



FCC Test Report

Report Number		UCSFR-1903-0001		
Applicant	Company Name	SALTED VENTURE Co., Ltd.		
	Address	11, Nonhyeon-ro 76-gil, Gangnam-gu, Seoul, Republic of Korea		
Product	Product Name	Salted Fitness		
	FCC ID	2AL6N-FTU01BK		
	Model No.	FTU01-BK		
	Family Model Name	-		
	Manufacturer	SALTED VENTURE Co., Ltd.		
	Serial No.	N/A	Country of origin	Korea
Other	Receipt Date	2019-02-07	Receipt Number	UCS-R-2019-0206
	Issued Date	2019-03-08	Tested Date	2019-03-04 ~ 2019-03-07
Standards	FCC CFR 47 PART 15 SUBPART C, Section 15.247, ANSI C 63.10(2013), KDB 558074 D01(2016)			
Tested by	H. S. Lee (Sign) 			
Approved by	T. Y. Yoon (Sign) 			

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Revision History

Issued Report No.	Issued Date	Revisions	Effect Section
UCSFR-1903-0001	03-08-2019	Initial Issue	All



1. Applicant Information

Applicant Name SALTED VENTURE Co., Ltd.
Addressant 11, Nonhyeon-ro 76-gil, Gangnam-gu, Seoul, Republic of Korea
Manufacturer SALTED VENTURE Co., Ltd.

2. EUT (Equipment under test) Information

Product name	Salted Fitness
Basic Model name	FTU01-BK
Power source	DC 3.8 V (Li-ion Battery)
Output Power	0.415 mW
Ferquency range	2 402 MHz ~ 2 480 MHz
Number of channels	40 CH
Modulation Technique	Bluetooth(GFSK)
Transfer Rate	1 Mbps
OS support	Android, IOS

3. Laboratory Information

UCS Co., Ltd.

#702, 268, Hagui-ro, Dongan-gu, Anyang-si, Gyeonggi-do, 14056 Korea.

ER Center

- #35-13 Hwalcho-gil, 109beon-gil, Hwaseong-si, Gyeonggi-do, 18278 Korea

Test site

- FCC Registration Number: 767461
- Designation Number: KR0045
- This test site is in compliance with ISO/IEC 17025 for general requirements for the competence of testing and calibration laboratories.

4. Test Configuration and Condition

4.1 EUT operating condition

- The EUT had been tested under The operating condition.
- There are three channels have been tested as following:
- Channel Low and Channel High with higher data rate were chosen for full testing.

Channel	Frequency (MHz)
Low	2 402
Middle	2 442
High	2 480

- The measurements were taken in continuous transmitting mode using The TEST MODE.
- For controlling the EUT as TEST MODE, the test program and the cable assembly were provided by the applicant.

4.2 EUT test configuration diagram



4.3 Peripheral equipments list for test

Equipment Name	Model	Serial Number	Manufacturer
Notebook computer	NT910S3P	0GG291FG700325F	Samsung Electronics Suzhou Computer Co., Ltd.
-			
-			



5. Summary of Test Results and Measurement Procedures

5.1 Summary of test results

Standard	Test Item	CFR 47 Section	Result
FCC CFR 47 PART 15 SUBPART C, Section 15.247	Antenna Requirement	15.203, 15.247(b)(4)	PASS
	6 dB Bandwidth	15.247(a)(2)	PASS
	Occupied Bandwidth	15.247(a)(2)	PASS
	Maximum Peak Output Power	15.247(b)(1)	PASS
	Peak Power Spectral Density	15.247(a)(1)	PASS
	Spurious Emission, Band Edge, and Restricted bands	15.247(d), 15.209	PASS
	AC Power Line Conducted Emissions	15.207	N/A
	RF Exposure	15.247(i), 1307(b)(1)	PASS

- The tests were performed according to the method of measurements prescribed in KDB No.558074

D01 DTS Meas Guidance v03r05

5.2 AC Powerline conducted emission test

It is not need to test this requirement, because the power of the EUT supplies from a battery. The product will not operate while charging.

5.3 Radiated emission test

Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10:2013 to determine the worse operating conditions. The radiated emissions measurements were performed on the 3 m open area test site.

The turntable was rotated through 360 degrees and the EUT was tested by positioned three orthogonal planes to obtain the highest reading on the field strength meter. Once maximum reading was determined, the search antenna was raised and lowered in both vertical and horizontal polarization.



6. Test Results

6.1 Antenna requirement

6.1.1 Regulation

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 use of a standard antenna jack or electrical connector is prohibited.

And according to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi.

Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

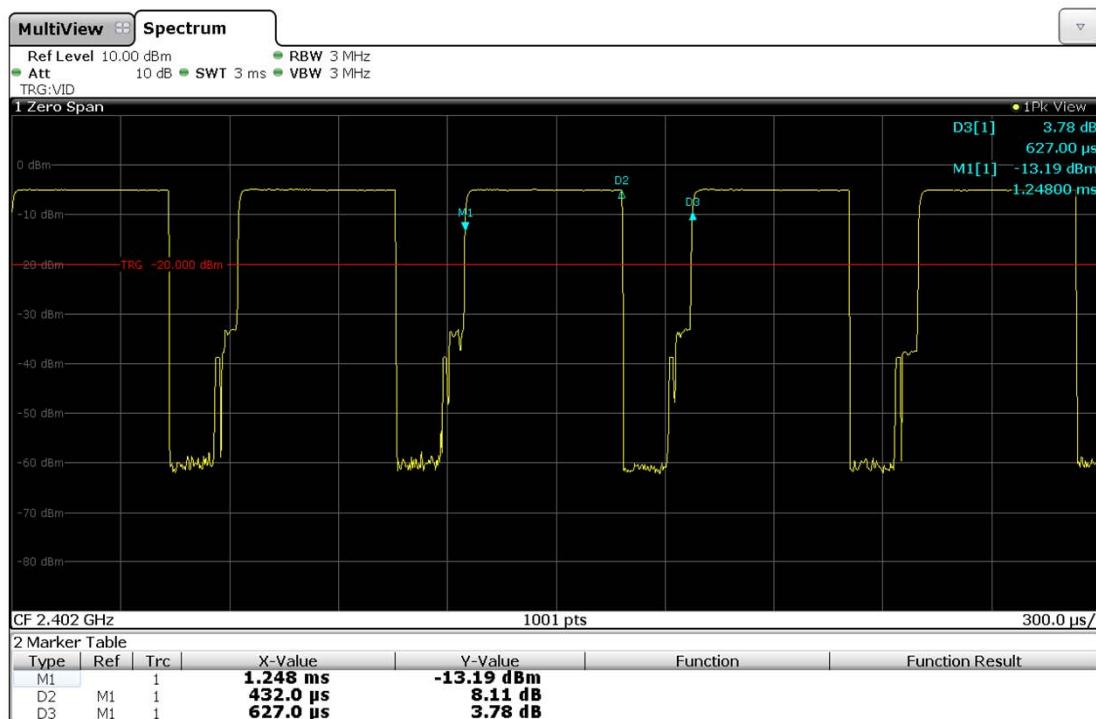
6.1.2 Results: Pass

The transmitter has an Dipole antenna. The directional gain of the antenna is 2.37 dBi.

6.2 DUTY CYCLE OF TEST SIGNAL

Duty cycle is < 98%, duty factor shall be considered.

Pulse Duration (us)	Period (us)	Duty Cycle (dB)
432	627	1.618





6.3 DTS bandwidth

6.3.1 Test procedure

558074 D01 DTS Meas Guidance v03r05 Option 2

6.3.2 Test instruments and measurement setup

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW \geq 3 X RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be \geq 6 dB.

Limits : FCC§15.247(a)(2)

6dB Bandwidth Test Instruments

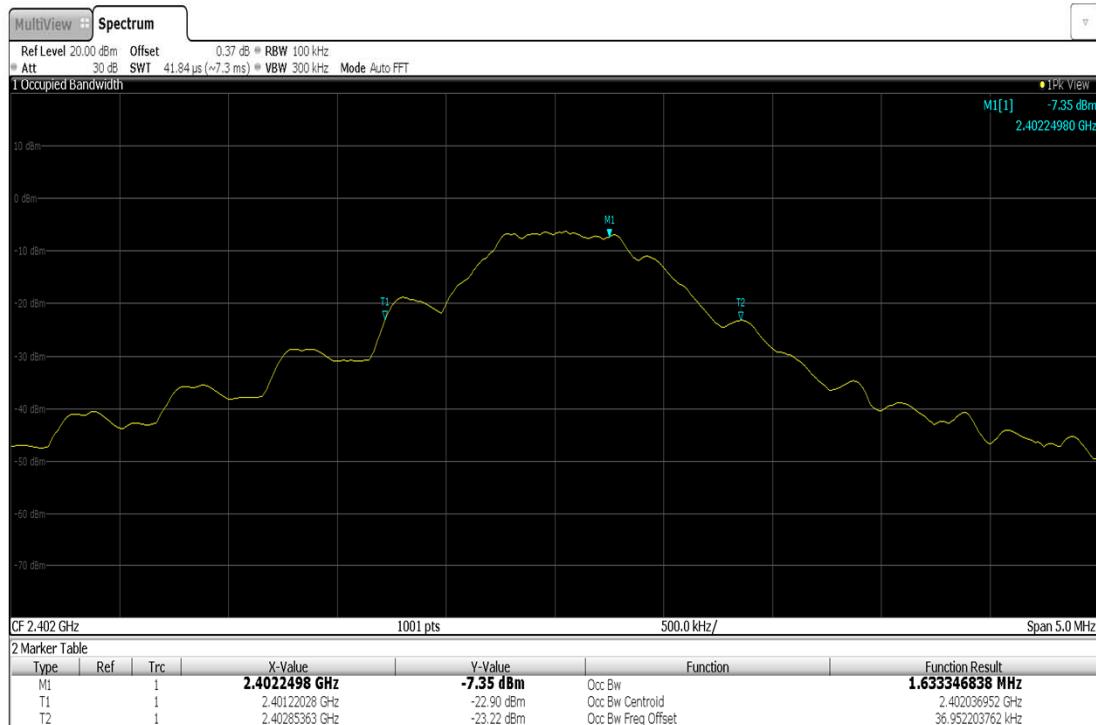
Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	FSW43	104088	2019-08-03
RF Cable	Length : 30 cm	-	
Spectrum Analyzer <-> EUT	Loss : 0.37 dB	-	

6.3.3 Measurement results

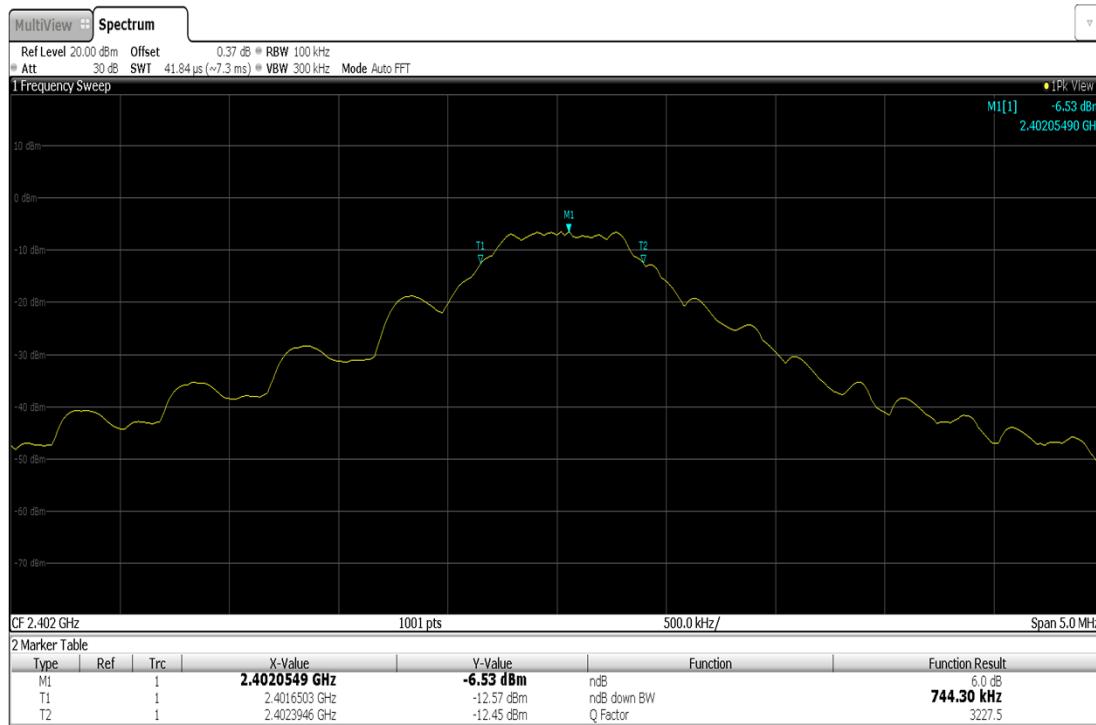
Channel Frequency(MHz)	Occupied Bandwidth(MHz)	Bandwidth at 6 dB below(MHz)	Minimum Limit(MHz)
2 402	1.633	0.744	\geq 0.5
2 442	1.070	0.744	\geq 0.5
2 480	1.061	0.739	\geq 0.5

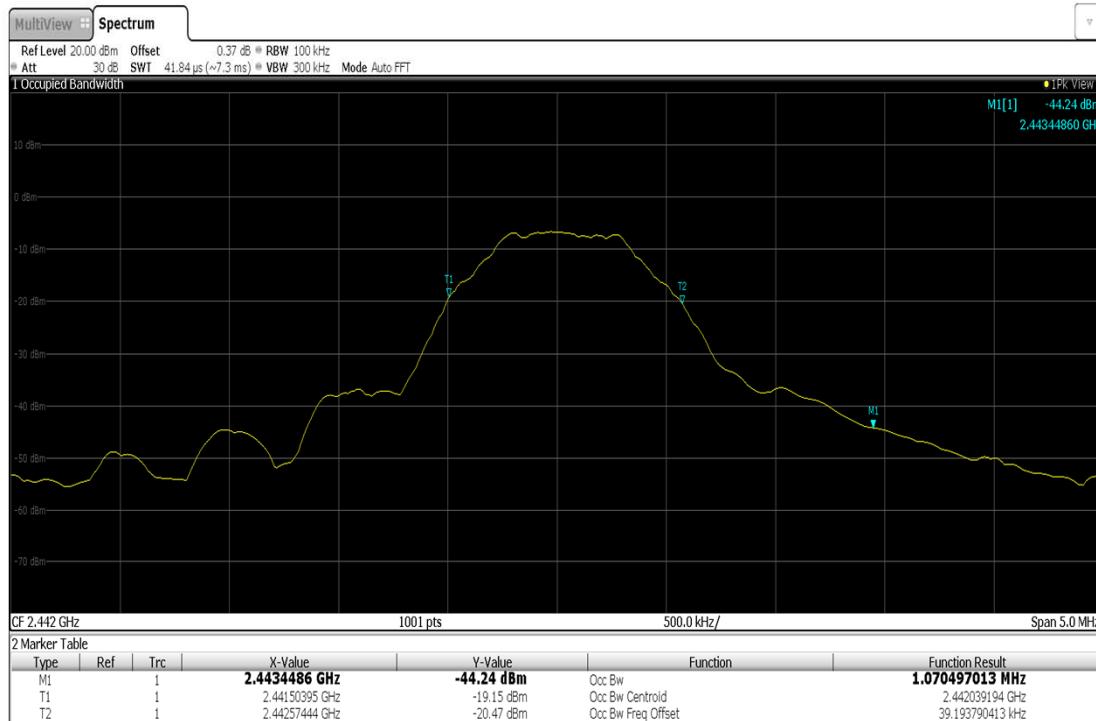
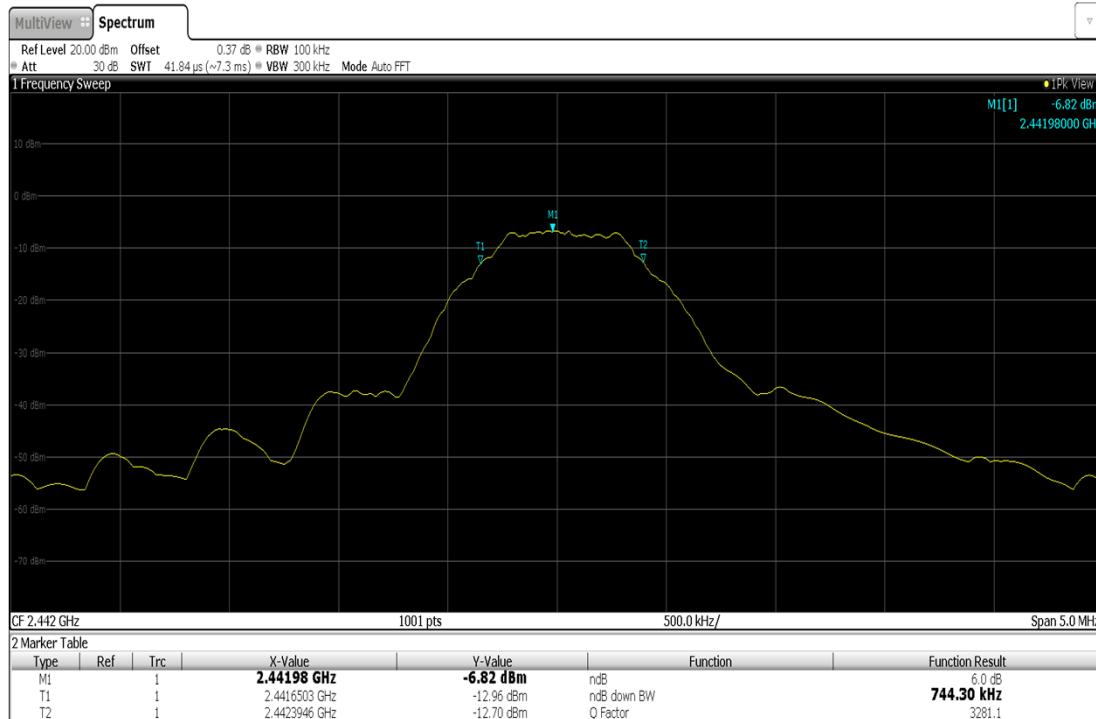
6.3.4 Trace data

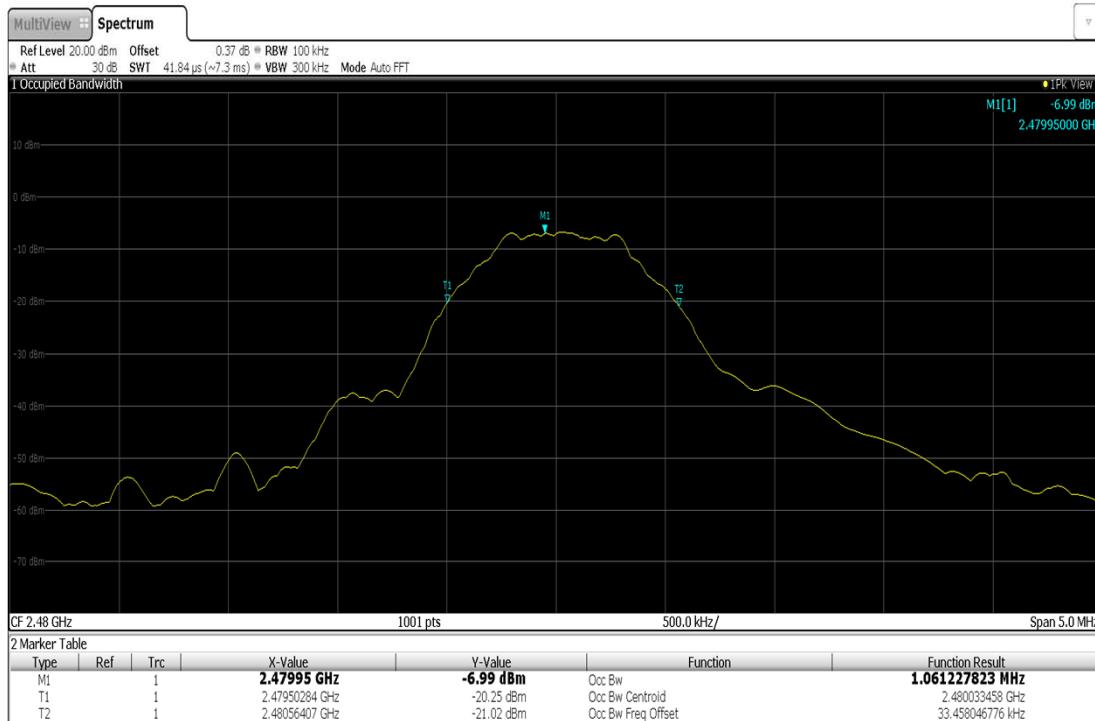
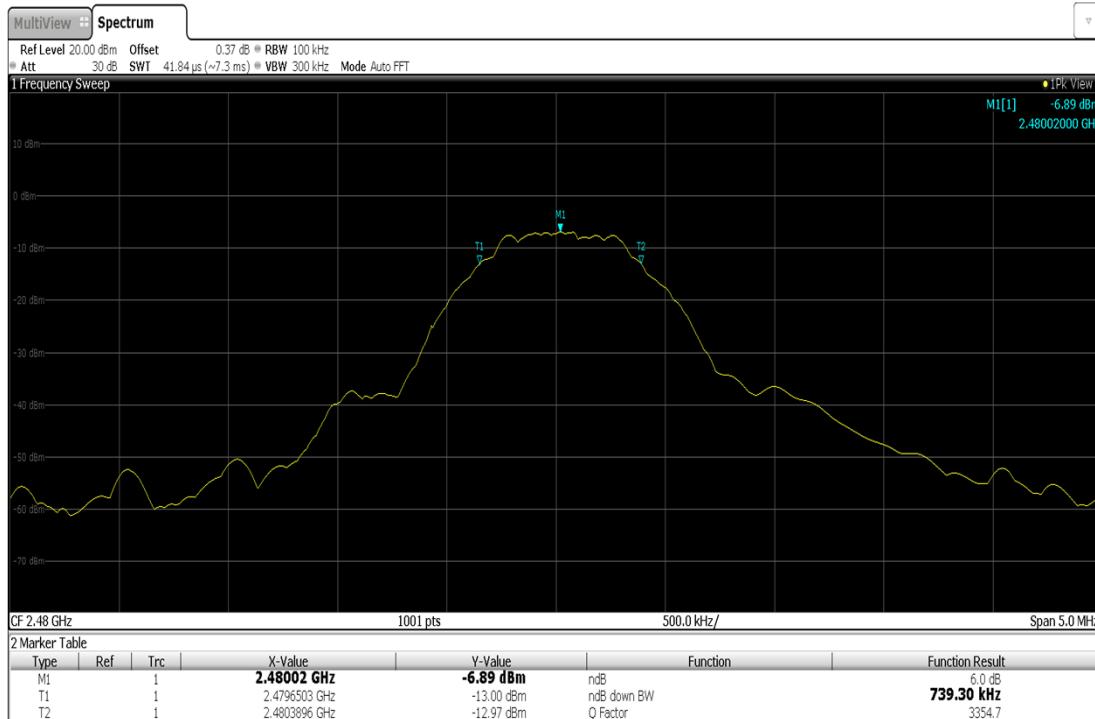
Ch_0 Occupied Bandwidth 99 %



Ch_0 Bandwidth at 6 dB below



Ch_20 Occupied Bandwidth 99 %**Ch_20 Bandwidth at 6 dB below**

Ch_39 Occupied Bandwidth 99 %**Ch_39 Bandwidth at 6 dB below**



6.4 Maximum peak conducted output power

6.4.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r05 9.1.1 Integrated band power method

6.4.2 Test instruments and measurement setup

- a) Set the RBW \geq DTS.
- b) Set VBW $\geq 3 \times$ RBW.
- c) Set span $\geq 3 \times$ RBW
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

Limits : FCC§15.247

Maximum Peak Output Power Test Instruments

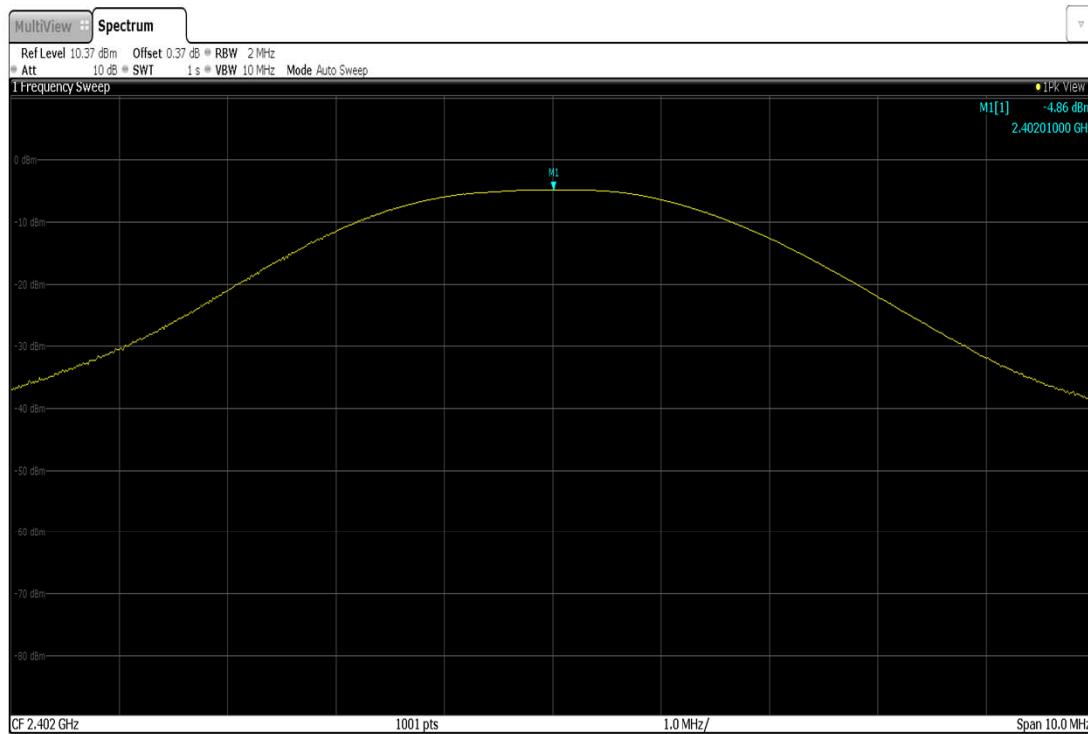
Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	FSW43	104088	2019-08-03
RF Cable	Length : 30 cm	-	
Spectrum Analyzer <-> EUT	Loss : 0.37 dB	-	

6.4.3 Measurement results

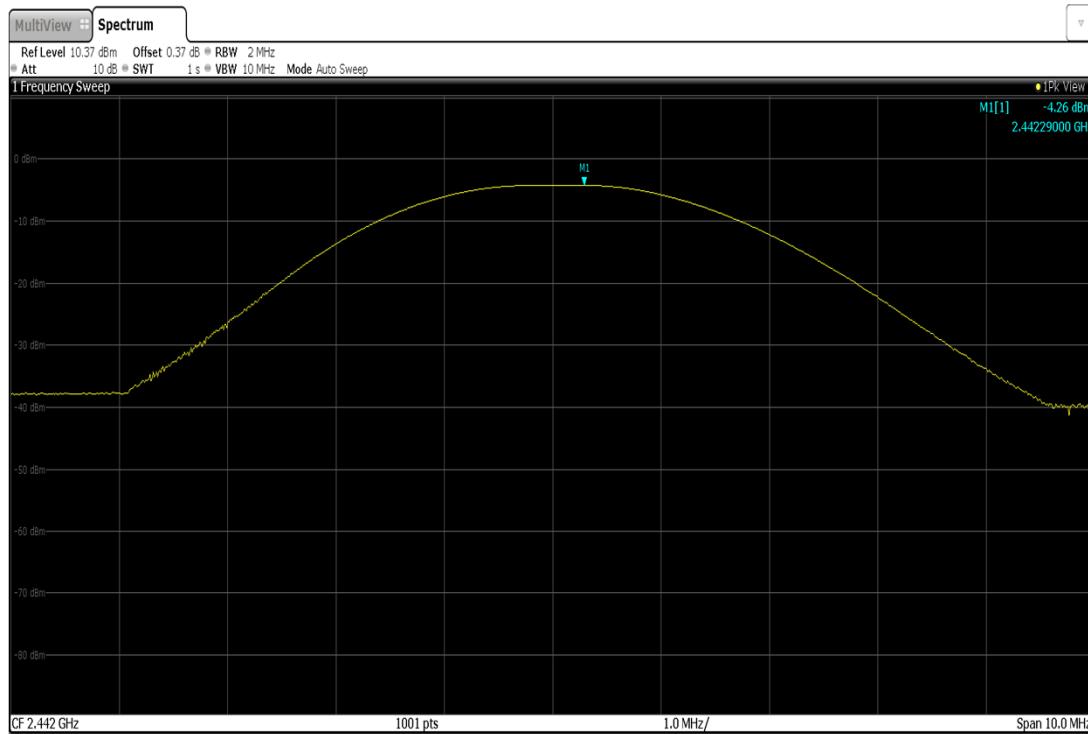
Channel	Channel Frequency(MHz)	Conducted Power Output(dBm)		Limit (dBm)
		dBm	mW	
0	2 402	-4.86	0.327	30
20	2 442	-4.26	0.375	30
39	2 480	-3.82	0.415	30

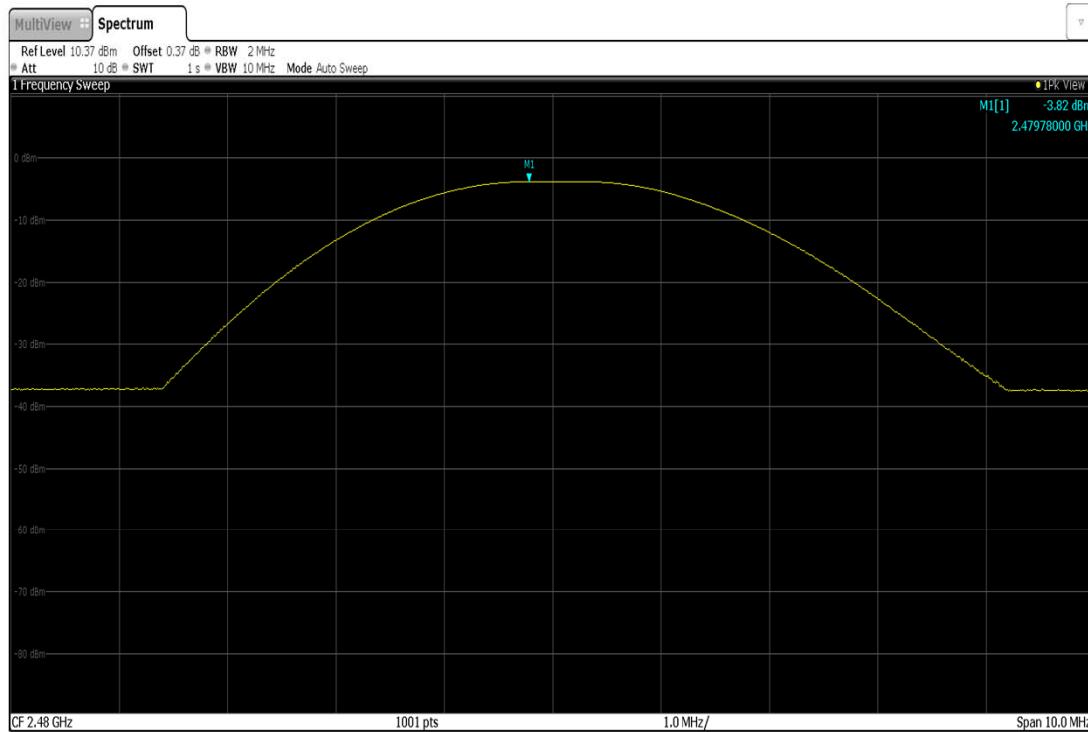
6.4.4 Trace data

Ch_0 Conducted Power Output



Ch_20 Conducted Power Output



Ch_39 Conducted Power Output



6.5 Maximum power spectral density level in the fundamental emission

6.5.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r05 10.2 Method PKPSD (peak PSD)

6.5.2 Test instruments and measurement setup

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq 3 \times \text{RBW}$,
- e) Detector = peak,
- f) Sweep time = auto couple,
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

The peak power density Test Instruments

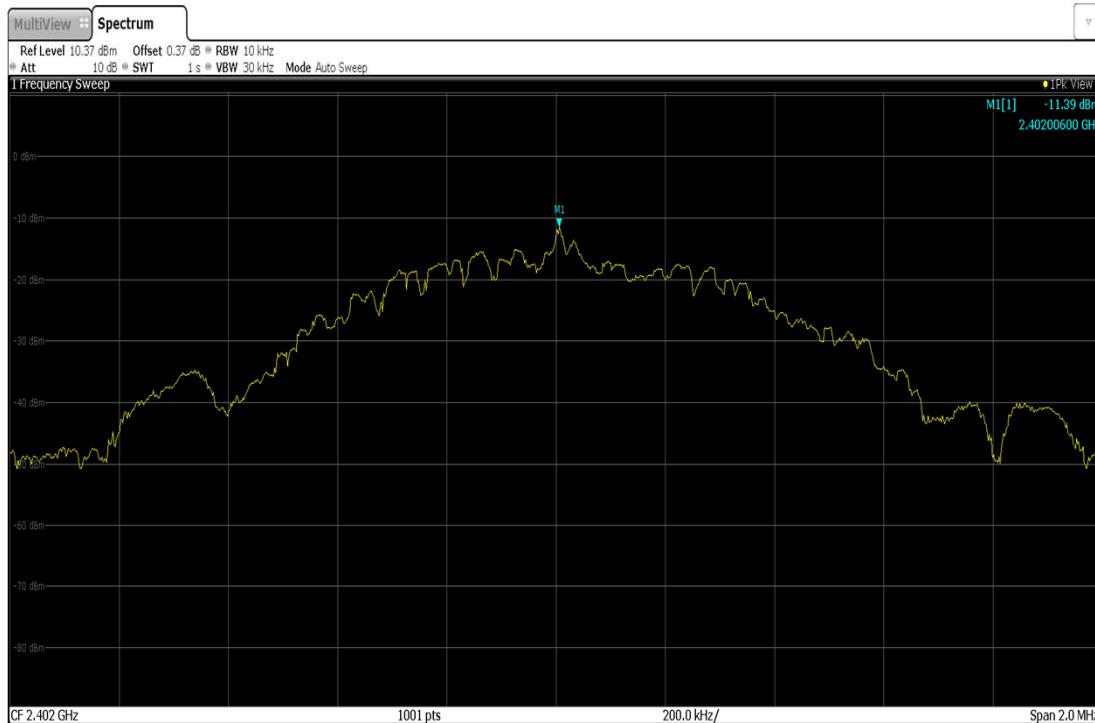
Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	FSW43	104088	2019-08-03
RF Cable	Length : 30 cm	-	
Spectrum Analyzer <-> EUT	Loss : 0.37 dB	-	

6.5.3 Measurement results

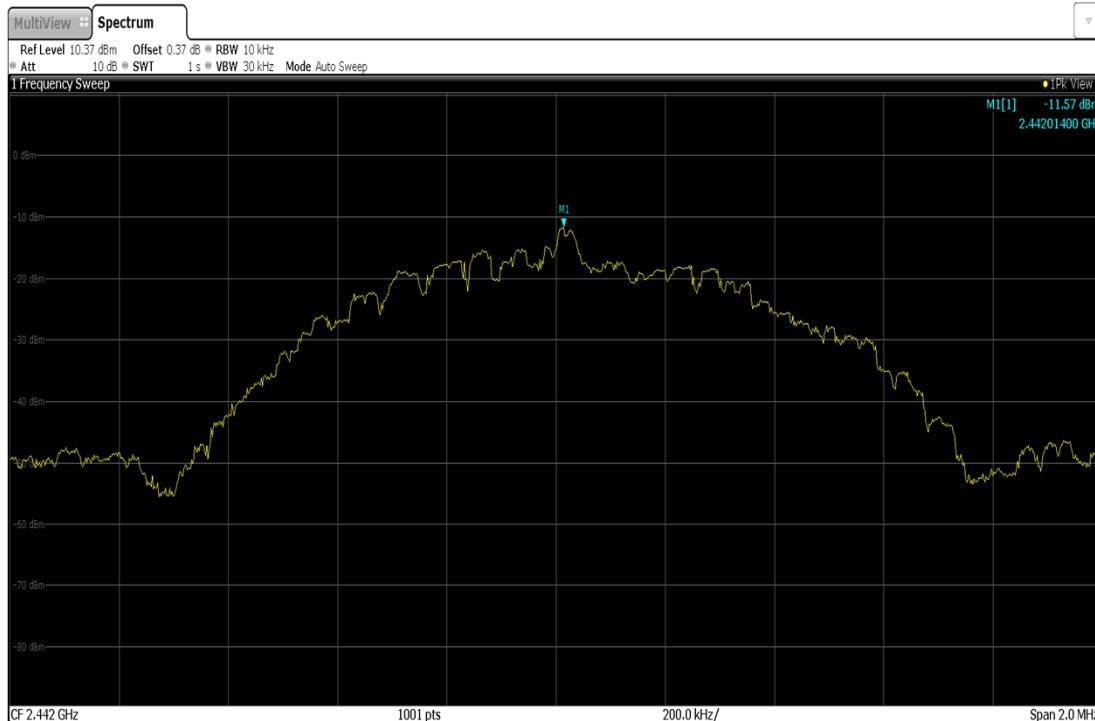
Channel	Channel Frequency(MHz)	Measured Power Spectral Density (dBm)	Maximum Permissible power density (dBm/3 kHz)	Margin
0	2 402	-11.39	8.0	19.39
20	2 442	-11.57	8.0	19.57
39	2 480	-9.87	8.0	17.87

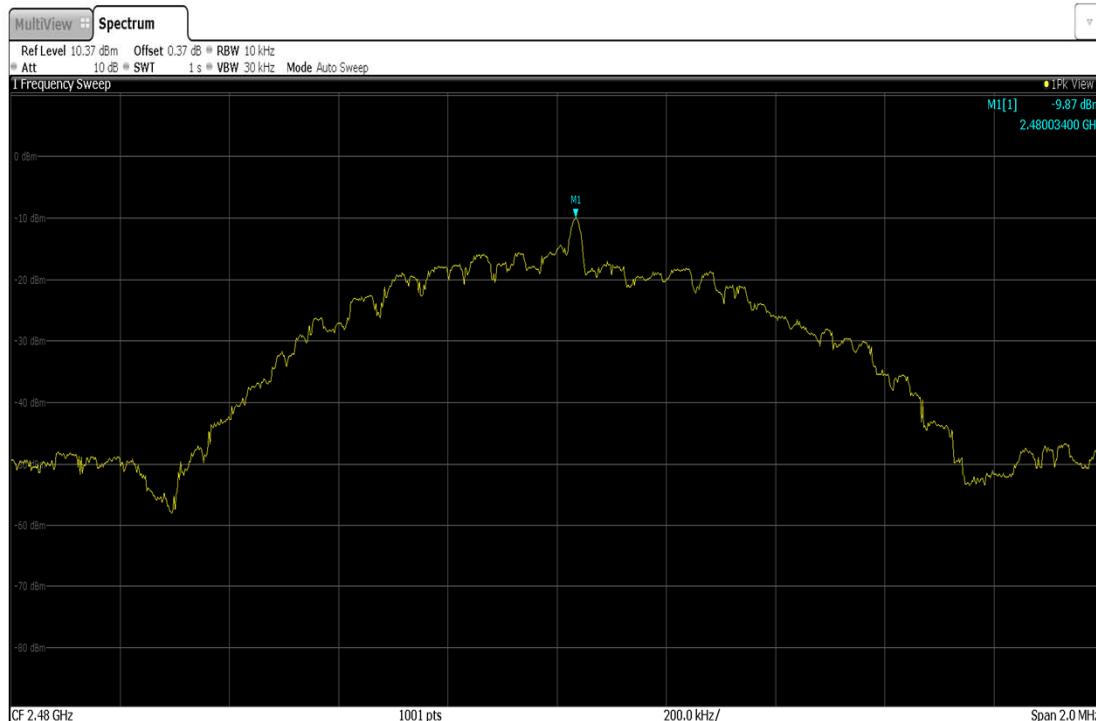
6.5.4 Trace data

Ch_0 Maximum power spectral density



Ch_20 Maximum power spectral density



Ch_39 Maximum power spectral density



6.6 Emissions in non-restricted frequency bands

6.6.1 Test procedure

KDB 558074 D01 DTS Meas Guidance V03r05 11.0 Emissions in non-restricted frequency

6.6.2 Test instruments and measurement setup

The DTS rules specify that in any 100 kHz bandwidth outside of the authorized frequency band the power shall be attenuated according to the following conditions(15.247(d))

- a) Set the center frequency and span to encompass frequency range to be measured.
- b) Set the RBW = 100 kHz.
- c) Set the VBW $\geq 3 \times$ RBW.
- d) Detector = peak.
- e) Sweep time = auto couple.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use the peak marker function to determine the maximum amplitude level.

The peak power density Test Instruments

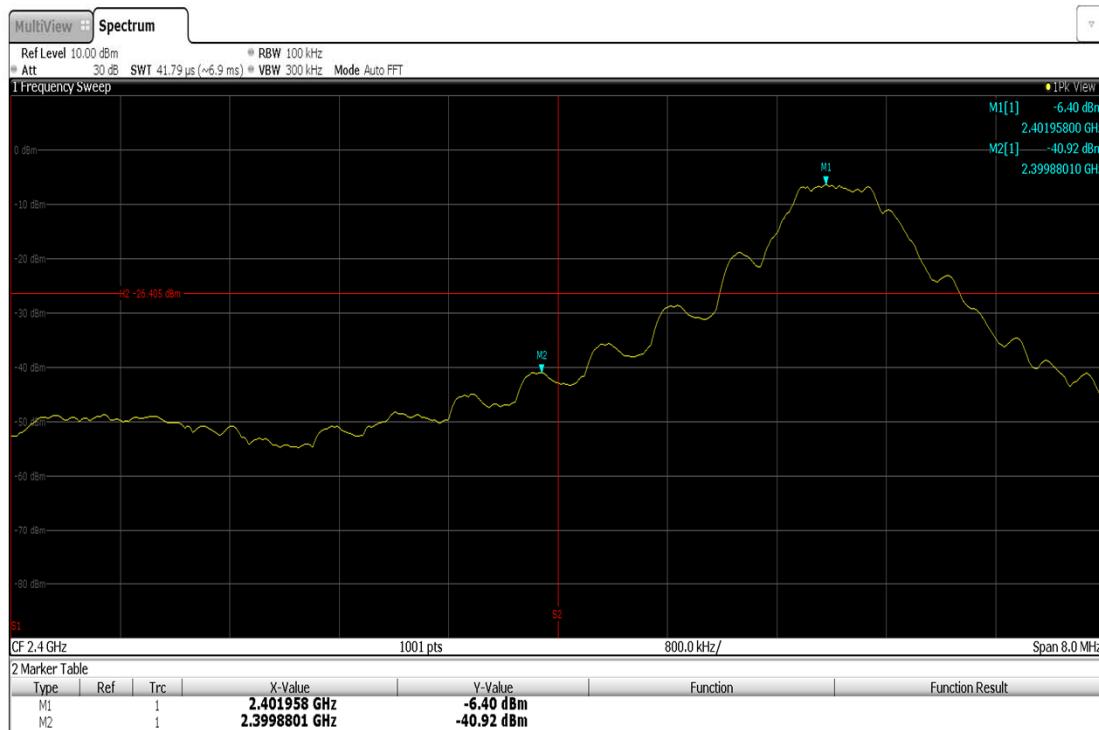
Description	Model	Serial Number	Cal. Due Date
Spectrum Analyzer	FSW43	104088	2019-08-03
RF Cable	Length : 30 cm	-	
Spectrum Analyzer <-> EUT	Loss : 0.37 dB	-	

6.6.3 Measurement results

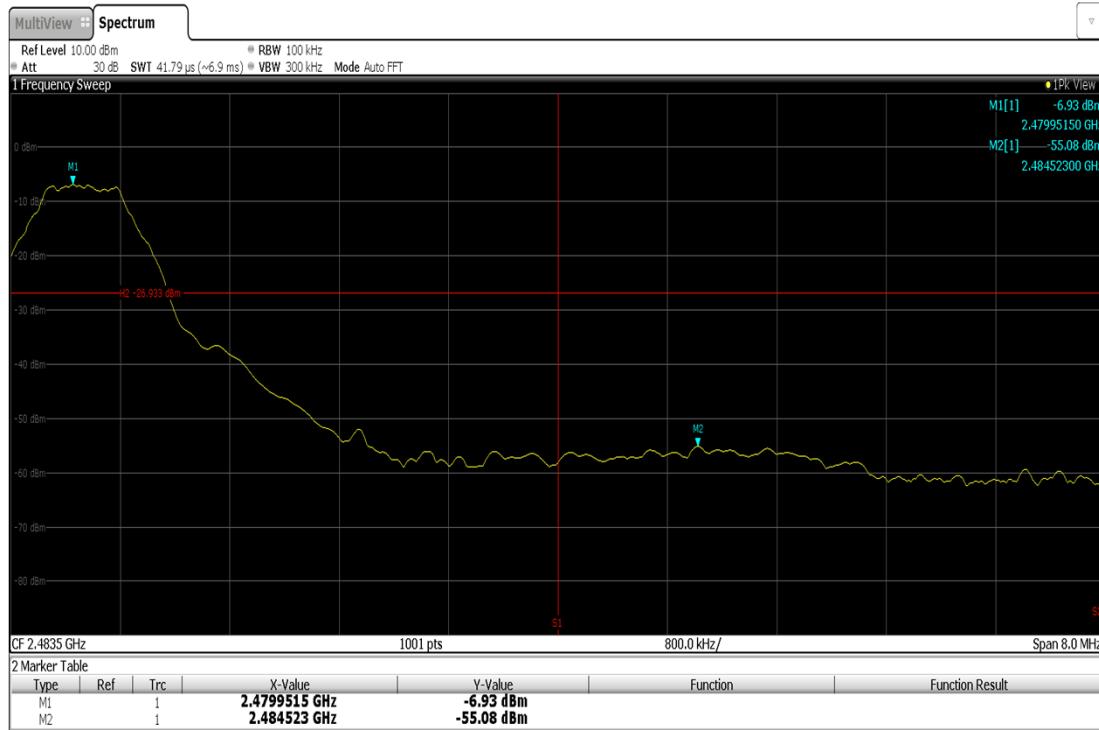
Channel	Channel Frequency (MHz)	Limit
0	2 402	20 dBc
39	2 480	20 dBc

6.6.4 Trace data

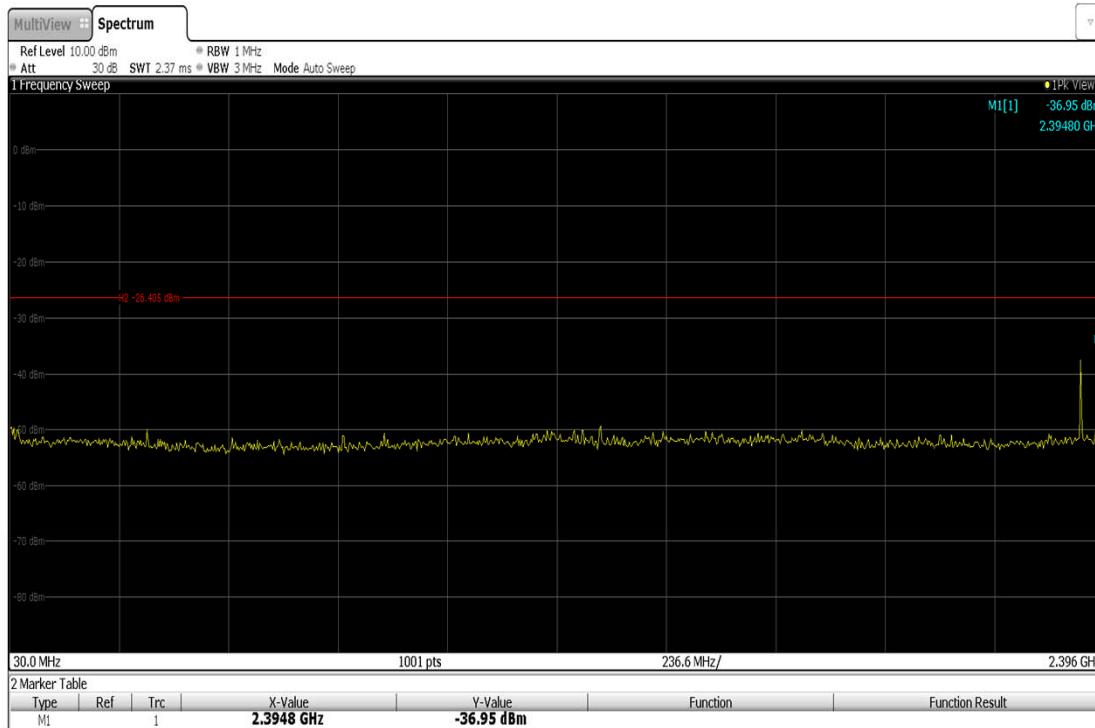
Ch_0_Restricted bands



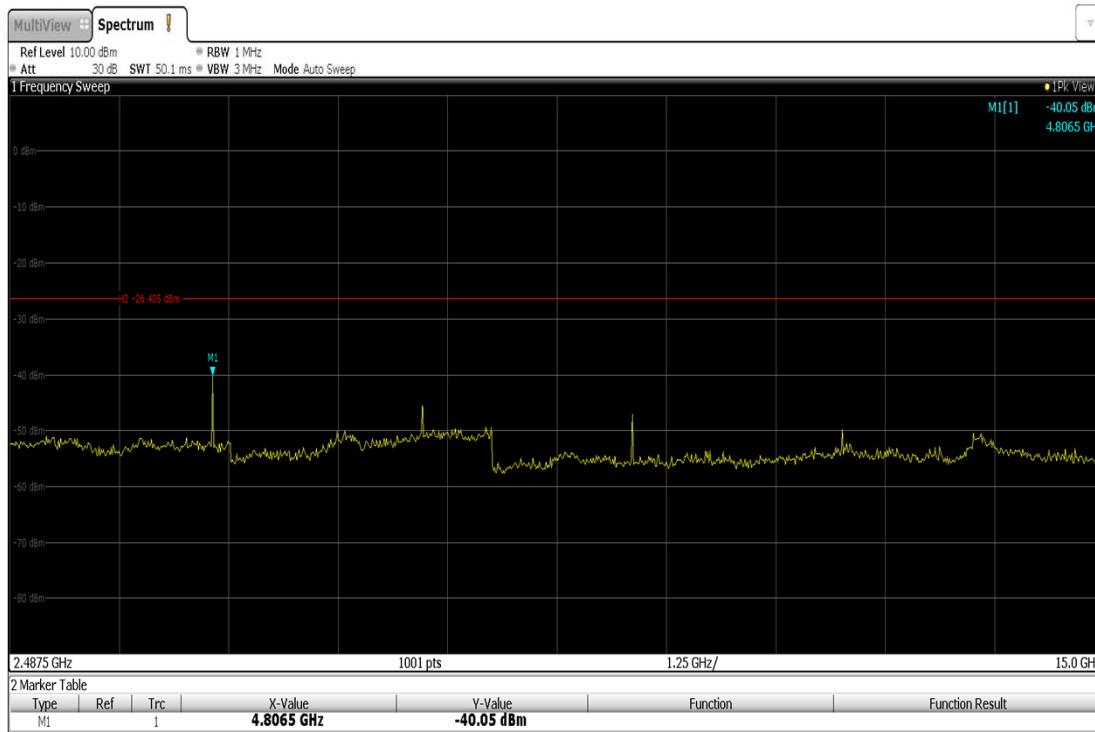
Ch_39_Restricted bands



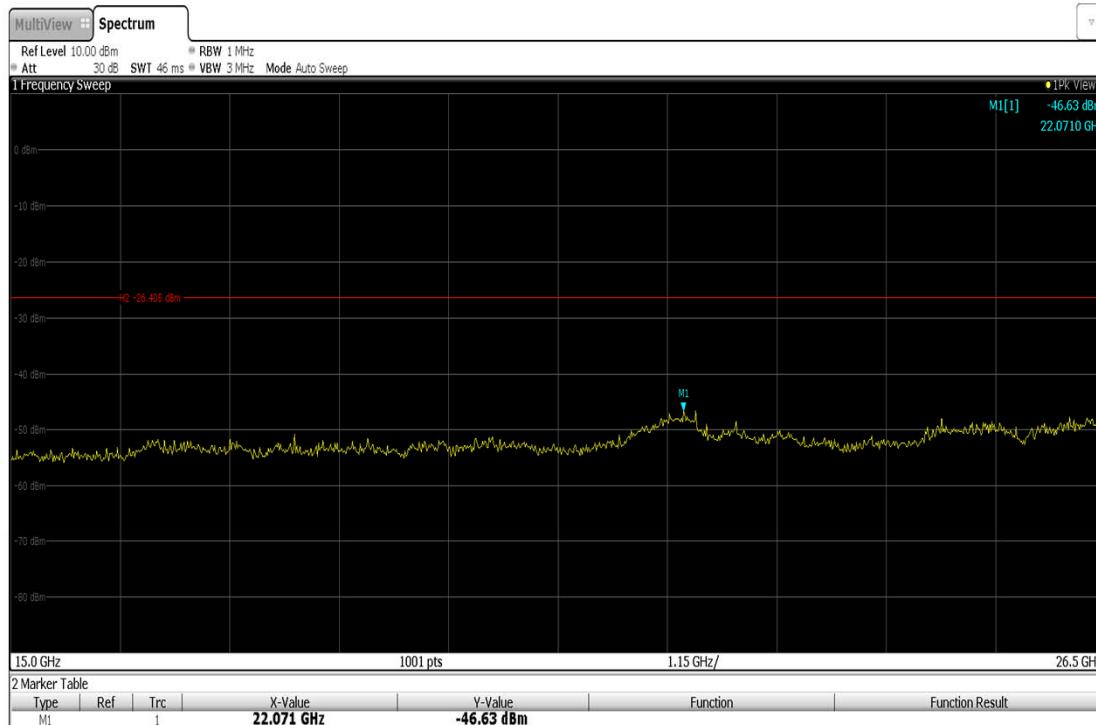
Ch_0_Non-restricted bands



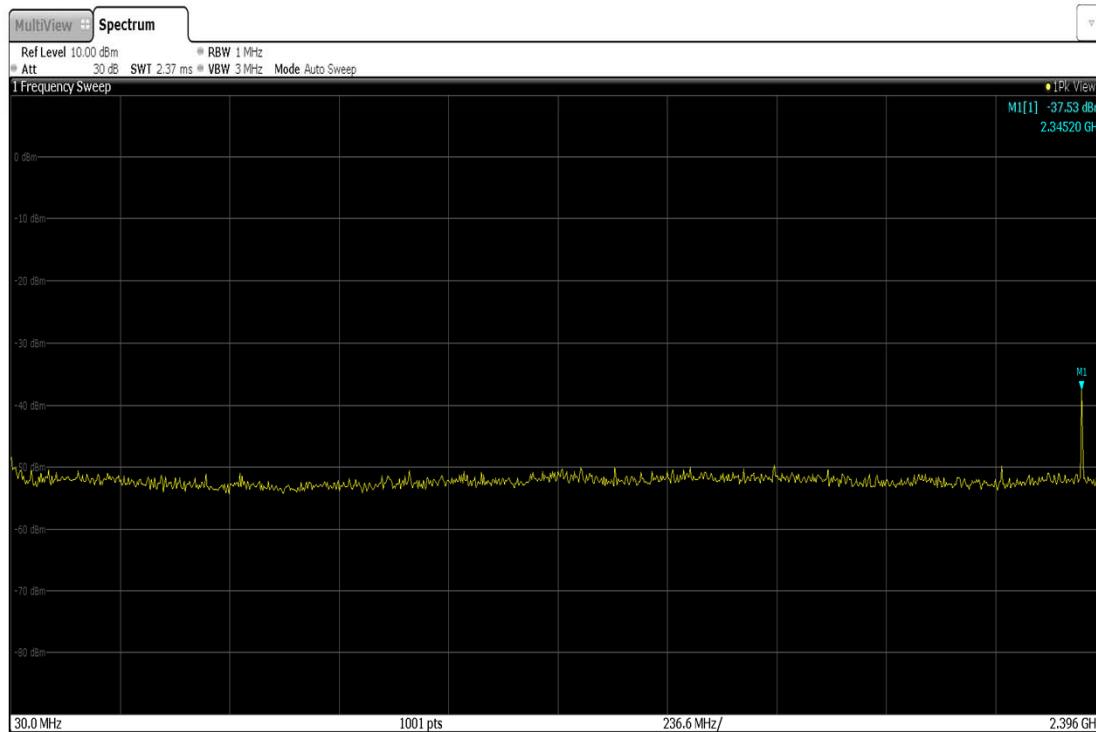
Ch_0_Non-restricted bands



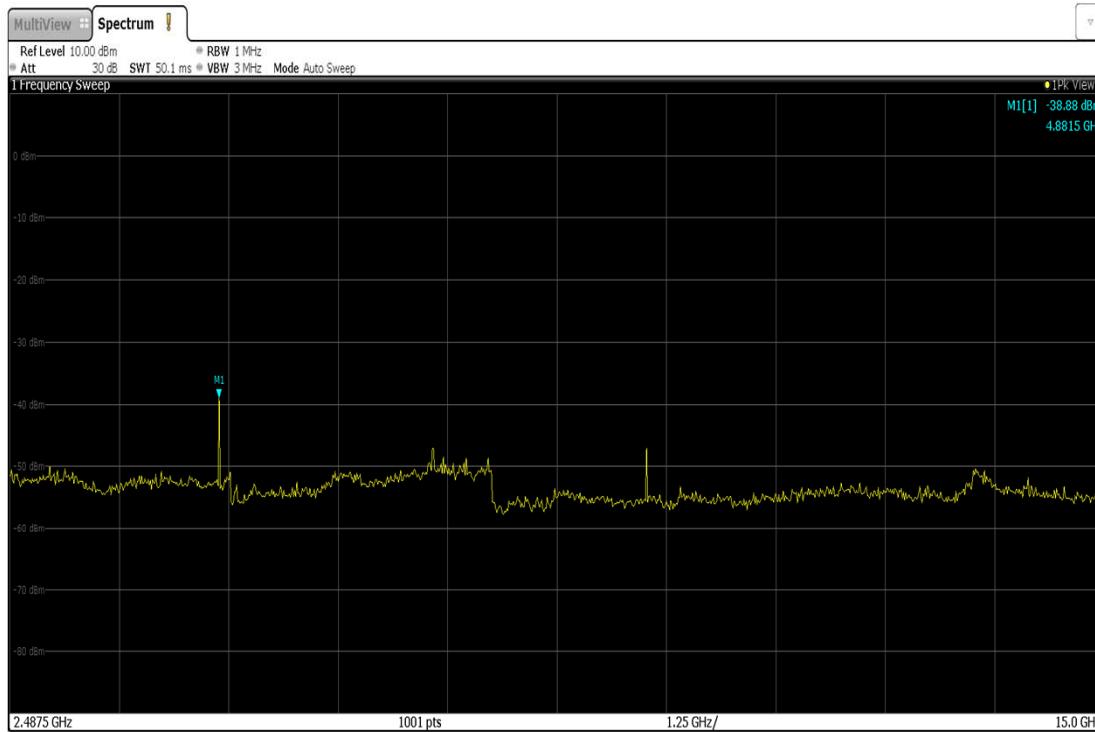
Ch_0_Non-restricted bands



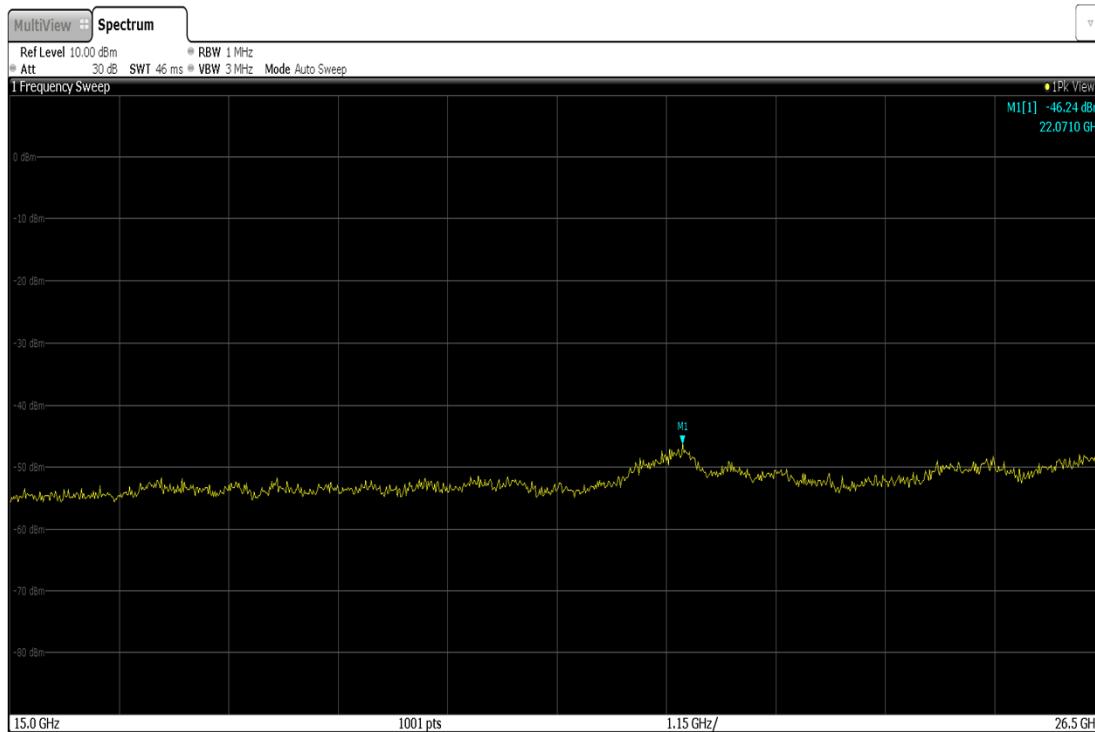
Ch_20_Non-restricted bands



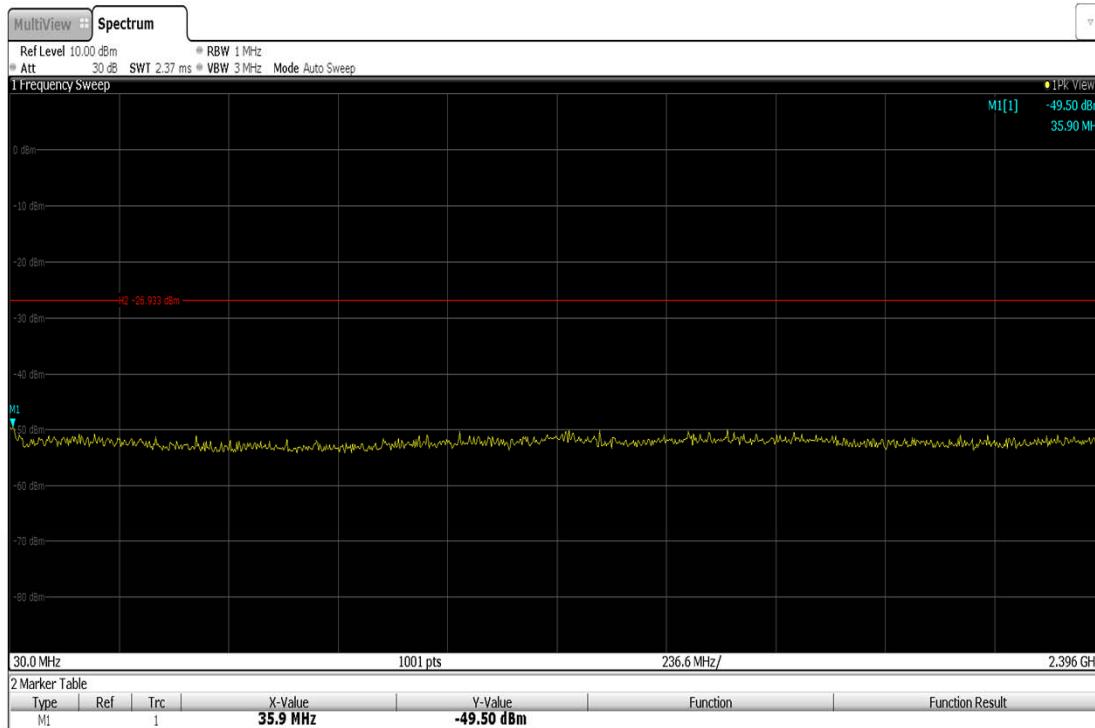
Ch_20_Non-restricted bands



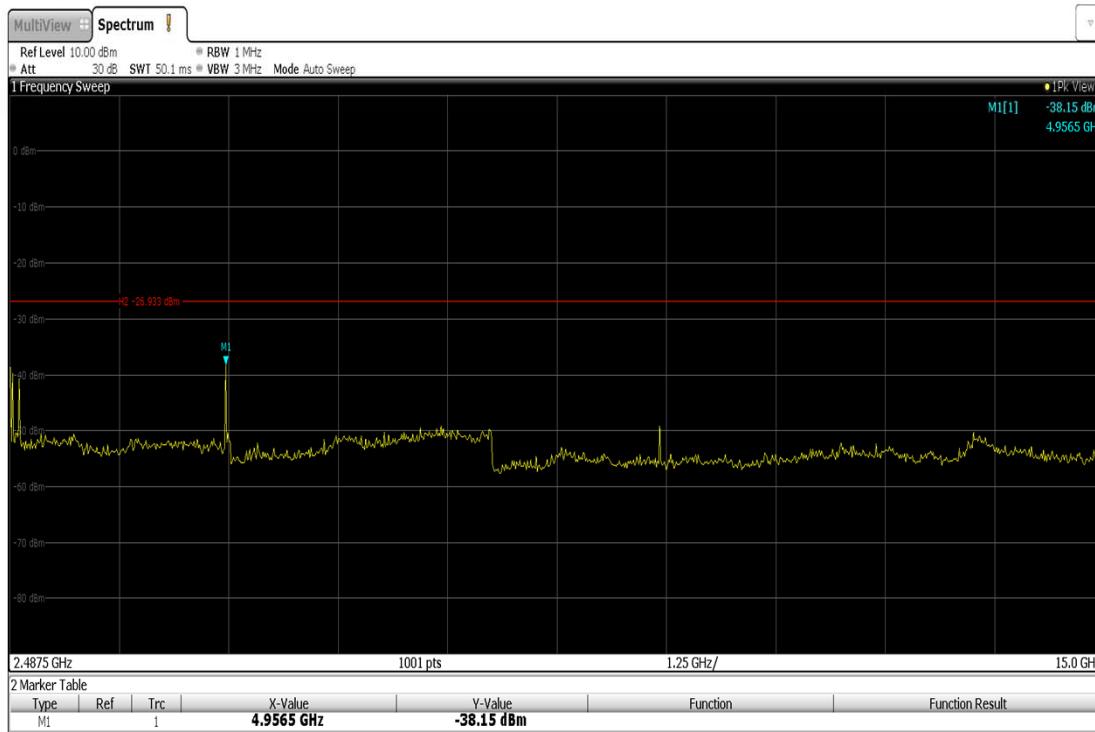
Ch_20_Non-restricted bands



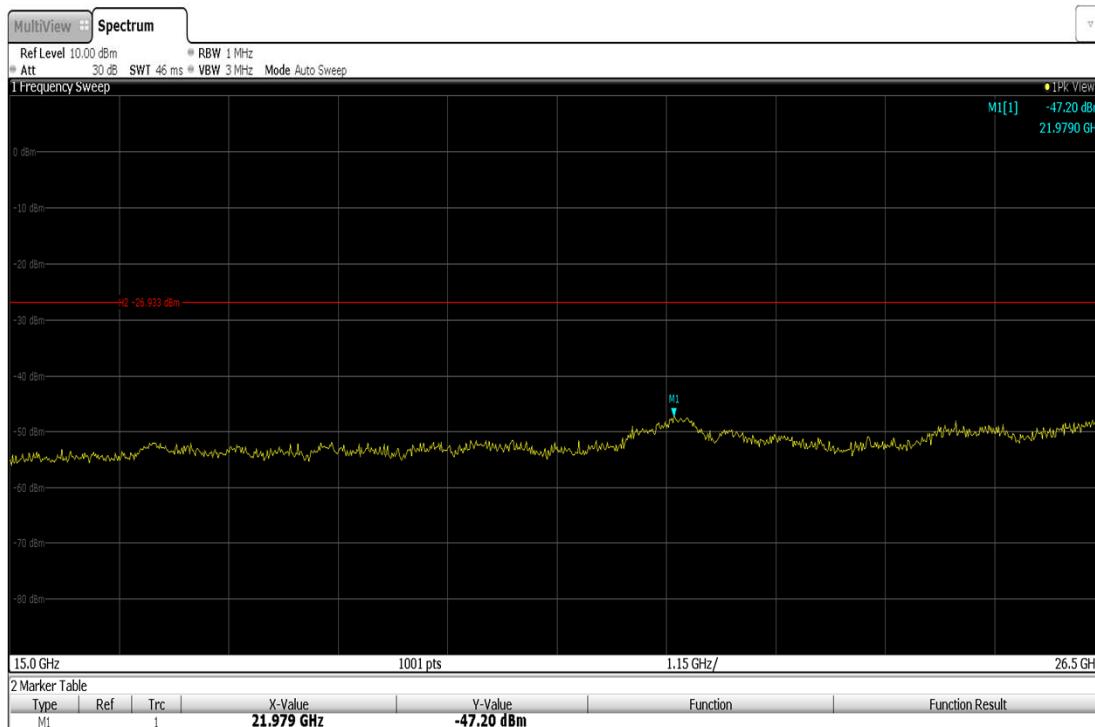
Ch_39_Non-restricted bands



Ch_39_Non-restricted bands



Ch_39_Non-restricted bands





6.7 Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC PART 15.205, 15.209 . The test setup was made according to ANSI C 63.10 (2013) & KDB 558074 D01 Semi-anechoic chamber, which allows a 3 m distance measurement. The EUT was placed in the center of styrofoam. turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

6.7.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Cal. Due Data
Spectrum Analyzer	FSW43	Rohde & Schwarz	104088	2019-08-03
Test Receiver	ESR7	Rohde & Schwarz	101969	2019-08-03
BI-LOG ANT	VULB 9163	Schwarzbeck	691	2020-01-03
Horn antenna	BBHA 9120D	Schwarzbeck	769	2019-09-25
SHF-EHF Horn	BBHA 9170	Schwarzbeck	#674	2020-01-03
Amplifier	310N	SONOMA	291723	2019-08-03
Microwave Preamplifier	8449B	Agilent	3008A02413	2019-04-09
DC Power Supply	M8811	Maynuo	80010960 011103000	2019-08-03
Antenna Mast	MA4640/800-XP-ET	Innco systems GmbH	-	-
Antenna Mast	MA4000-EP	Innco systems GmbH	-	-
Turntable	DT3000-t2	Innco systems GmbH	-	-
Controller	CO3000	Innco systems GmbH	CO3000/969/3942 1016/L	-

6.7.2 Environmental Condition

Temperature (°C) : 21 °C

Humidity (% R.H.) : 38 % R.H.



6.8 Measurement Instrument setting for Radiated Emission

6.8.1 Transmitter Radiated Emissions < 1 GHz

Test Summary :

FCC Reference	Parts 15.247(d) & 15.209(a)
Test Method Used	ANSI C63.10 Sections 6.3 and 6.5
Frequency Range	30 MHz to 1 000 MHz

Note(s) :

1. The final measured value, for given emission, in the table below incorporates the calibrated antenna factor and cale loss.
2. All emissions shown on the pre-scans were investigated and found to be ambient, or > 20 dB below the appropriate limit or below the noise floor of the measurement system.
Therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
3. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the High channel only.
4. Measurements below 1 GHz were performed in a semi-anechoic chamber at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
5. Pre-scans were performed and markers placed on the highest measured levels. The test receiver resolution bandwidth was set to 120 kHz and video bandwidth 500 kHz. A peak detector was used, sweep time was set to auto and trace mode was Max Hold.
6. Final measurements were performed on the marker frequencies and the results entered into the table below. The test receiver resolution bandwidth was set to 120 kHz, using a CISPR quasi-peak detector and span wide enough to see the whole emission.



6.8.1.1 Test Data (30 MHz ~ 1 000 MHz)

Transmitter Radiated Emissions(continued)

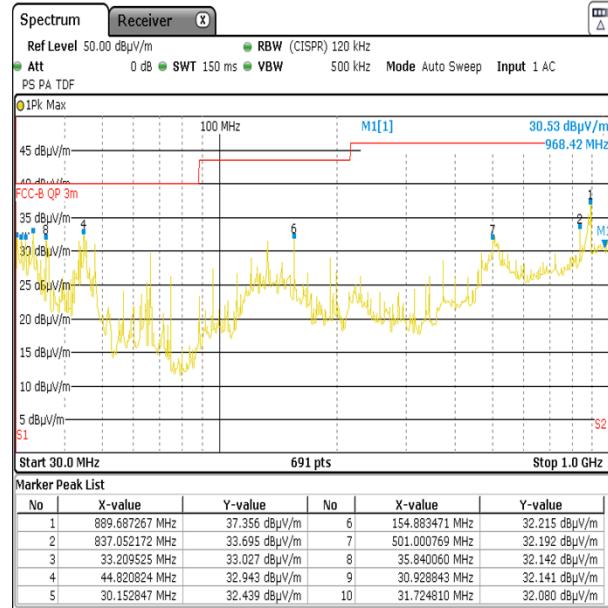
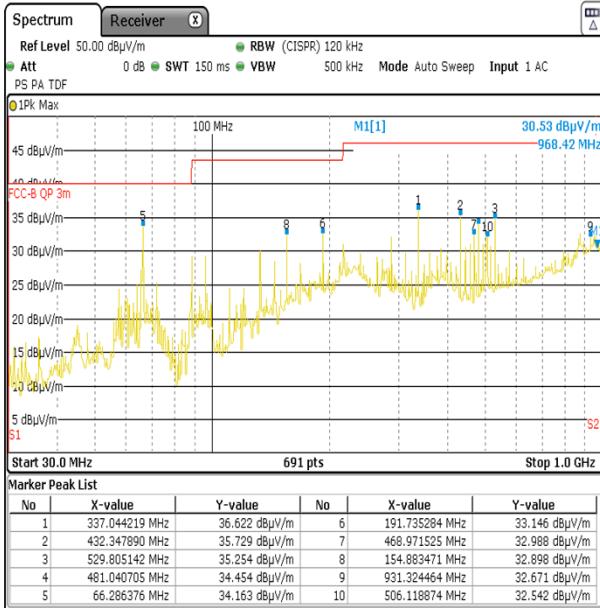
Results : Peak / High Channel / LE

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
337.04	Vertical	36.62	46.02	9.4	Complied
432.34	Vertical	35.72	46.02	10.3	Complied
66.28	Vertical	34.16	40	5.84	Complied
889.68	Horizontal	37.35	46.02	8.67	Complied
33.20	Horizontal	33.02	40	6.98	Complied



Transmitter Radiated Emissions(continued)

Results : LE



30 MHz to 1 GHz
(Horizontal)

30 MHz to 1 GHz
(Vertical)



6.8.2 Transmitter Radiated Emissions > 1 GHz

Test Summary :

FCC Reference	Parts 15.247(d) & 15.209(a)
Test Method Used	FCC KDB 558074 Sections 11 & 12 referencing ANSI C63.10 Sections 6.3 and 6.6
Frequency Range	1 GHz to 25 GHz

Note(s) :

1. The final measured value, for given emission, in the table below incorporates the calibrated antenna factor and cale loss.
2. The emission shown on the 1 GHz to 6 GHz plot is the EUT fundamental.
3. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak and average noise floor readings of the measuring receiver were recorded as shown in the tables below.
4. Pre-scans above 1 GHz were performed in a semi anechoic chamber at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT.
5. Pre-scans were performed and a marker placed on the hight measured level of the appropriate Ipot. The test receiver resolution bandwidth was set to 1 MHz and video bandwidth 3 MHz. The sweep time was set to auto. Peak and average measurements were performed with their own appropriate detectors during the pre-scan measurements.



6.8.2.1 Test Data (1 GHz ~ 25 GHz)

Transmitter Radiated Emissions(continued)

Results : Peak / Middle Channel / LE

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
4 958	Horizontal	48.79	74	25.21	Complied

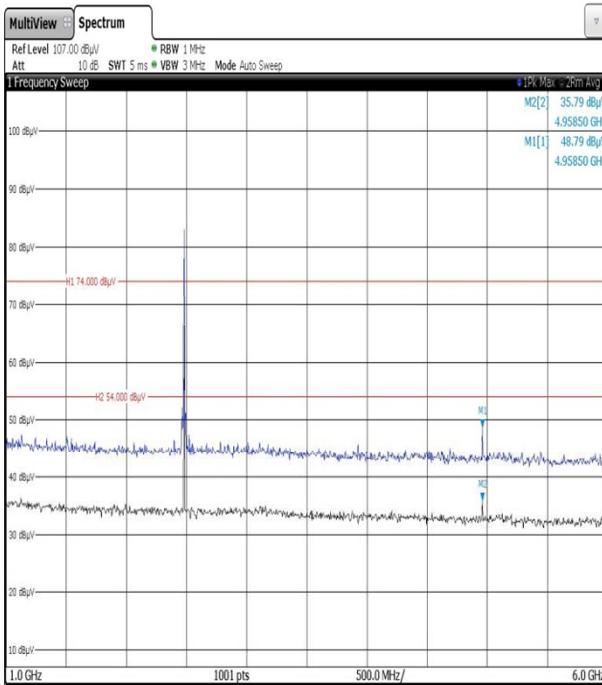
Results : Average / Middle Channel / LE

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
4 958	Horizontal	35.79	54	18.21	Complied

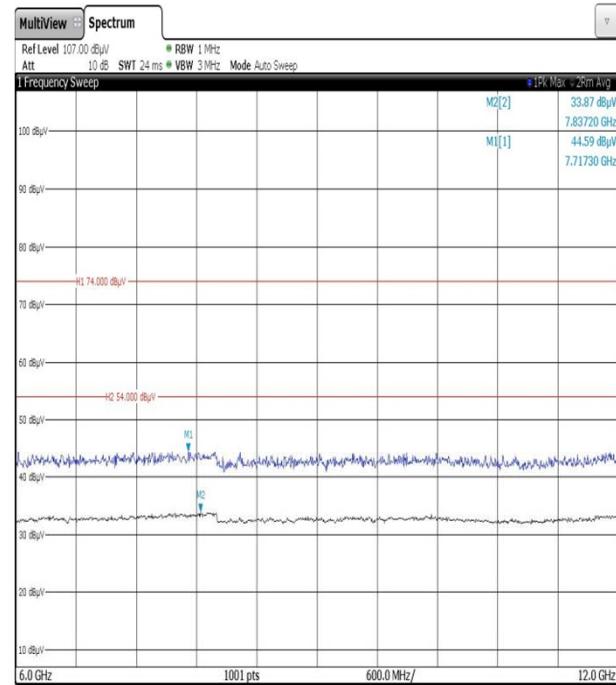


Transmitter Radiated Emissions(continued)

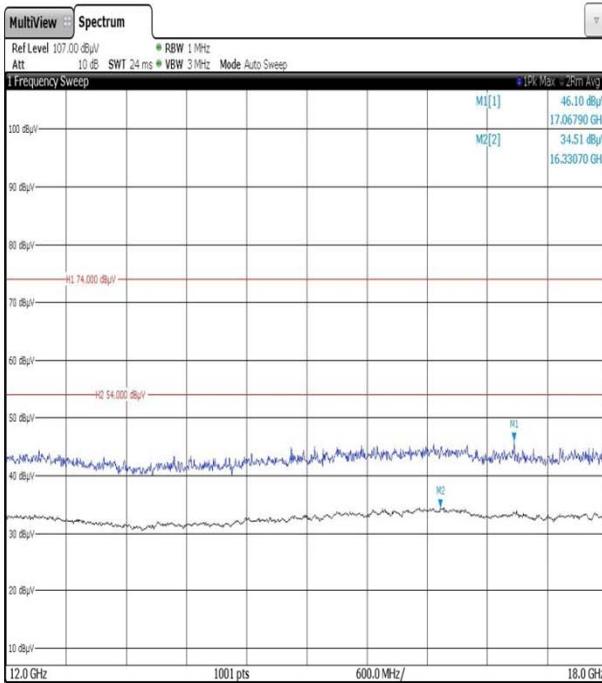
Results : LE



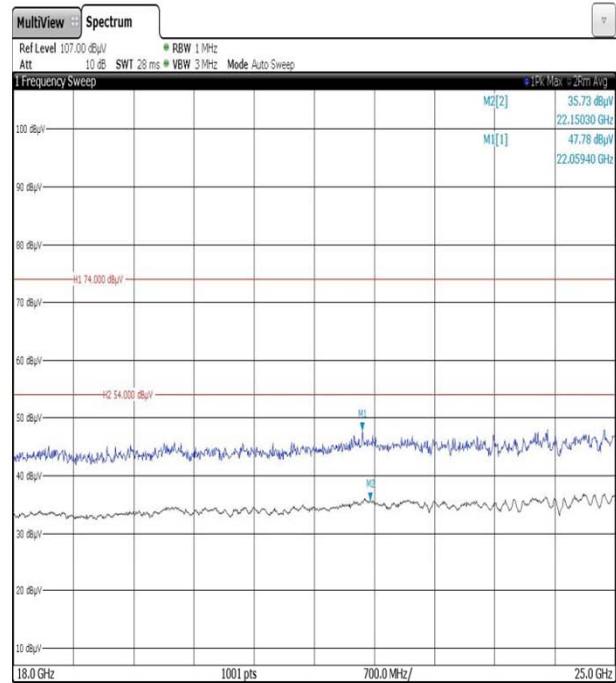
1 GHz to 6 GHz



6 GHz to 12 GHz



12 GHz to 18 GHz



18 GHz to 25 GHz



6.8.3 Transmitter Band Edge Radiated Emissions

Test Summary :

FCC Reference	Parts 15.247(d) & 15.209(a)
Test Method Used	FCC KDB 558074 Sections 11 & 12

Note(s) :

1. Set the spectrum analyzer as follows:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation

RBW \geq 1 % of the span

VBW \geq RBW

Sweep = auto

Detector function = peak

Trace = max hold

2. Allow the trace to stabilize. Set the marker on the emission at the band-edge, or on the highest modulation product outside of the band, if this level is greater than that at the band-edge. Enable the marker-delta function, and then use the marker-to-peak function to move the marker to the peak of the in-band emission.

3. Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.



6.8.3.1 Test Data (Band Edge)

Transmitter Radiated Emissions(continued)

Results : Peak / LE / Lower Band Edge

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 400	Horizontal	66.58	74	7.42	Complied

Results : Average / LE / Lower Band Edge

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 400	Horizontal	40.53	54	13.47	Complied

Results : Peak / LE / Upper Band Edge

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 489.14	Horizontal	52.22	74	21.78	Complied

Results : Average / LE / Upper Band Edge

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 488.89	Horizontal	35.96	54	18.04	Complied

Results : Peak / LE / 2 310 MHz to 2 390 MHz Restricted Band

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 332.81	Horizontal	46.53	74	27.47	Complied

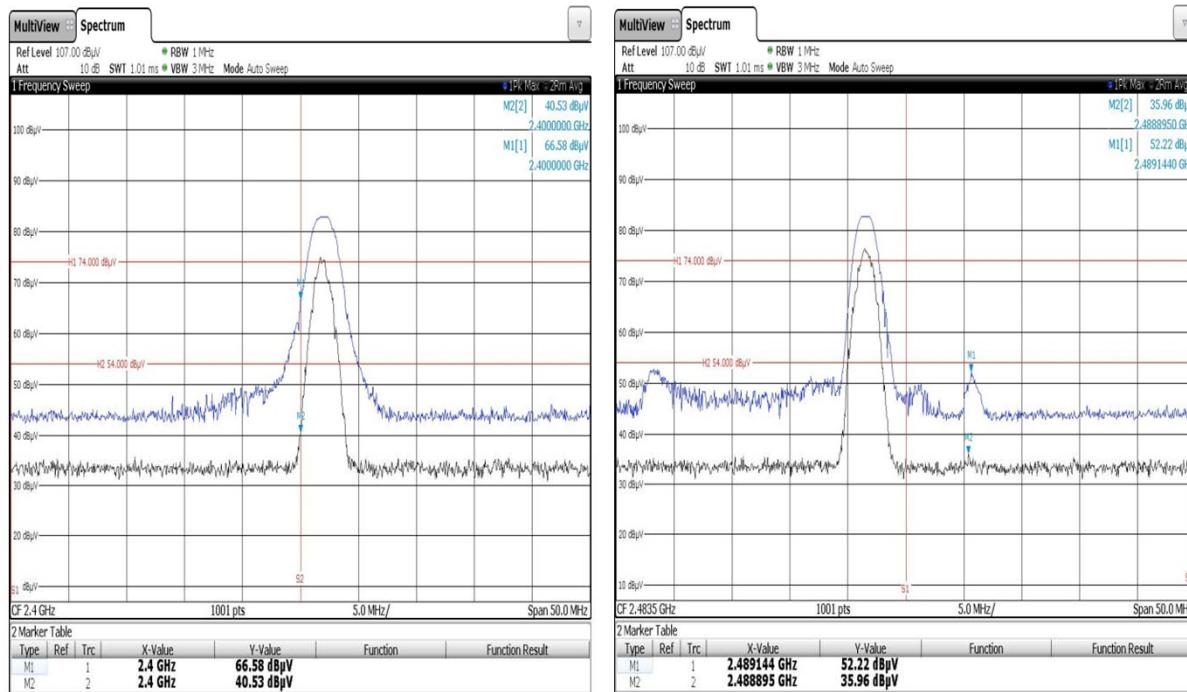
Results : Average / LE / 2 310 MHz to 2 390 MHz Restricted Band

Frequency [MHz]	Antenna Polarity	Level (dBuV/m)	Level (dBuV/m)	Margin (dB)	Result
2 328.58	Horizontal	35.54	54	18.46	Complied



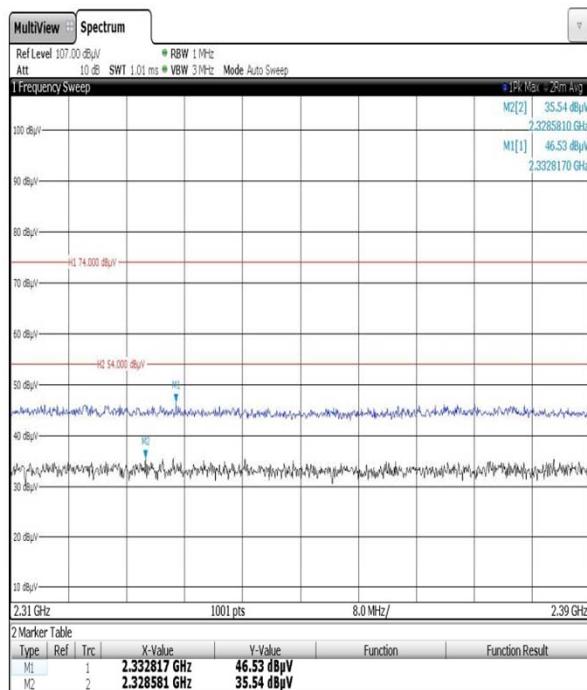
Transmitter Radiated Emissions(continued)

Results : LE



Lower Band Edge

Upper Band Edge



2 310 MHz to 2 390 MHz

Restricted Band



7. Radio Frequency Exposure

7.1 RF exposure limit

According to the FCC rule §1.1310, the limit for General Population/Uncontrolled exposure is 1 mW/cm² for the device operating 1 500 MHz ~ 100 000 MHz.

7.2 RF exposure consideration

This equipment should be operated with a minimum distance of 2 cm between the radiator and front of face.

This equipment should not be placed directly on the ear when the speaker is active.

7.3 EUT description

Kind of EUT	SMART TURNTABLE
Operating Frequency Band	<input type="checkbox"/> Wireless Microphone: 494.000 MHz ~ 501.000 MHz and 498.200 MHz ~ 505.200 MHz <input type="checkbox"/> WLAN(802.11b/g/n(HT20)): 2 412 MHz ~ 2 462 MHz <input type="checkbox"/> WLAN(802.11n(HT40)): 2 422 MHz ~ 2 452 MHz <input type="checkbox"/> WLAN: 5 180 MHz ~ 5 320 MHz / 5 500 MHz ~ 5 700 MHz <input type="checkbox"/> WLAN: 5 745 MHz ~ 5 825 MHz <input checked="" type="checkbox"/> Bluetooth: 2 402 MHz ~ 2 480 MHz <input type="checkbox"/> Zigbee: 2 425 MHz, 2 450 MHz, 2 475 MHz
Device Category	<input type="checkbox"/> Portable (< 20 cm separation) <input checked="" type="checkbox"/> Mobile (> 20 cm separation) <input type="checkbox"/> Others
Max. Output Power	-4.61 dBm
Used Antenna	Dipole antenna
Used Antenna Gain	2.37 dBi
Exposure Evaluation Applied	<input type="checkbox"/> MPE <input type="checkbox"/> SAR <input checked="" type="checkbox"/> N/A



7.4 Results

According to the procedure, KDB 447498 D01, the standalone SAR test exclusion threshold is

$$[(\text{Max. Power of channel, including tune-up tolerance, mW}) / (\text{Mim. test separation distance, mm})] \times [\sqrt{f(\text{GHz})}] < 3 = [1.14/5] \times \sqrt{2.480} = 0.359$$

Conclusion: The SAR test exclusion threshold is less than 3, so the device meets the RF Exposure Requirement and excluded SAR Test.