



# FCC PART 15.249 TEST REPORT

For

## Anker Innovations Limited

Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hong Kong

**FCC ID: 2AOKB-T8213**

<b>Report Type:</b> Original Report	<b>Product Name:</b> eufy Security Video Doorbell Dual(Battery)
<b>Report Number:</b> <u>DG2210819-35223E-00B</u>	
<b>Report Date:</b> <u>2021-10-22</u>	
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**DOCUMENT REVISION HISTORY**

Revision Number	Report Number	Description of Revision	Date of Revision
0	DG2210819-35223E-00B	/	2020-09-26
1	DG2210819-35223E-00B	Added desensitization factor, and duty cycle test in radiation test section	2021-10-18
2	DG2210819-35223E-00B	Updated firmware to fix channel to test	2021-10-22

## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

Product	eufy Security Video Doorbell Dual(Battery)
Tested Model	T8213
Frequency Range	24054.99891MHz-24242.99888MHz
Modulation Technique	FMCW
Antenna Specification*	0dBi
Voltage Range	DC 3.63V from battery or DC 5V from adapter or DC 8-24V from Door Bell System
Date of Test	2021-09-12 to 2021-10-21
Sample serial number	DG2210819-35223E-RF-S1
Received date	2021.08.20
Sample/EUT Status	Good condition

Note: Per 15B emission test, the worst is DC 5V power input mode, so this mode was tested for this report.

### Objective

This type approval report is prepared on behalf of *Anker Innovations Limited* in accordance with Part 2-Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions 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 15.249 rules.

### 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.

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Measurement Uncertainty

Parameter		Uncertainty
Emissions, Radiated	30MHz - 1GHz	4.28dB
	1GHz- 18GHz	4.98dB
	18GHz-26.5GHz	5.06dB
	26.5GHz-40GHz	4.72dB
Temperature		1°C
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 Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. 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.: 708358, the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A-2.

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## SYSTEM TEST CONFIGURATION

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### Justification

The system was configured for testing by manufacturer.

### EUT Exercise Software

No software was used in test, the device was configured to engineer mode by manufacturer.

### Equipment Modifications

No modifications were made to the unit tested.

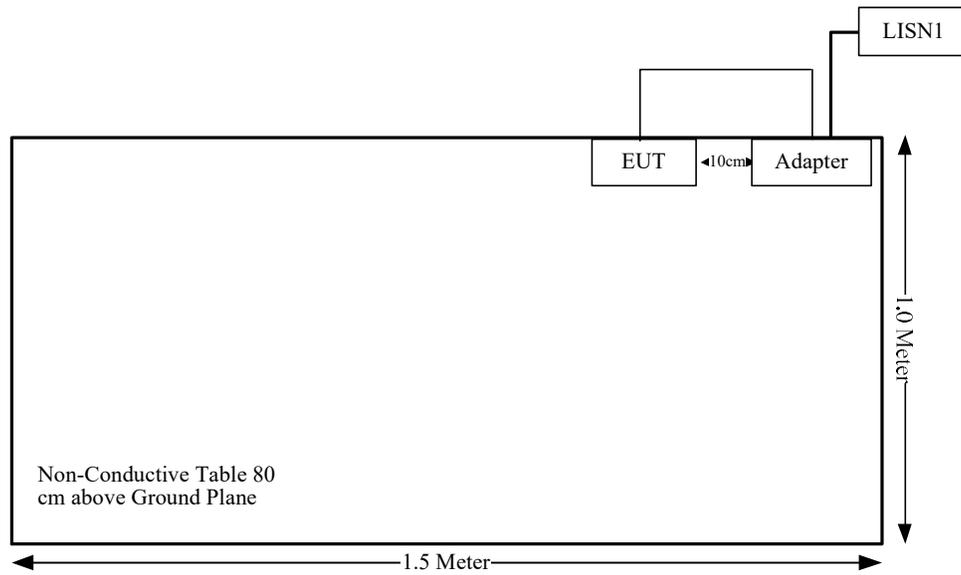
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Hytera	Adapter	TAS-AN00	S010WU0500200

### External I/O Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Adapter Cable	No	No	0.5	Adapter	EUT

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

<b>Rules</b>	<b>Description of Test</b>	<b>Result</b>
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conduction Emissions	Compliant
15.205, §15.209, §15.249(d)	Radiated Emissions& Outside of Band Emission	Compliant
§15.215 (c)	20dB Bandwidth	Compliant

## Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde& Schwarz	Test Receiver	ESPI3	100396	2020/12/24	2021/12/23
R & S	L.I.S.N.	ENV216	101314	2020/12/25	2021/12/24
Anritsu Corp	50Ω Coaxial Switch	MP59B	6200506474	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-2m	No.2	2020/12/25	2021/12/24
Radiated Emissions Test					
Rohde&Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/07/08	2022/07/07
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2020/01/05	2023/01/04
Quinstar	Amplifier	QLW-1840553 6-J0	15964001002	2020/11/28	2021/11/27
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/04	2023/01/03
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Wainwright	High Pass Filter	WHNX6.0/26. 5G-6SS	4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
OML	Harmonic Mixer	WR19/M19H WD	U60313-1	2019-10-14	2022-10-14
OML	Horn Antenna	M19RH	11648-01	2019-10-14	2022-10-14
OML	Harmonic Mixer	WR12/M12H WD	E60120-1	2019-10-19	2022-10-19
OML	Horn Antenna	M12RH	E60120-2	2019-10-19	2022-10-19

OML	Harmonic Mixer	WR08/M08H WD	F60313-1	2019-10-24	2022-10-24
OML	Horn Antenna	M08RH	F60313-2	2019-10-24	2022-10-24
OML	Harmonic Mixer	WR19/M19H WD	U60313-1	2019-10-14	2022-10-14
OML	Horn Antenna	M19RH	11648-01	2019-10-14	2022-10-14
OML	Harmonic Mixer	WR12/M12H WD	E60120-1	2019-10-19	2022-10-19
OML	Horn Antenna	M12RH	E60120-2	2019-10-19	2022-10-19
Agilent	Spectrum Analyzer	E4440A	MY44303352	2021-04-25	2022-04-24

\* **Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

**§1.1310 & §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 <sup>2</sup> )	Averaging Time (Minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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/cm<sup>2</sup>)

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:

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

**Calculated Data:**

Mode	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance*		Evaluation Distance (cm)	Power Density	FCC MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)	(dBm)	(mW)		(mW/cm <sup>2</sup> )	
WLAN	2412-2462	2	1.58	23	199.53	20.00	0.063	1.0
Radar	24054.99891 - 24242.99888	0	1.00	11	12.59	20.00	0.003	1.0

Note: The Tune up power was declared by manufacturer.

The WLAN and Radar can transmit simultaneously:

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

$$=S_{WLAN}/S_{limit-WLAN} + S_{Radar}/S_{limit-Radar}$$

$$=0.063/1+0.003/1$$

$$=0.066$$

$$< 1.0$$

Result: The device meet FCC MPE at 20 cm distance

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## FCC §15.203 - ANTENNA REQUIREMENT

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### 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 one antenna integrated on chip antenna, the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

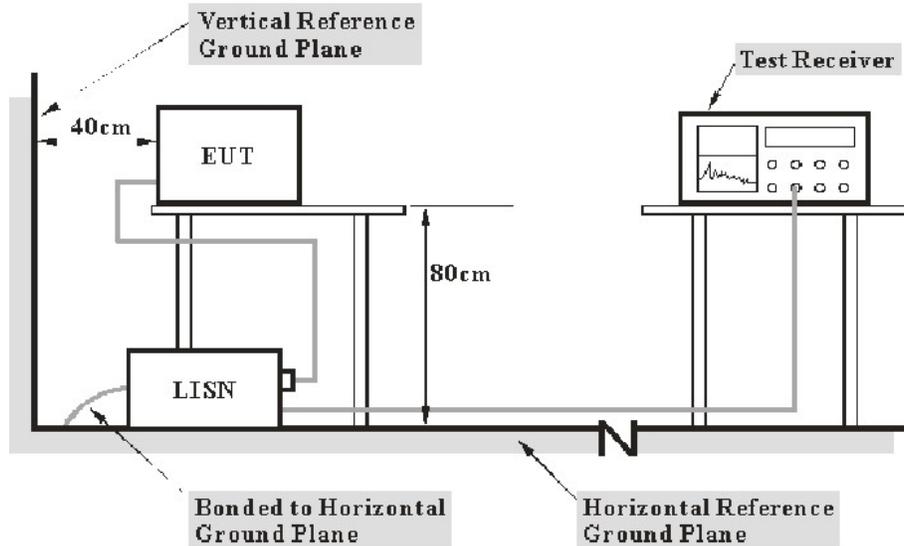
**Result:** Compliance.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

FCC§15.207(a).

### EUT Setup



- Note: 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

FrequencyRange	IF B/W
150 kHz – 30 MHz	9 kHz

### Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

## Transd Factor & Margin Calculation

The Transd factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Transd Factor} = \text{LISN VDF} + \text{Cable Loss}$$

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 7 dB below the limit. The equation for margin calculation is as follows:

$$\begin{aligned} \text{Margin} &= \text{Limit} - \text{level} \\ \text{Level} &= \text{reading level} + \text{Transd Factor} \end{aligned}$$

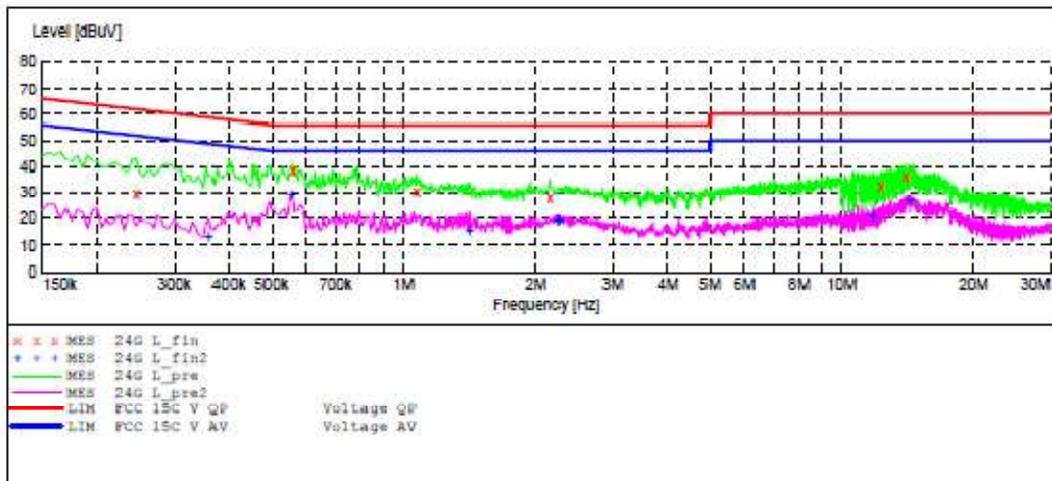
## Test Data

### Environmental Conditions

<b>Temperature:</b>	26.2°C
<b>Relative Humidity:</b>	63%
<b>ATM Pressure:</b>	100.3kPa
<b>Tester:</b>	<i>Fan Yang</i>
<b>Test Date:</b>	2021-09-12

*EUT operation mode: Transmitting (Worst case as below)*

AC 120V/60 Hz, Line



MEASUREMENT RESULT: "24G L\_fin"

2021-9-12 11:42

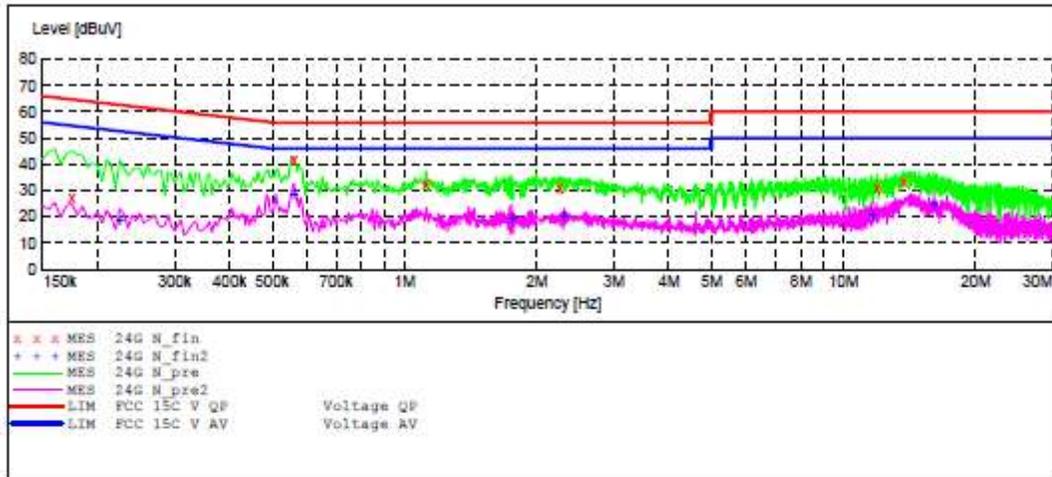
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.245000	29.60	10.9	62	32.4	QP	L1	GND
0.560000	38.40	11.0	56	17.6	QP	L1	GND
1.070000	30.30	11.1	56	25.7	QP	L1	GND
2.170000	28.10	11.3	56	27.9	QP	L1	GND
12.325000	32.40	11.6	60	27.6	QP	L1	GND
14.025000	36.20	11.6	60	23.6	QP	L1	GND

MEASUREMENT RESULT: "24G L\_fin2"

2021-9-12 11:42

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.360000	13.60	10.9	49	35.4	AV	L1	GND
0.555000	29.70	11.0	46	16.3	AV	L1	GND
1.410000	15.50	11.2	46	30.5	AV	L1	GND
2.260000	19.50	11.3	46	26.5	AV	L1	GND
11.750000	21.20	11.6	50	28.8	AV	L1	GND
14.250000	27.00	11.6	50	23.0	AV	L1	GND

**AC 120V/60 Hz, Neutral**



**MEASUREMENT RESULT: "24G N\_fin"**

2021-9-12 11:46

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.175000	27.00	10.8	65	38.0	QP	N	GND
0.560000	41.20	11.0	56	14.8	QP	N	GND
1.120000	32.20	11.2	56	23.8	QP	N	GND
2.260000	31.10	11.3	56	24.9	QP	N	GND
11.950000	30.70	11.6	60	29.3	QP	N	GND
13.725000	33.00	11.6	60	27.0	QP	N	GND

**MEASUREMENT RESULT: "24G N\_fin2"**

2021-9-12 11:46

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.225000	18.60	10.8	53	34.4	AV	N	GND
0.560000	28.80	11.0	46	17.2	AV	N	GND
1.755000	19.90	11.2	46	26.1	AV	N	GND
2.310000	20.10	11.3	46	25.9	AV	N	GND
11.600000	21.30	11.6	50	28.7	AV	N	GND
16.050000	24.60	11.7	50	25.4	AV	N	GND

## FCC§15.205, §15.209&§15.249(d) - RADIATED EMISSIONS

### Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

As per FCC§15.249 (d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

### Test Equipment Setup

The spectrum analyzer or receiver is set as:

Below 1000MHz:

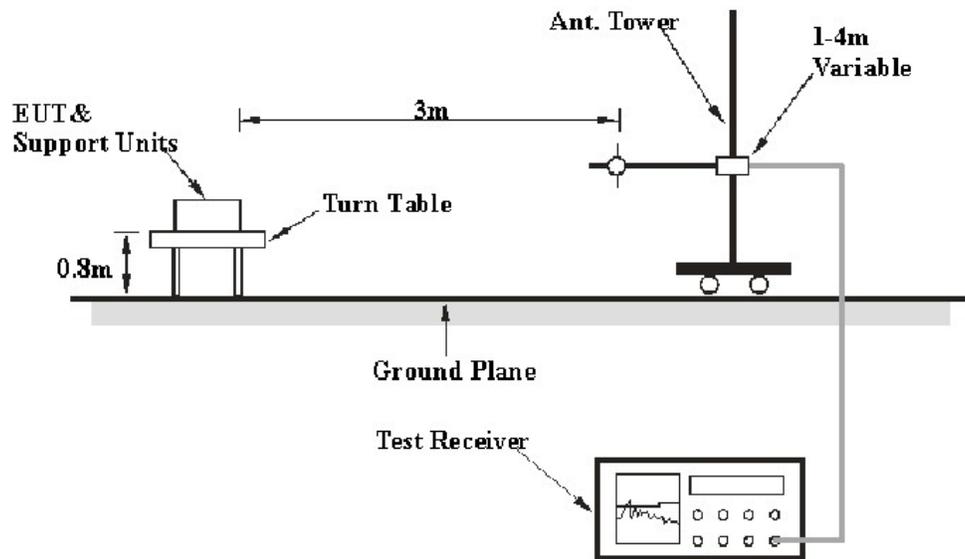
RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000MHz:

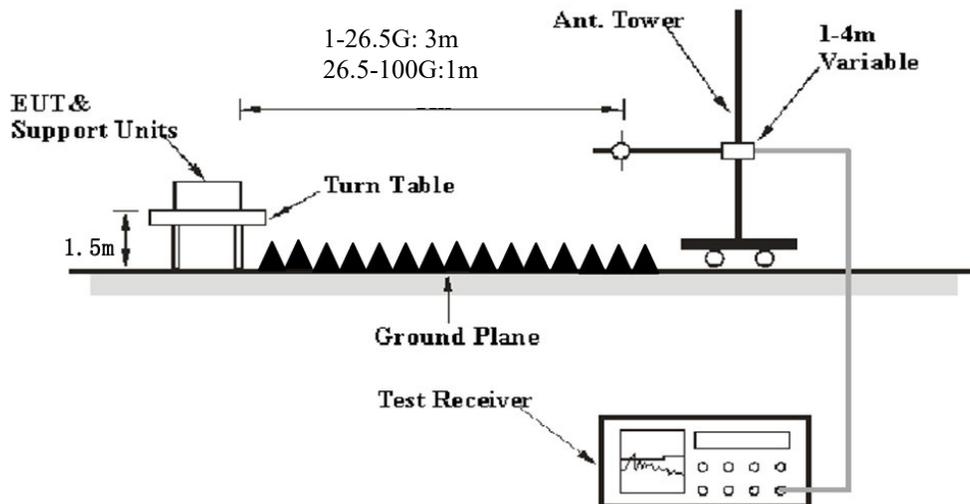
Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto  
Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

## EUT Setup

### Below 1GHz:



### Above 1GHz:



The radiated emission and out of band emission tests were performed in the 3meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209/15.205 and FCC 15.249 limits..

According to C63.10, the 26.5-100GHz test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1m

Distance extrapolation factor =  $20 \log(\text{specific distance [3m]}/\text{test distance [1m]})$  dB

Extrapolation result = Corrected Amplitude (dB $\mu$ V/m) - distance extrapolation factor (9.54dB)

For above 40GHz, external harmonic mixers are utilized. The antenna is scanned around the entire perimeter surface of the EUT, in both horizontal and vertical polarizations, at the distance of 1m from the EUT for 40-100GHz, The Mixers and it's RF cables is compose a system for calibration, the conversion factor was added into the test Spectrum Analyzer in testing.

## Test Procedure

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

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane for below 1GHz or 1.5 meter for above 1GHz, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

## Corrected Amplitude & Margin Calculation

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

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

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:

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

Or

$$\text{Margin} = \text{Limit} - \text{Extrapolation result}$$

## Test Data

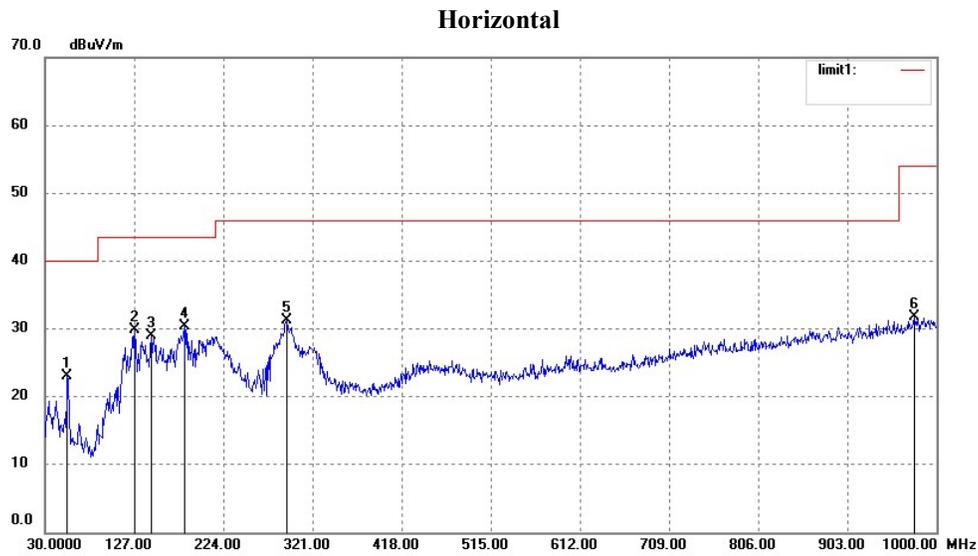
### Environmental Conditions

<b>Temperature:</b>	21.2°C~28.5°C
<b>Relative Humidity:</b>	50 %~60 %
<b>ATM Pressure:</b>	100.1 kPa~100.3 kPa

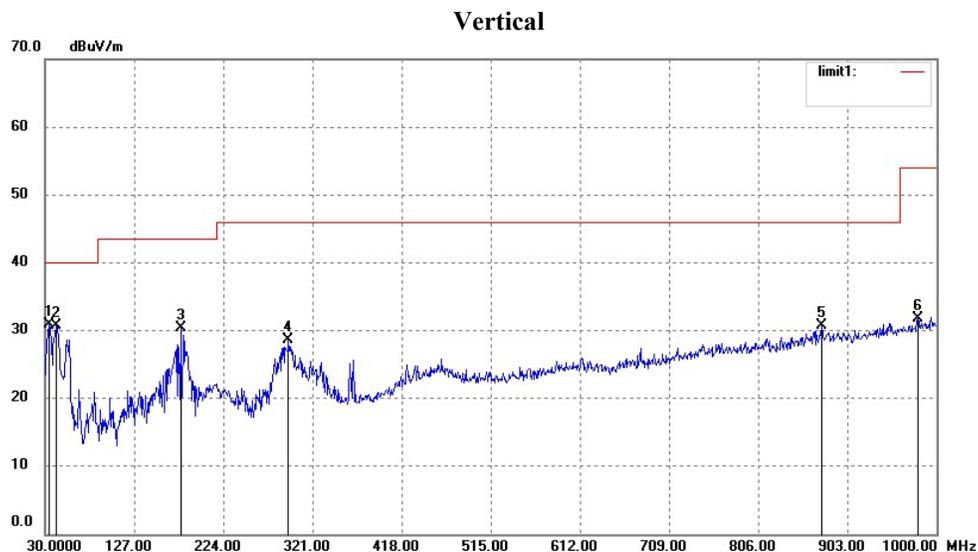
*The testing was performed by Fan Yang on 2021-09-25~2021-10-21.*

*Test Mode: Transmitting*

**30MHz-1GHz: (Middle Channel was Worst case)**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.2500	40.35	-17.36	22.99	40.00	17.01	peak
2	127.9699	48.56	-18.74	29.82	43.50	13.68	peak
3	145.4299	49.10	-20.13	28.97	43.50	14.53	peak
4	181.3199	48.73	-18.36	30.37	43.50	13.13	peak
5	292.8700	46.02	-14.76	31.26	46.00	14.74	peak
6	975.7500	34.11	-2.41	31.70	54.00	22.30	peak



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.8500	50.82	-19.91	30.91	40.00	9.09	peak
2	42.6100	48.39	-17.67	30.72	40.00	9.28	peak
3	177.4400	49.05	-18.61	30.44	43.50	13.06	peak
4	294.8100	43.30	-14.68	28.62	46.00	17.38	peak
5	874.8700	34.67	-3.96	30.71	46.00	15.29	peak
6	979.6300	34.00	-2.30	31.70	54.00	22.30	peak

**1-40GHz:**

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Absolute Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
	Reading (dBuV)	PK/Ave					
Low Channel: 24054.99891 MHz							
24055.00	96.42	PK	H	8.97	105.39	127.96	22.57
24055.00	67.47	AV	H	8.97	76.44	107.96	31.52
24055.00	81.67	PK	V	8.97	90.64	127.96	37.32
24055.00	53.73	AV	V	8.97	62.70	107.96	45.26
24000.00	55.52	PK	H	8.82	64.34	74.00	9.66
24000.00	40.40	AV	H	8.82	49.22	54.00	4.78
24250.00	60.03	PK	H	9.53	69.56	74.00	4.44
24250.00	40.26	AV	H	9.53	49.79	54.00	4.21
23943.60	55.27	PK	H	8.81	64.08	74.00	9.92
23943.60	42.15	AV	H	8.81	50.96	54.00	3.04
Middle Channel: 24139.99889 MHz							
24140.00	96.44	PK	H	9.21	105.65	127.96	22.31
24140.00	67.77	AV	H	9.21	76.98	107.96	30.98
24140.00	82.54	PK	V	9.21	91.75	127.96	36.21
24140.00	53.83	AV	V	9.21	63.04	107.96	44.92
24000.00	50.40	PK	H	8.82	59.22	74.00	14.78
24000.00	35.87	AV	H	8.82	44.69	54.00	9.31
24250.00	50.87	PK	H	9.53	60.40	74.00	13.60
24250.00	30.87	AV	H	9.53	40.40	54.00	13.60
23943.60	47.87	PK	H	8.81	56.68	74.00	17.32
23943.60	22.70	AV	H	8.81	31.51	54.00	22.49
High Channel: 24242.99888 MHz							
24243.00	96.42	PK	H	9.51	105.93	127.96	22.03
24243.00	67.47	AV	H	9.51	76.98	107.96	30.98
24243.00	81.67	PK	V	9.51	91.18	127.96	36.78
24243.00	53.73	AV	V	9.51	63.24	107.96	44.72
24000.00	51.24	PK	H	8.82	60.06	74.00	13.94
24000.00	36.21	AV	H	8.82	45.03	54.00	8.97
24250.00	59.87	PK	H	9.53	69.40	74.00	4.60
24250.00	39.15	AV	H	9.53	48.68	54.00	5.32
23943.60	47.10	PK	H	8.81	55.91	74.00	18.09
23943.00	21.88	AV	H	8.81	30.69	54.00	23.31

**Note:**

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

Corrected Amplitude = Corrected Factor + Reading

Margin = Limit- Corrected. Amplitude

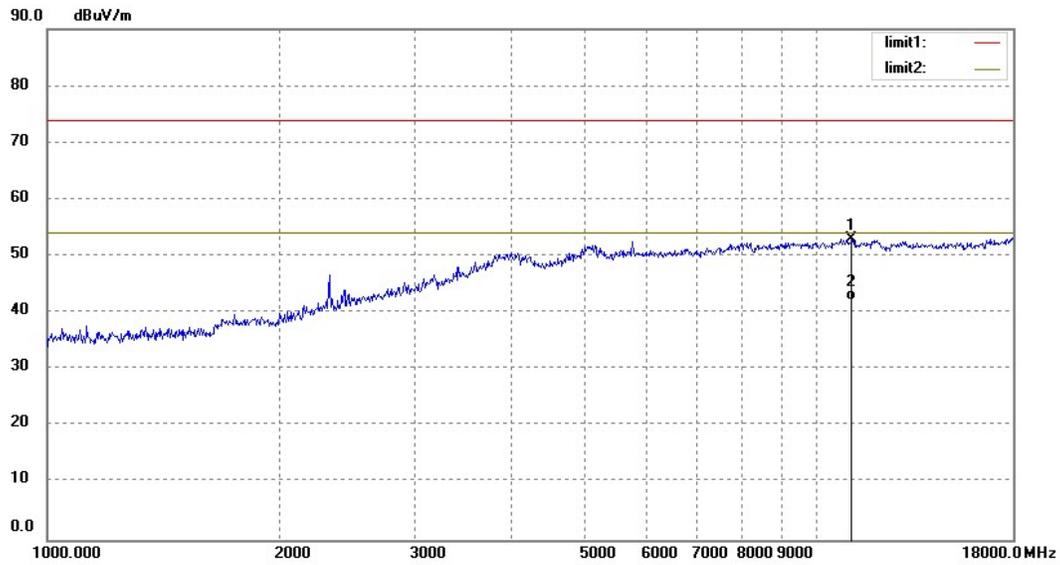
The other spurious emission which is 20dB below to the limit was not recorded.

**Spurious Emission in 40GHz-100GHz(Middle channel was the worst):**

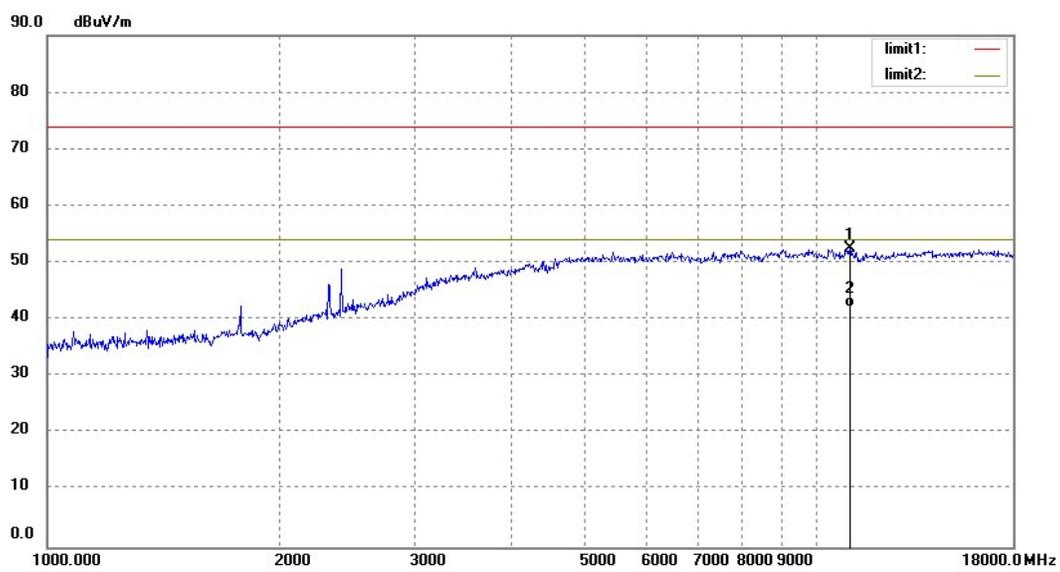
Frequency (GHz)	Receiver		Rx Antenna		Corrected Amplitude (dB $\mu$ V/m)	Extrapolation result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
	Reading (dB $\mu$ V)	Detector	Polar (H/V)	Factor (dB/m)				
48.28	51.35	PK	H	40.08	91.43	81.89	87.96	6.07
48.28	27.36	AV	H	40.08	67.44	57.9	67.96	10.06
48.28	50.36	PK	V	40.08	90.44	80.9	87.96	7.06
48.28	28.05	AV	V	40.08	68.13	58.59	67.96	9.37
78.45	48.66	PK	H	43.68	92.34	82.8	87.96	5.16
78.45	26.87	AV	H	43.68	70.55	61.01	67.96	6.95
78.45	48.02	PK	V	43.68	91.7	82.16	87.96	5.8
78.45	27.26	AV	V	43.68	70.94	61.4	67.96	6.56

*Note: For the range 40-100GHz, the test performed at the distance 1m.*

**Pre-scan with high channel Peak  
1-18GHz  
Horizontal**



**Vertical**



## FCC§15.215(c) - 20dB EMISSION BANDWIDTH

### Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that indicated 20dB bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	21.2-22.6°C
<b>Relative Humidity:</b>	50 -54 %
<b>ATM Pressure:</b>	100.3 kPa

*The testing was performed by Fan Yang on 2021-09-13 and 2021-10-21.*

*Test Mode: Transmitting*

*Please refer to the following table and plots.*

*For Stop Sweeping Mode:*

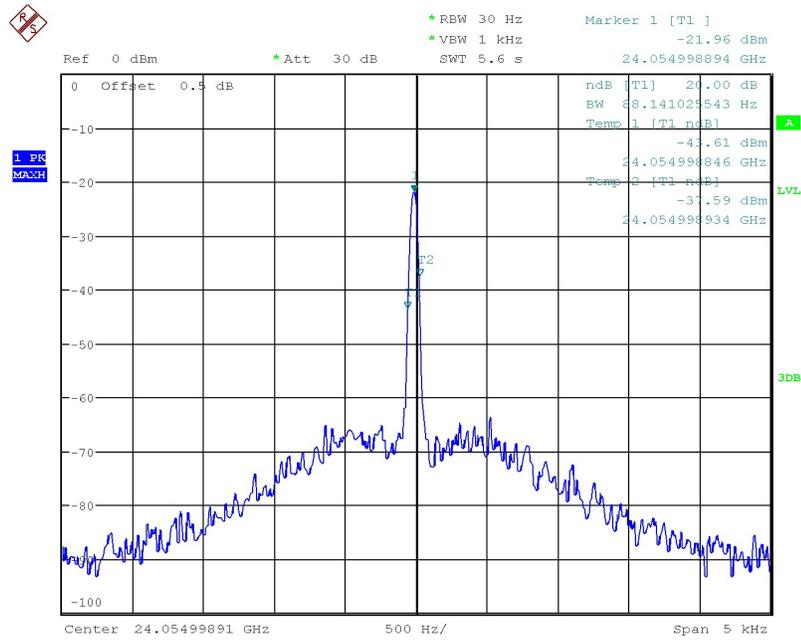
<b>Frequency (MHz)</b>	<b>20 dB Bandwidth (Hz)</b>
24054.99891	88.14
24139.99889	88.14
24242.99888	88.14

*For Sweeping Mode:*

<b>Frequency (MHz)</b>	<b>20 dB Bandwidth (MHz)</b>
24054.99891	190.8
-	
24242.99888	

**For Stop Sweeping Mode:  
Low Channel:**

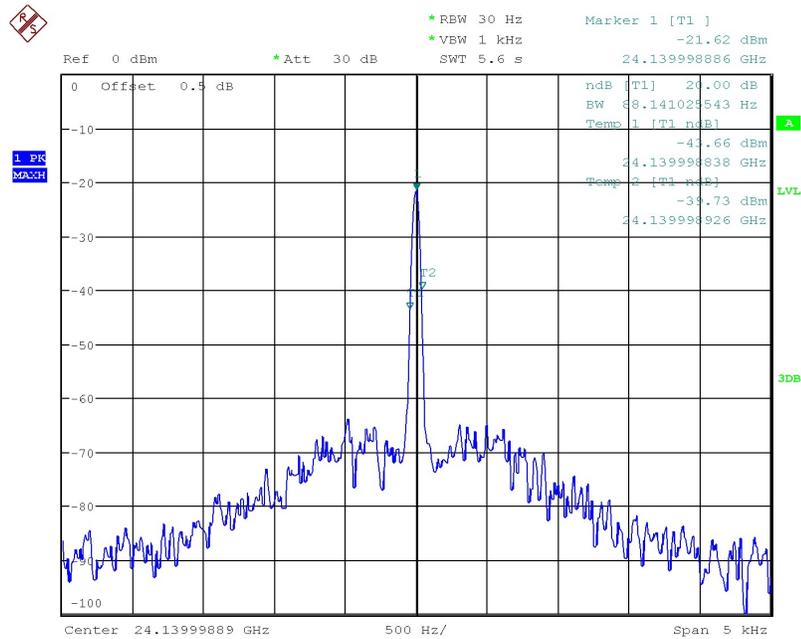
**20dB Bandwidth**



Date: 21.OCT.2021 21:39:02

**Middle Channel:**

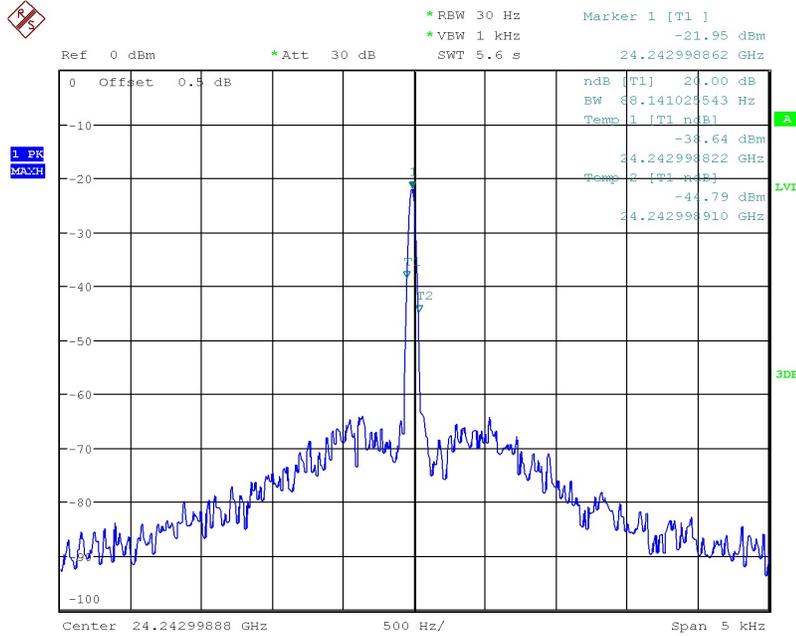
**20dB Bandwidth**



Date: 21.OCT.2021 21:40:28

High Channel

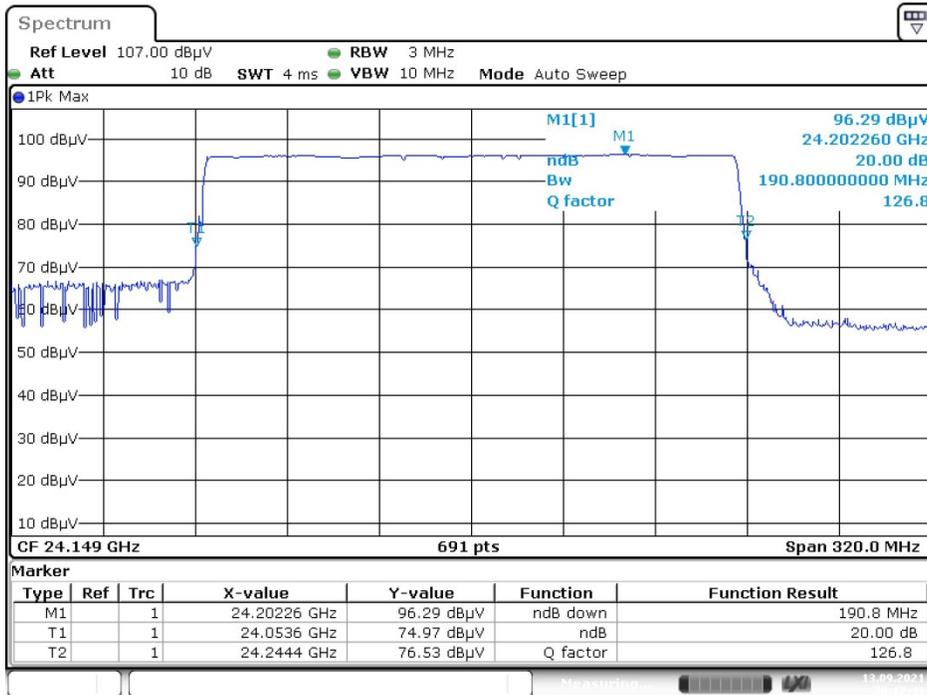
20dB Bandwidth



Date: 21.OCT.2021 21:47:03

For Sweeping Mode:

20dB Bandwidth



Date: 13.SEP.2021 20:12:43

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