	H	32.13	61.24	74	12.76
2487.42	15.17	Ave.	351	1.4	H	32.13	47.30	54	6.70
4944.00	43.25	PK	167	2.2	H	6.76	50.01	74	23.99
4944.00	29.65	Ave.	167	2.2	H	6.76	36.41	54	17.59

802.11g Mode, Chain 0: (Pre-scan with chain 0 and chain 1, the chain 0 is worst case)

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2373.99	28.23	PK	212	2.1	H	31.87	60.10	74	13.90
2373.99	13.87	Ave.	212	2.1	H	31.87	45.74	54	8.26
2489.32	28.34	PK	225	1.9	H	32.13	60.47	74	13.53
2489.32	13.82	Ave.	225	1.9	H	32.13	45.95	54	8.05
4824.00	43.16	PK	330	1.4	H	6.28	49.44	74	24.56
4824.00	32.28	Ave.	330	1.4	H	6.28	38.56	54	15.44
Middle Channel (2442MHz)									
4884.00	46.71	PK	263	1.4	H	6.76	53.47	74	20.53
4884.00	31.58	Ave.	324	2.4	H	6.76	38.34	54	15.66
2462 MHz									
2372.60	28.46	PK	234	2.5	H	31.87	60.33	74	13.67
2372.60	13.69	Ave.	234	2.5	H	31.87	45.56	54	8.44
2484.80	28.6	PK	289	1.8	H	32.13	60.73	74	13.27
2484.80	13.94	Ave.	289	1.8	H	32.13	46.07	54	7.93
4924.00	43.27	PK	142	1.6	H	6.76	50.03	74	23.97
4924.00	29.12	Ave.	142	1.6	H	6.76	35.88	54	18.12
2467 MHz									
2383.46	28.96	PK	233	2.5	H	31.87	60.83	74	13.17
2383.46	13.96	Ave.	233	2.5	H	31.87	45.83	54	8.17
2488.53	28.84	PK	340	2.3	H	32.13	60.97	74	13.03
2488.53	13.91	Ave.	340	2.3	H	32.13	46.04	54	7.96
4934.00	46.44	PK	277	2.1	H	6.76	53.20	74	20.80
4934.00	34.15	Ave.	50	1.1	H	6.76	40.91	54	13.09
High Channel (2472 MHz)									
2377.89	28.12	PK	252	1.4	H	31.87	59.99	74	14.01
2377.89	13.67	Ave.	252	1.4	H	31.87	45.54	54	8.46
2486.81	28.25	PK	64	2.3	H	32.13	60.38	74	13.62
2486.81	13.73	Ave.	64	2.3	H	32.13	45.86	54	8.14
4944.00	43.43	PK	295	2.3	H	6.76	50.19	74	23.81
4944.00	29.17	Ave.	295	2.3	H	6.76	35.93	54	18.07

802.11n-HT20 Mode, Chain 0& Chain 1:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2389.25	37.68	PK	279	1.3	H	31.87	69.55	74	4.45
2389.25	17.75	Ave.	279	1.3	H	31.87	49.62	54	4.38
2483.97	28.95	PK	360	2.1	H	32.13	61.08	74	12.92
2483.97	13.86	Ave.	360	2.1	H	32.13	45.99	54	8.01
4824.00	44.61	PK	7	2.0	H	6.28	50.89	74	23.11
4824.00	32.14	Ave.	7	2.0	H	6.28	38.42	54	15.58
Middle Channel (2442MHz)									
4884.00	44.32	PK	148	1.1	H	6.76	51.08	74	22.92
4884.00	31.85	Ave.	148	1.1	H	6.76	38.61	54	15.39
2462 MHz									
2379.29	30.39	PK	305	1.1	H	31.87	62.26	74	11.74
2379.29	13.89	Ave.	305	1.1	H	31.87	45.76	54	8.24
2489.05	37.16	PK	125	2.4	H	32.13	69.29	74	4.71
2489.05	20.22	Ave.	125	2.4	H	32.13	52.35	54	1.65
4924.00	45.59	PK	31	1.1	H	6.76	52.35	74	21.65
4924.00	29.86	Ave.	31	1.1	H	6.76	36.62	54	17.38
2467 MHz									
2381.56	28.82	PK	59	1.3	H	31.87	60.69	74	13.31
2381.56	13.81	Ave.	59	1.3	H	31.87	45.68	54	8.32
2483.94	38.67	PK	271	1.1	H	32.13	70.80	74	3.20
2483.94	19.75	Ave.	271	1.1	H	32.13	51.88	54	2.12
4934.00	45.08	PK	74	2.2	H	6.76	51.84	74	22.16
4934.00	30.25	Ave.	74	2.2	H	6.76	37.01	54	16.99
High Channel (2472 MHz)									
2384.15	28.12	PK	296	2.4	H	31.87	59.99	74	14.01
2384.15	13.67	Ave.	296	2.4	H	31.87	45.54	54	8.46
2483.95	38.64	PK	309	1.9	H	32.13	70.77	74	3.23
2483.95	15.82	Ave.	309	1.9	H	32.13	47.95	54	6.05
4944.00	43.27	PK	38	2.0	H	6.76	50.03	74	23.97
4944.00	29.16	Ave.	38	2.0	H	6.76	35.92	54	18.08

802.11n-HT40 Mode, Chain 0& Chain 1:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2422 MHz)									
2388.09	38.15	PK	344	2.2	H	31.87	70.02	74	3.98
2388.09	19.03	Ave.	344	2.2	H	31.87	50.90	54	3.10
2491.34	28.57	PK	237	2.2	H	32.13	60.70	74	13.30
2491.34	14.16	Ave.	237	2.2	H	32.13	46.29	54	7.71
4844.00	49.10	PK	273	1.8	H	6.28	55.38	74	18.62
4844.00	31.56	Ave.	273	1.8	H	6.28	37.84	54	16.16
Middle Channel (2442MHz)									
4884.00	43.51	PK	335	1.2	H	6.76	50.27	74	23.73
4884.00	28.84	Ave.	335	1.2	H	6.76	35.60	54	18.40
2452 MHz									
2387.58	32.27	PK	317	1.3	H	31.87	64.14	74	9.86
2387.58	13.83	Ave.	317	1.3	H	31.87	45.70	54	8.30
2483.91	39.16	PK	351	2.3	H	32.13	71.29	74	2.71
2483.91	20.77	Ave.	351	2.3	H	32.13	52.90	54	1.10
4904.00	44.24	PK	209	1.6	H	6.76	51.00	74	23.00
4904.00	29.03	Ave.	209	1.6	H	6.76	35.79	54	18.21
2457 MHz									
2386.57	28.90	PK	105	1.3	H	31.87	60.77	74	13.23
2386.57	13.93	Ave.	105	1.3	H	31.87	45.80	54	8.20
2483.60	32.96	PK	75	1.2	H	32.13	65.09	74	8.91
2483.60	16.80	Ave.	75	1.2	H	32.13	48.93	54	5.07
4914.00	46.45	PK	209	2.1	H	6.76	53.21	74	20.79
4914.00	30.59	Ave.	209	2.1	H	6.76	37.35	54	16.65
High Channel (2462 MHz)									
2387.65	32.31	PK	16	2.2	H	31.87	64.18	74	9.82
2387.65	18.25	Ave.	16	2.2	H	31.87	50.12	54	3.88
2483.56	39.14	PK	66	2.0	H	32.13	71.27	74	2.73
2483.56	16.42	Ave.	66	2.0	H	32.13	48.55	54	5.45
4924.00	42.72	PK	33	2.1	H	6.76	49.48	74	24.52
4924.00	28.38	Ave.	33	2.1	H	6.76	35.14	54	18.86

Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

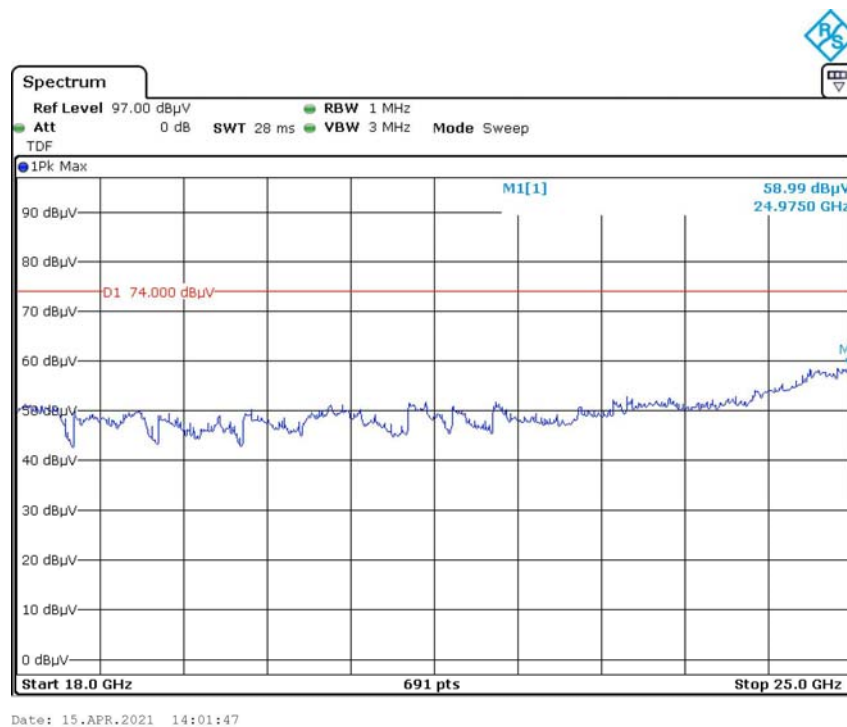
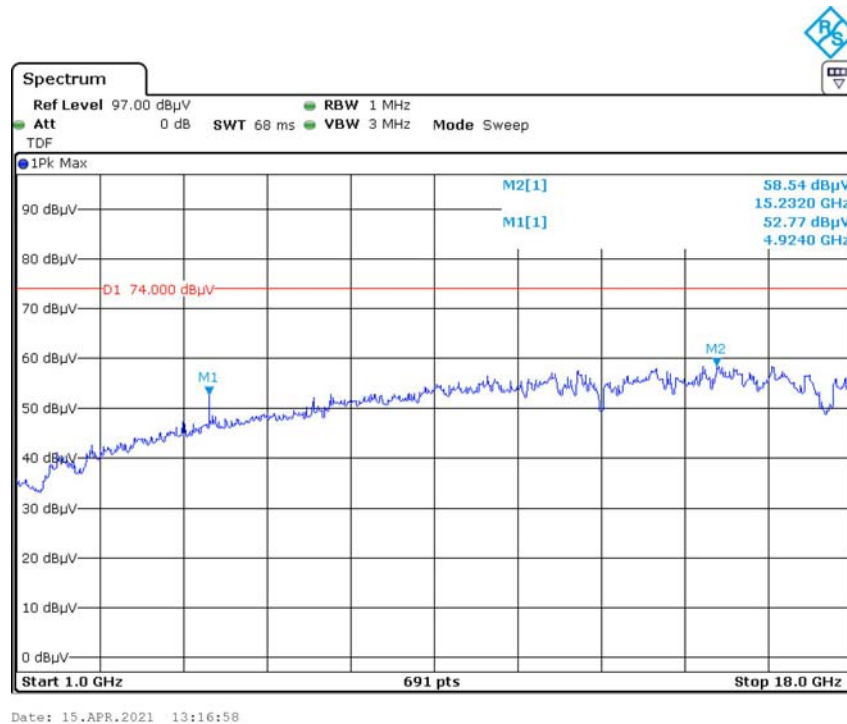
Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

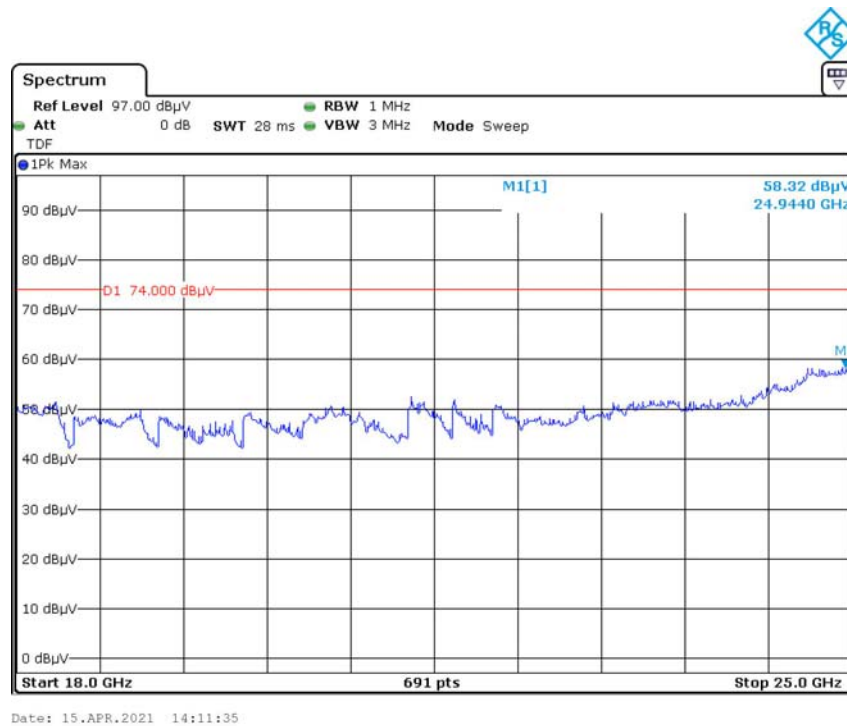
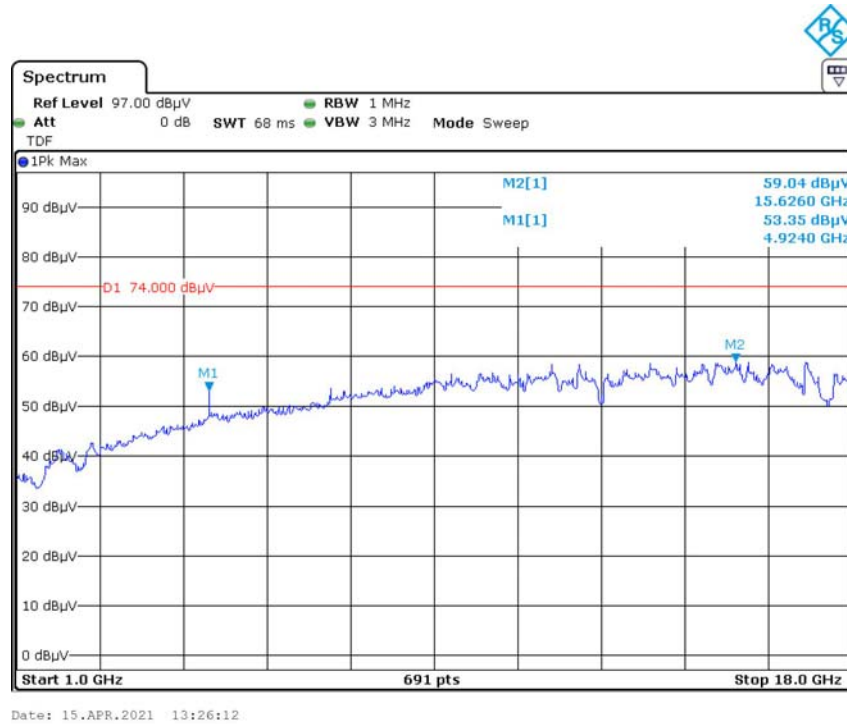
The other spurious emission which is 20dB to the limit was not recorded.

And for the pre-scan is performed with the 2400-2483.5MHz band filter.

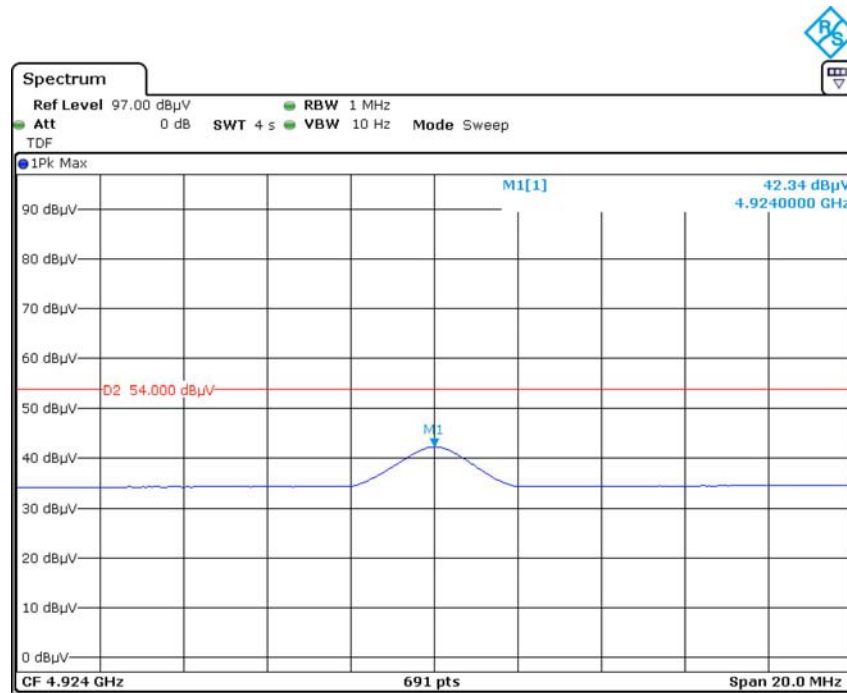
**Pre-scan with 802.11b Mode, 2462MHz
Horizontal**



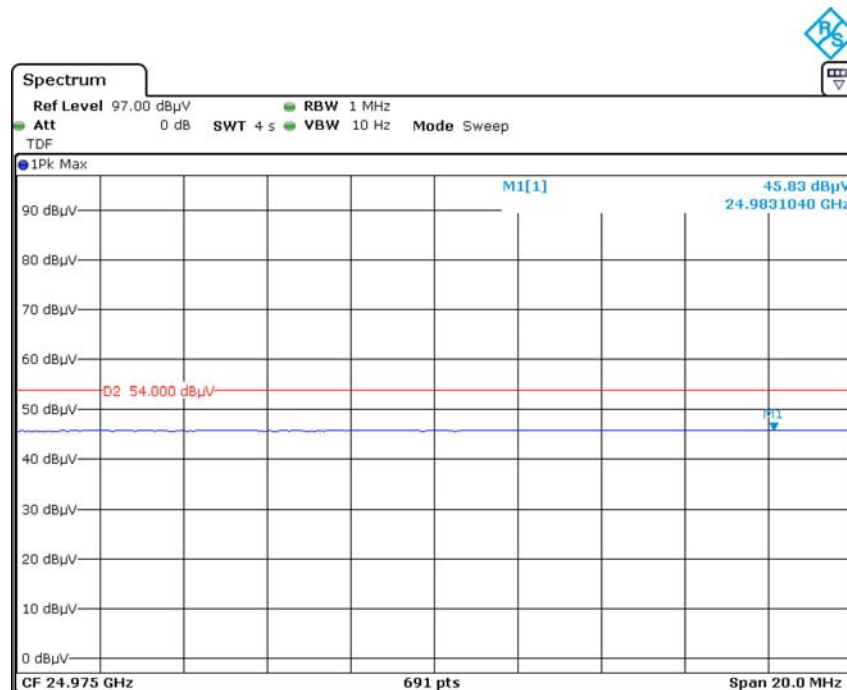
Vertical



Average Horizontal

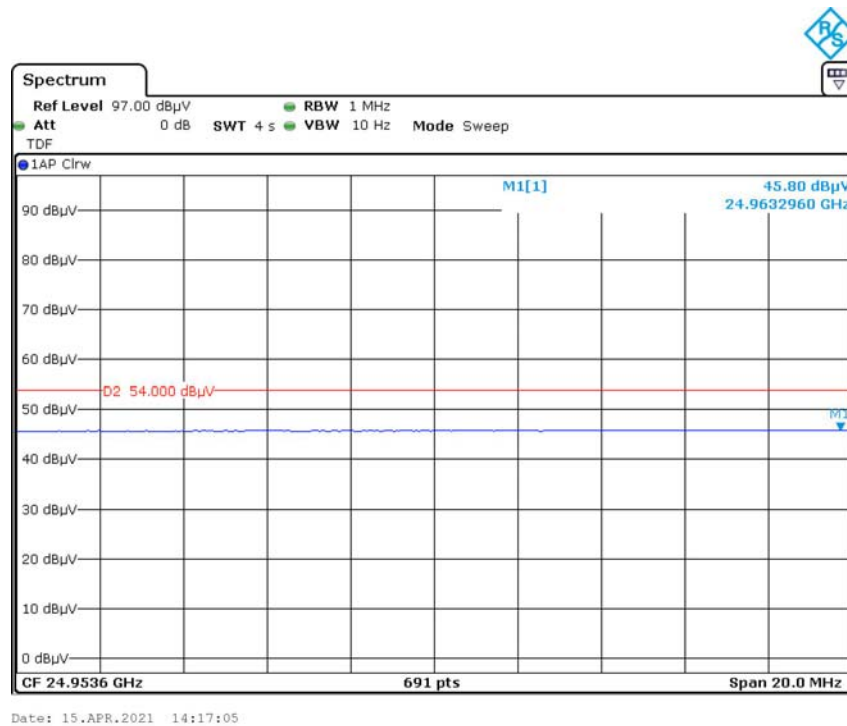
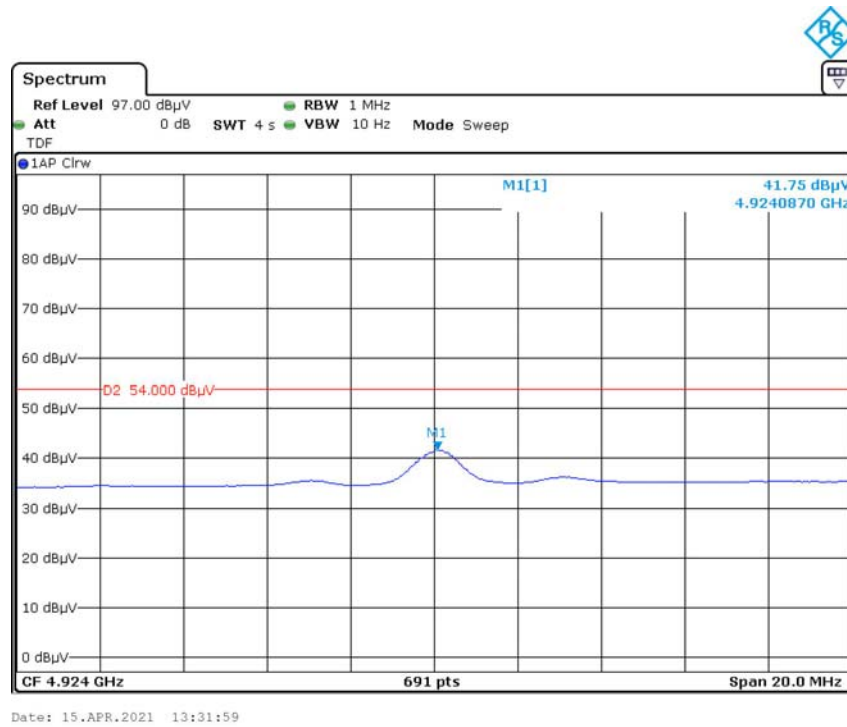


Date: 15.APR.2021 13:22:08



Date: 15.APR.2021 14:06:28

Vertical



***** END OF REPORT *****