

TEST REPORT

Verified code: 673916

Report No.:	E20200313686501-5	Application No.:	E20200313686501
Client:	TianJinHuaLai Technology Co.,Ltd.		
Address:	No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China		
Sample Description:	NS-SBD-US1		
Model:	NS-SBD-US1		
FCC ID:	2ANJHNS-SBD-US1		
Test Location:	Guangzhou GRG Metrology & Test Co., Ltd.		
Test Specification:	CFR 47 FCC Part 15 Subpart C 10-1-2019 Edition ANSI C63.10:2013		
Issue Date:	2020/06/11		
Test Result:	PASS		
Prepared By: Test Engineer <i>Wu Haoting</i>	Reviewed By: Technical Manager <i>Wu Chengrong</i>	Approved By: Manager 	
Other Aspects:			
Note: /			
Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable;			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			



DIRECTIONS OF TEST

1. This company carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.
2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.
3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

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1. TEST RESULT SUMMARY

CFR 47 FCC Part 15 Subpart C 10-1-2019 Edition ANSI C63.10:2013		
Standard	Test Item	Result
15.207	Conducted emission AC power port	N/A see Note 1
§15.205(a), §15.209(a), §15.249(a), §15.249(c)	Field strength of emissions and Restricted bands	P
FCC §15.215(c)	20dB bandwidth	P
§15.249(d)	Out of band emissions	P
§15.203	Antenna Requirement	P, see Note 2

Remark: P = Pass, N/A = Not Applicable.

Note 1: The EUT was powered by 1*3.0V dc type “CR2450” battery.

Note 2: The max gain of antenna is -0.32dBi which accordance 15.203.is considered sufficient to comply with the provisions of this section.

2. GENERAL DESCRIPTION OF EUT

2.1 APPLICANT

Name: TianJinHuaLai Technology Co.,Ltd.
Address: No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China

2.2 MANUFACTURER

Name: TianJinHuaLai Technology Co.,Ltd.
Address: No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China

2.3 FACTORY

Name: TianJinHuaLai Technology Co.,Ltd.
Address: No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China

2.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: Neos Smart Bridge
Model No.: NS-SBD-US1
Adding Model: /
Trade Name:



Power supply: 5.0V dc powered by USB port
Frequency List: 906MHz, 906.6MHz, 906.8MHz, 907MHz, 907.4MHz, 909.6MHz, 909.8MHz, 915MHz
Transmit Power: Peak: 107.56dBuV/m (Max.),
Average: 89.57dBuV/m (Max.)
Type of Modulation: GFSK
Antenna Specification: Integrated Antenna, -0.32dBi
Temperature Range: -10 °C ~ +50 °C
Hardware Version: 1.00
Software Version: 2.0.0.22
Note: N/A

2.5 TEST OPERATION MODE

Test Item	Mode No.	Description of the modes
Radiated Emission	1	Continuously Transmitting (906MHz, 907MHz, 915MHz)

2.6 LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
/	/	/	/	/
Cable				
/	/	/	/	/

2.7 TEST SOFTWARE:

Software version	Test level
N/A	N/A

2.8 MONITORING OF EUT FOR THE IMMUNITY TEST

- 1 Press the button to enter the fixed frequency continuous transmission state.
- 2 Use buttons to switch between high, medium and low channels.

3. LABORATORY AND ACCREDITATIONS

3.1 LABORATORY

The tests and measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Add. : No.1301 Guangang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

P.C. : 518000

Telephone : 0755-61180008

Fax : /

3.2 ACCREDITATIONS

A2LA	Certificate Number 2861.01
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3.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		Frequency	Uncertainty
Radiated Emission	Horizontal	30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
	Vertical	30MHz~1000MHz	4.3dB
		1GHz~18GHz	5.6dB
Conduction Emission		9 kHz ~ 150 kHz	2.8 dB
		150 kHz ~ 10 MHz	2.8 dB
		10 MHz ~ 30 MHz	2.2 dB

This uncertainty represents an expanded uncertainty factor of $k=2$.

4. LIST OF USED TEST EQUIPMENT AT GRGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Radiated Spurious Emission&Restricted bands of operation				
ESPI Test Receiver	R&S	ESU26	EMC26-G260	2020/07/17
Horn antenna	Schwarzbeck	BBHA9170	BBHA9170-497	2020/11/30
Bilog Antenna	Schwarzbeck	VULB 9160	9160-3401	2020/11/27
Horn Antenna	Schwarzbeck	BBHA9120	D286	2020/11/27
Preamplifier	Agilent	8449B	3008A02060	2020/11/18
Loop antenna	TESEQ	HLA6121	52599	2021/05/21
RF automation swiching switch	Tonscend	JS0806-F	19K8060203	/
Test SW	Tonscend	JS36-RSE/2.5.2.2		
Test SW	Tonscend	JS36-RSE/2.5.1.5		
20dB Bandwidth				
EXA signal analyzer	Agilent	N9010A	MY52221469	2020/11/18
Conducted Emission				
EZ-EMC	EZ	CCS-3A1-CE	/	/
EMI Receiver	ROHDE&SCHWARZ	ESCI	100783	2020/11/27
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543	2021/03/14

5. CONDUCTED EMISSIONS

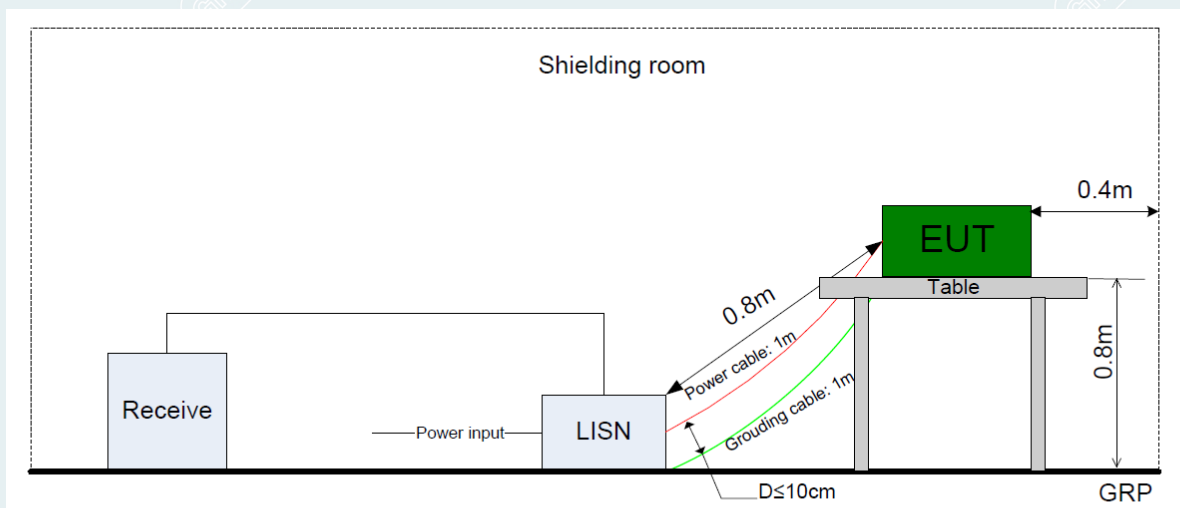
5.1. TEST METHOD:

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI testreceiver is used to test the emissions from both sides of ACline

5.2. TEST SETUP:

The mains cable of the EUT (per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

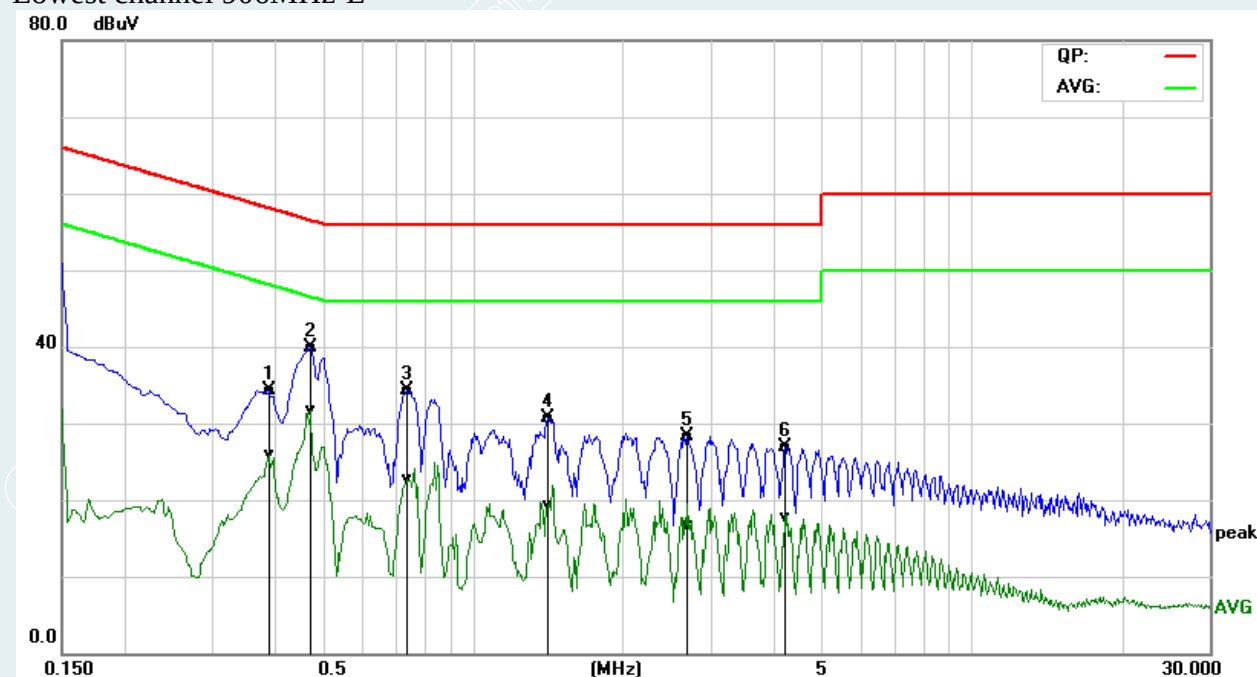


Limit:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linear.

Lowest channel 906MHz-L

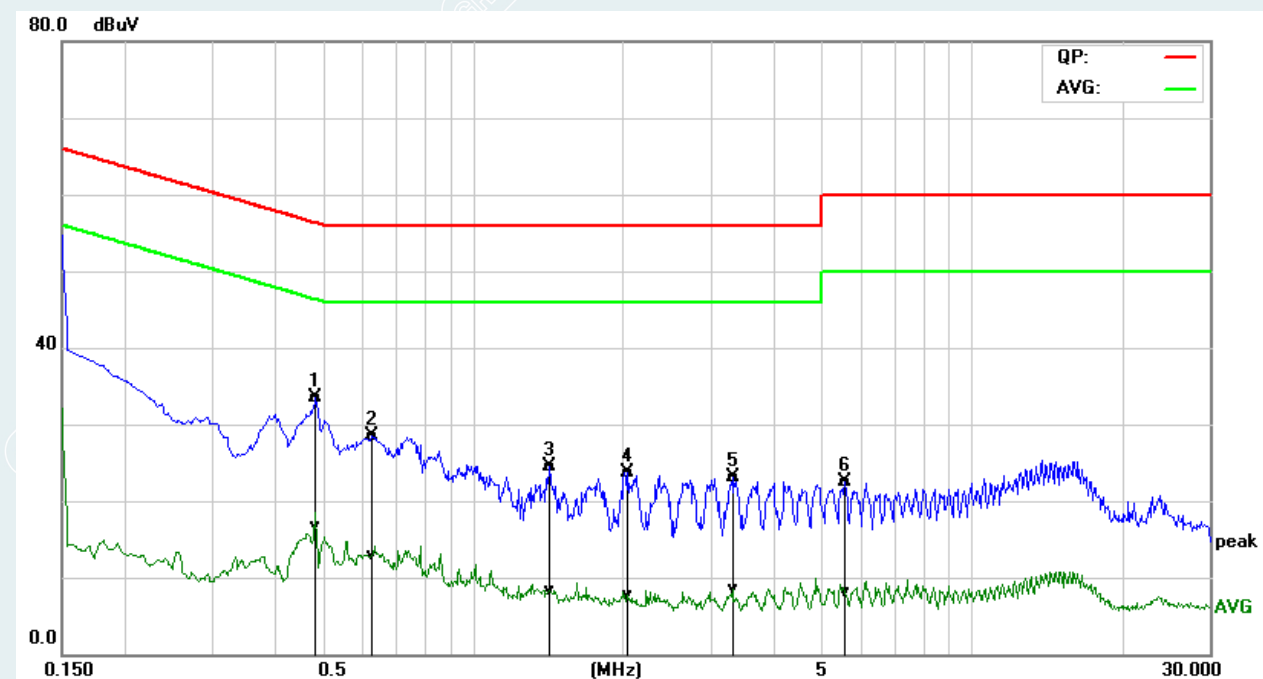


No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.3899	24.68	16.31	9.67	34.35	25.98	58.06	48.07	-23.71	-22.09	Pass
2*	0.4740	30.23	22.12	9.67	39.90	31.79	56.44	46.44	-16.54	-14.65	Pass
3	0.7420	24.66	12.93	9.68	34.34	22.61	56.00	46.00	-21.66	-23.39	Pass
4	1.4180	21.00	9.52	9.72	30.72	19.24	56.00	46.00	-25.28	-26.76	Pass
5	2.6860	18.58	7.01	9.75	28.33	16.76	56.00	46.00	-27.67	-29.24	Pass
6	4.2380	17.13	7.82	9.79	26.92	17.61	56.00	46.00	-29.08	-28.39	Pass

Result = Reading Level + Correction factor

Correction factor=LISN factor + att + cable loss

Lowest channel 906MHz-N



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1620	35.22	7.55	9.66	44.88	17.21	65.36	55.36	-20.48	-38.15	Pass
2	0.2260	42.19	17.48	9.67	51.86	27.15	62.59	52.60	-10.73	-25.45	Pass
3*	0.3260	43.59	16.06	9.67	53.26	25.73	59.55	49.55	-6.29	-23.82	Pass
4	0.4460	38.63	15.10	9.67	48.30	24.77	56.95	46.95	-8.65	-22.18	Pass
5	0.5460	36.55	10.53	9.67	46.22	20.20	56.00	46.00	-9.78	-25.80	Pass
6	0.6500	32.11	9.10	9.68	41.79	18.78	56.00	46.00	-14.21	-27.22	Pass

Result = Reading Level + Correction factor

Correction factor=LISN factor + att + cable loss

6. RADIATED SPURIOUS EMISSIONS

6.1. LIMITS

The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively.

Fundamental Frequency	Field Strength of Fundamental Field Strength (mV/m)	Field Strength of Harmonics (μ V/m)
902-928 MHz	50	500
2400 - 2483.5 MHz	50	500
5725 - 5875 MHz	50	500

Except where otherwise indicated in the applicable FCC, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5

Frequency (MHz)	Magnetic field strength (HField) (μ A/m)	Measurement Distance (m)
0.009-0.490	6.37/F (F in kHz)	300
0.490-1.705	63.7/F (F in kHz)	30
1.705-30.0	0.08	30

Table 6

Frequency (MHz)	Field Strength (μ V/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Restricted band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	1435 - 1626.5	9.0 - 9.2
0.495 - 0.505	16.69475 - 16.69525	1645.5 - 1646.5	9.3 - 9.5
2.1735 - 2.1905	16.80425 - 16.80475	1660 - 1710	10.6 - 12.7
3.020 - 3.026	25.5 - 25.67	1718.8 - 1722.2	13.25 - 13.4
4.125 - 4.128	37.5 - 38.25	2200 - 2300	14.47 - 14.5
4.17725 - 4.17775	73 - 74.6	2310 - 2390	15.35 - 16.2
4.20725 - 4.20775	74.8 - 75.2	2483.5 - 2500	17.7 - 21.4
5.677 - 5.683	108 - 138	2655 - 2900	22.01 - 23.12
6.215 - 6.218	149.9 - 150.05	3260 - 3267	23.6 - 24.0
6.26775 - 6.26825	156.52475 - 156.52525	3332 - 3339	31.2 - 31.8
6.31175 - 6.31225	156.7 - 156.9	3345.8 - 3358	36.43 - 36.5
8.291 - 8.294	162.0125 - 167.17	3500 - 4400	Above 38.6
8.362 - 8.366	167.72 - 173.2	4500 - 5150	
8.37625 - 8.38675	240 - 285	5350 - 5460	
8.41425 - 8.41475	322 - 335.4	7250 - 7750	
12.29 - 12.293	399.9 - 410	8025 - 8500	
12.51975 - 12.52025	608 - 614	--	
12.57675 - 12.57725	960 - 1427		
13.36 - 13.41			

6.2. TEST PROCEDURES**1) Sequence of testing 9 kHz to 30 MHz****Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 315 ° using 45 ° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0 °to 360 °) and by rotating the elevation axes (0 °to 360 °).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 °to 315 °using 45 °steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Pre measurement:

- The turntable rotates from 0 ° to 315 ° using 45 ° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the

turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Pre measurement:

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

NOTE: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).

6.3. TEST SETUP

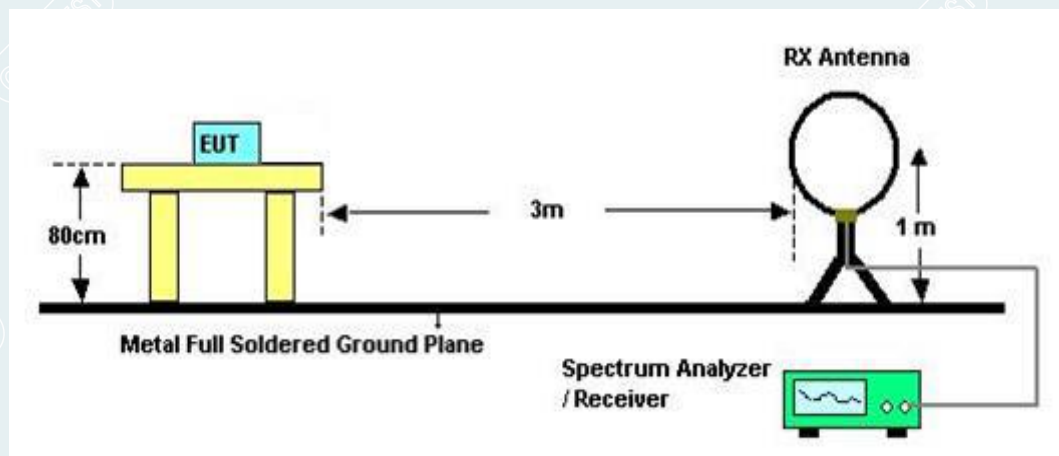


Figure 1.9KHz to 30MHz radiated emissions test configuration

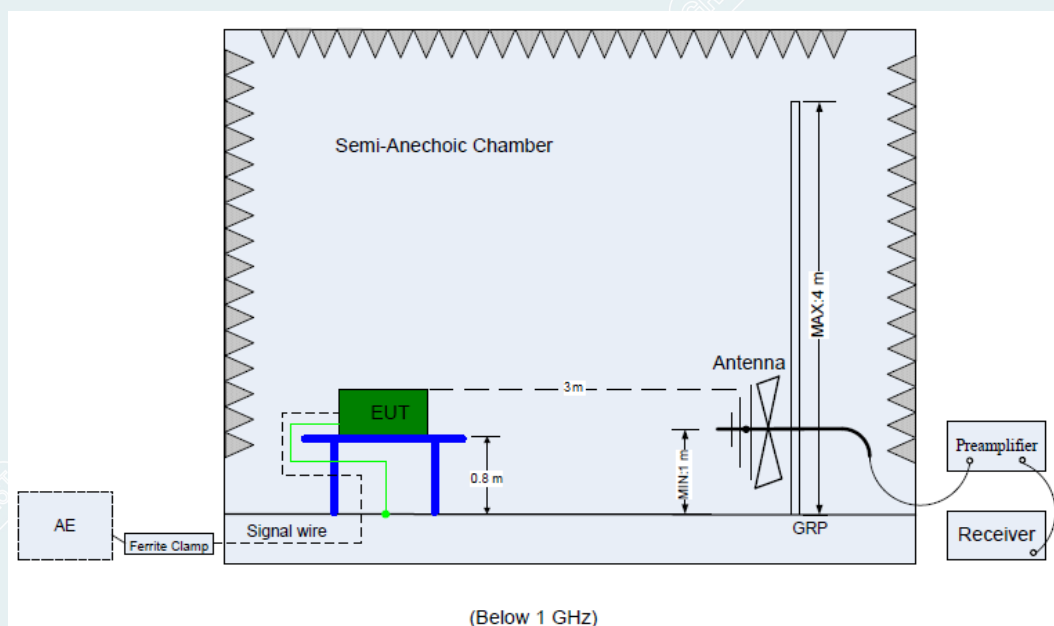


Figure 2. 30MHz to 1GHz radiated emissions test configuration

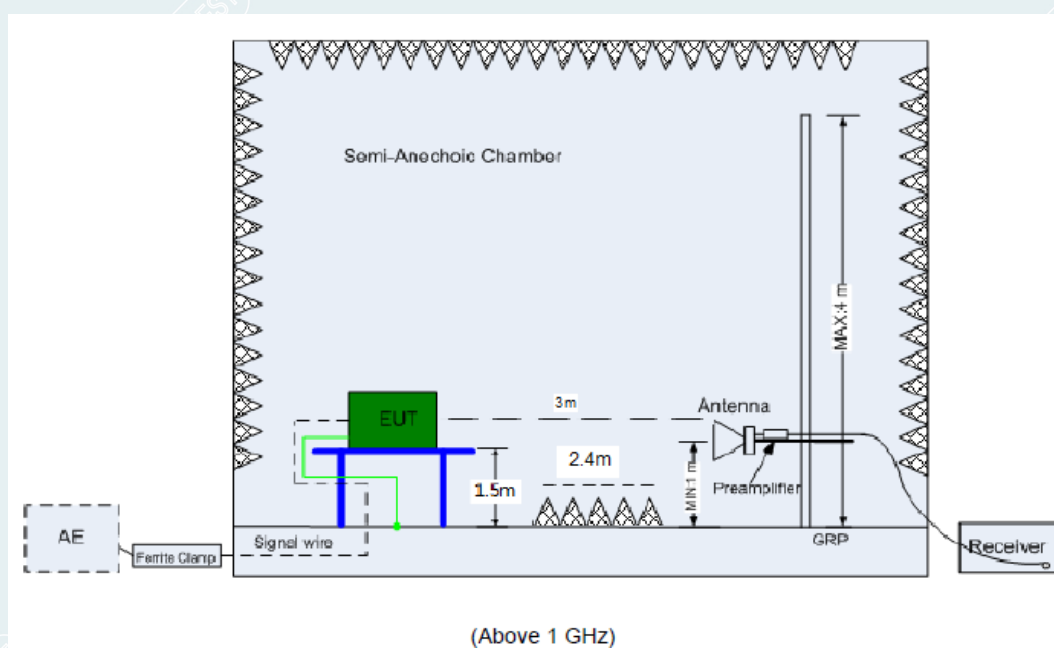


Figure 3. Above 1GHz radiated emissions test configuration

6.4. TEST RESULT

The field strength of fundamental
TX 906MHz

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
906	121.05	-14.14	106.91	114.00	7.09	Peak	Horizontal
906	101.82	-14.14	87.68	94.00	6.32	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
906	119.84	-13.53	106.31	114.00	7.69	Peak	Vertical
906	100.24	-13.53	86.71	94.00	7.29	AV	Vertical

TX 907MHz

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
907	116.84	-14.13	102.71	114.00	11.29	Peak	Horizontal
907	99.69	-14.13	85.56	94.00	8.44	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
907	116.83	-13.51	103.32	114.00	10.68	Peak	Vertical
907	99.62	-13.51	86.11	94.00	7.89	AV	Vertical

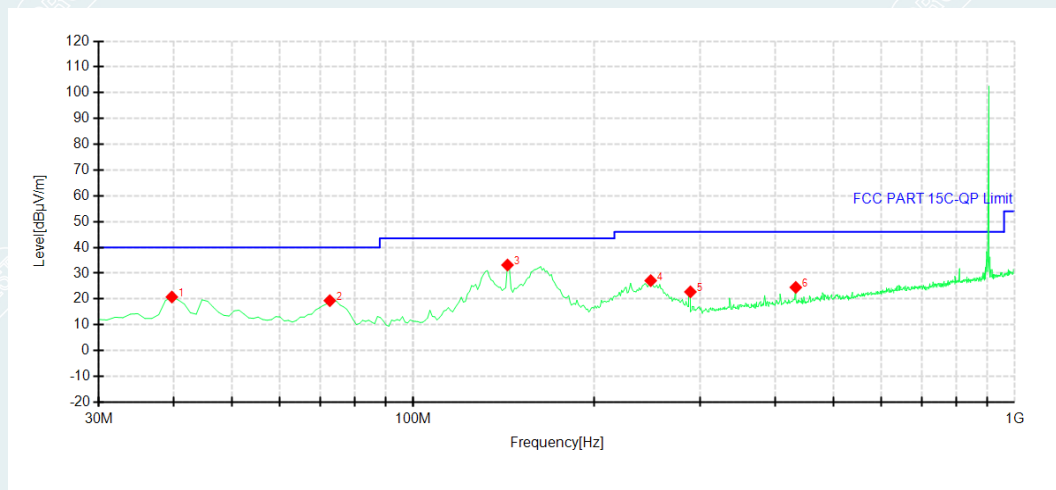
TX 915MHz

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
915	120.39	-13.88	106.51	114.00	7.49	Peak	Horizontal
915	103.45	-13.88	89.57	94.00	4.43	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
915	120.81	-13.25	107.56	114.00	6.44	Peak	Vertical
915	101.83	-13.25	88.58	94.00	5.42	AV	Vertical

Radiated Spurious Emission**Test Frequency 30MHz – 1GHz**

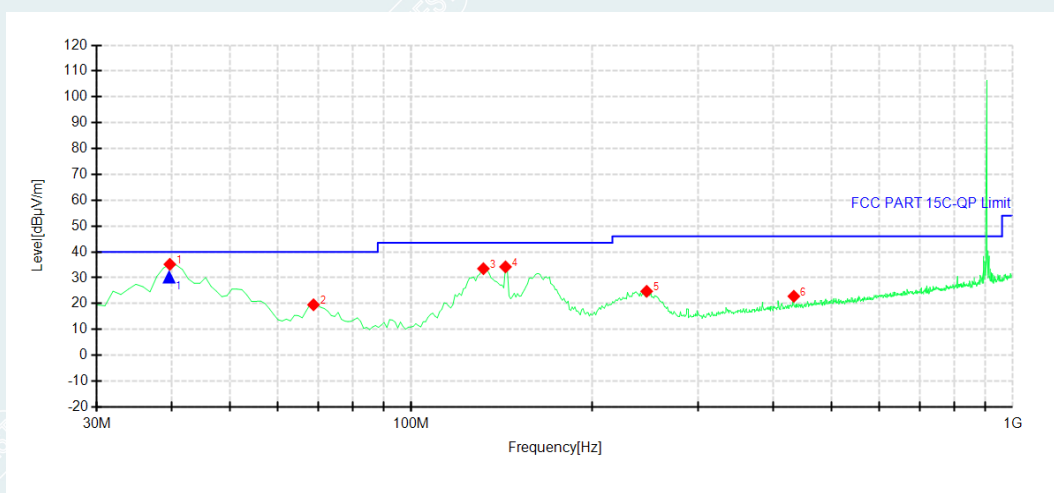
Lowest channel 906MHz



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	39.7000	20.77	-29.62	40.00	19.23	200	335	QP	Horizontal
2	72.6800	19.36	-31.79	40.00	20.64	200	335	QP	Horizontal
3	143.4900	33.18	-26.85	43.50	10.32	200	86	QP	Horizontal
4	248.2500	27.11	-28.01	46.00	18.89	100	284	QP	Horizontal
5	288.9900	22.77	-26.89	46.00	23.23	100	102	QP	Horizontal
6	432.5500	24.51	-22.59	46.00	21.49	200	59	QP	Horizontal

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.

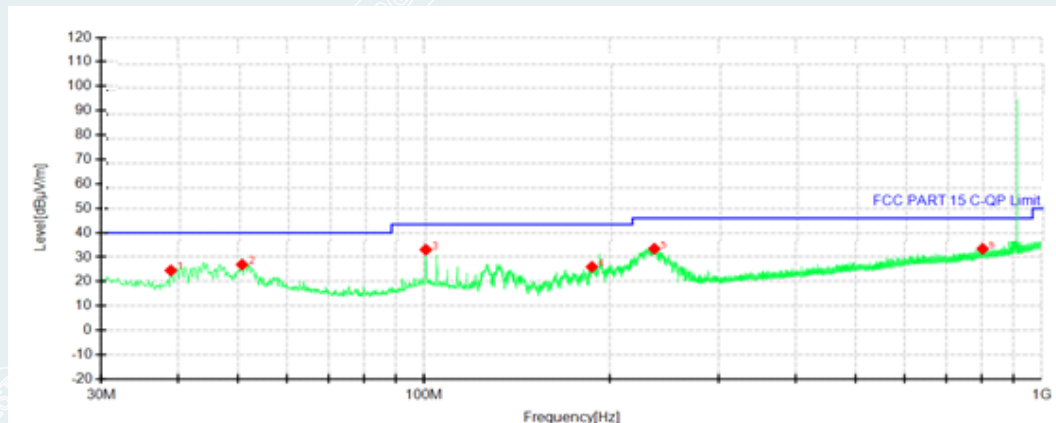


NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	39.7000	35.20	-29.62	40.00	4.80	100	241	QP	Vertical
2	68.8000	19.54	-31.41	40.00	20.46	100	79	QP	Vertical
3	131.8500	33.51	-28.66	43.50	9.99	100	31	QP	Vertical
4	143.4900	34.21	-26.85	43.50	9.29	100	217	QP	Vertical
5	246.3100	24.76	-28.09	46.00	21.24	200	3	QP	Vertical
6	432.5500	22.83	-22.59	46.00	23.17	100	330	QP	Vertical

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.

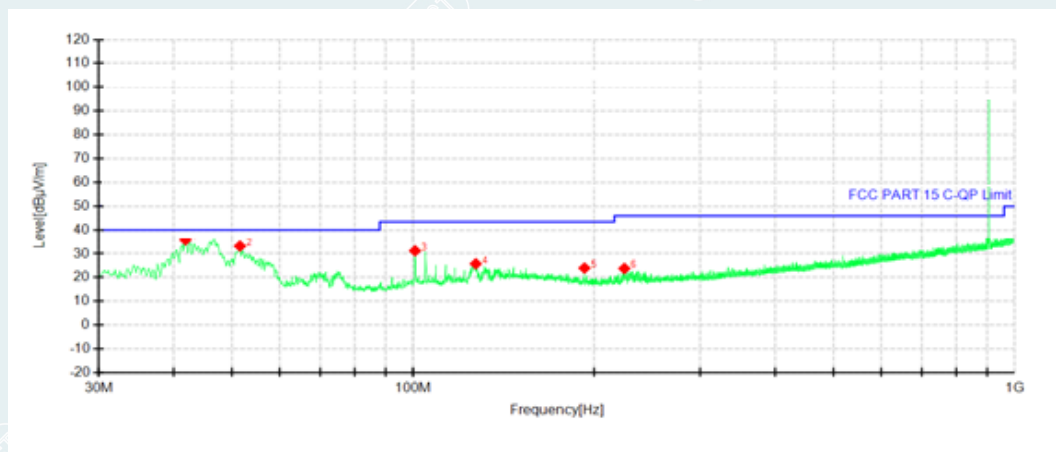
Middle channel 907MHz



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	38.9240	24.50	-29.91	40.00	15.50	100	301	QP	Horizontal
2	50.7580	26.92	-28.67	40.00	13.08	150	194	QP	Horizontal
3	100.7130	33.02	-29.89	43.50	10.48	150	267	QP	Horizontal
4	187.0430	25.97	-29.68	43.50	17.53	150	275	QP	Horizontal
5	236.0280	33.42	-27.88	46.00	12.58	100	18	QP	Horizontal
6	802.7990	33.38	-15.87	46.00	12.62	100	52	QP	Horizontal

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.

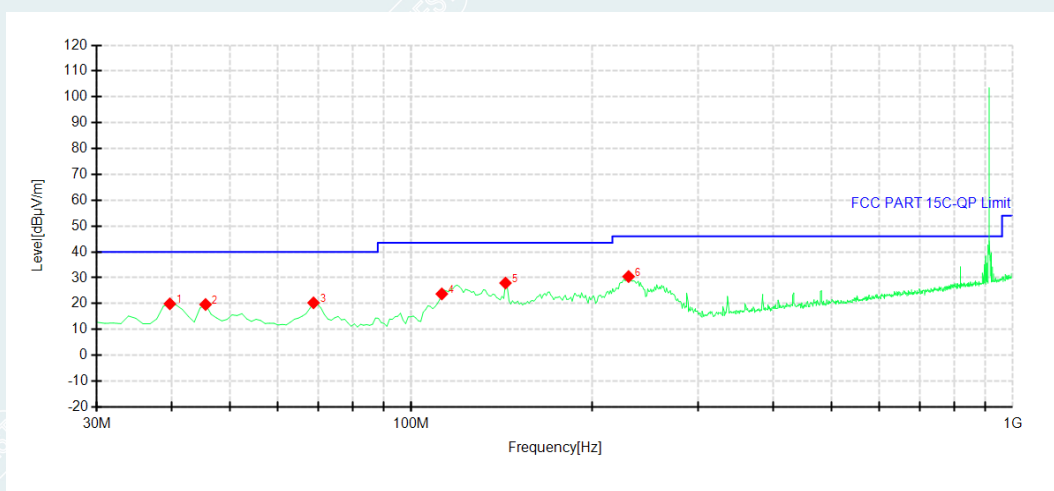


NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	41.8340	35.84	-29.68	40.00	4.16	100	152	QP	Vertical
2	51.5340	33.23	-30.08	40.00	6.77	100	141	QP	Vertical
3	100.7130	31.23	-31.68	43.50	12.27	150	285	QP	Vertical
4	127.0970	25.76	-29.14	43.50	17.74	150	243	QP	Vertical
5	192.6690	23.95	-29.03	43.50	19.55	150	236	QP	Vertical
6	224.4850	23.76	-28.82	46.00	22.24	150	288	QP	Vertical

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.

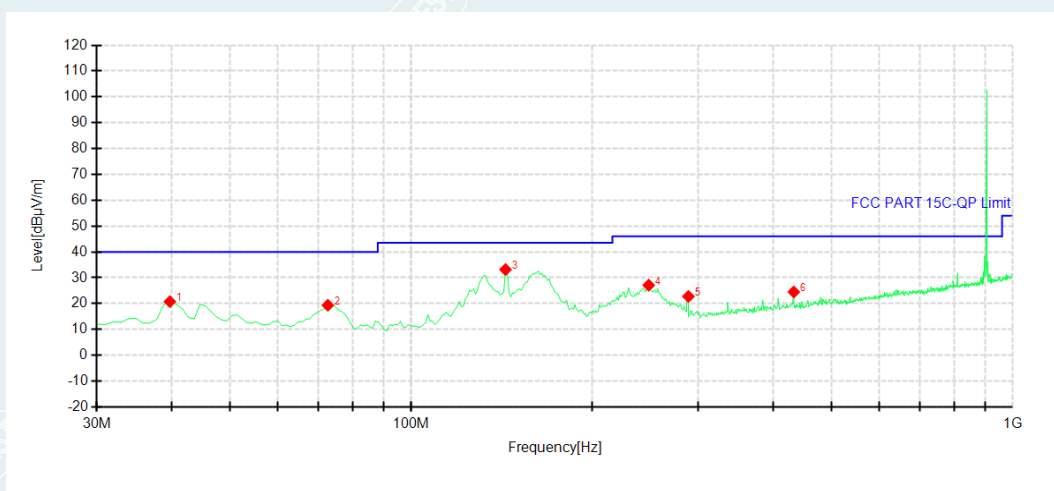
Highest channel 915MHz



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	39.7000	19.91	-29.62	40.00	20.09	200	282	QP	Horizontal
2	45.5200	19.65	-29.82	40.00	20.35	100	199	QP	Horizontal
3	68.8000	20.30	-31.41	40.00	19.70	100	322	QP	Horizontal
4	112.4500	23.74	-30.05	43.50	19.76	200	298	QP	Horizontal
5	143.4900	27.95	-26.85	43.50	15.55	200	322	QP	Horizontal
6	229.8200	30.48	-28.76	46.00	15.52	100	81	QP	Horizontal

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.



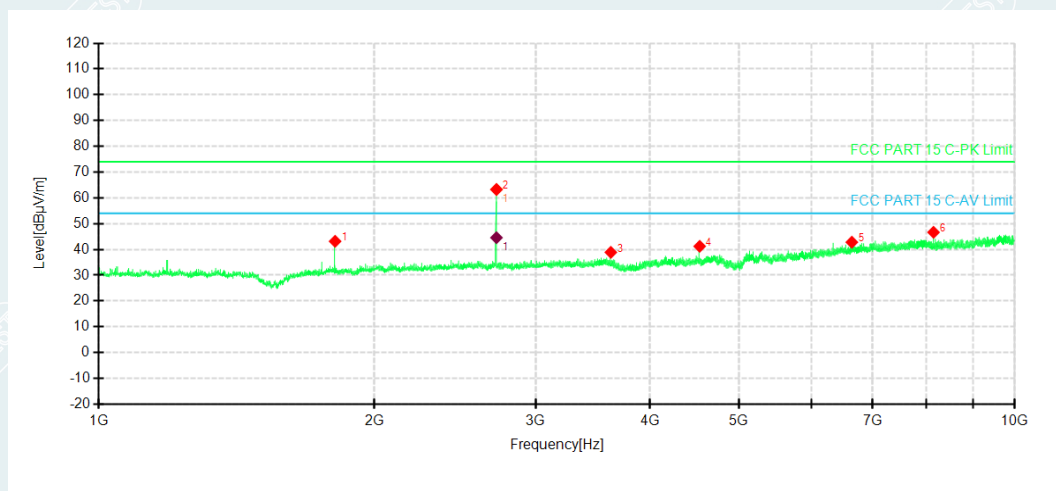
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	39.7000	20.77	-29.62	40.00	19.23	200	335	QP	Vertical
2	72.6800	19.36	-31.79	40.00	20.64	200	335	QP	Vertical
3	143.4900	33.18	-26.85	43.50	10.32	200	86	QP	Vertical
4	248.2500	27.11	-28.01	46.00	18.89	100	284	QP	Vertical
5	288.9900	22.77	-26.89	46.00	23.23	100	102	QP	Vertical
6	432.5500	24.51	-22.59	46.00	21.49	200	59	QP	Vertical

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 4 Below 1GHz: factor = Antenna Factor + Cable Loss.

Above 1 GHz

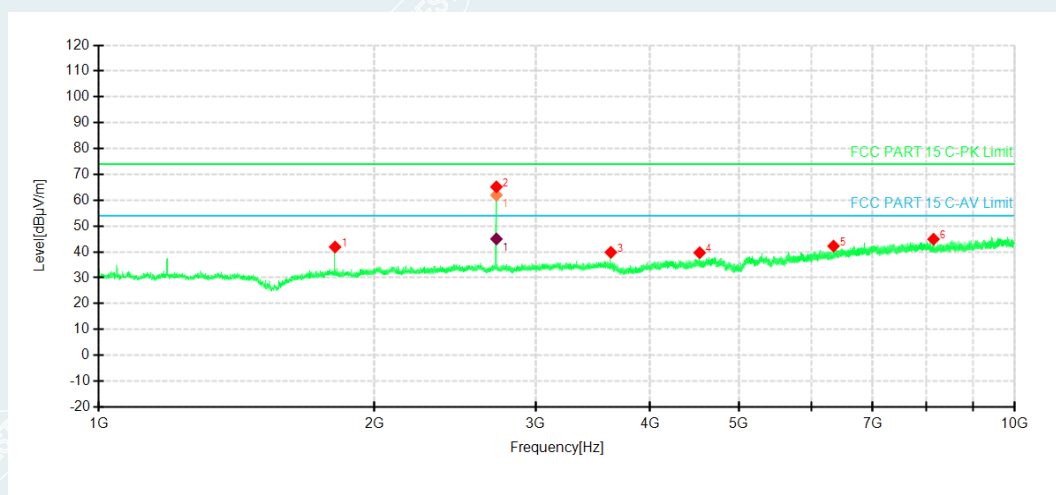
Lowest Channel 906MHz



NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1811.800	43.15		-21.36	74.00	30.85	200	162	Peak	Horizontal
2	2718.100	63.26		-18.10	74.00	10.74	100	24	Peak	Horizontal
3	2718.100		44.55	-18.10	54.00	54.00	9.45	100	AV	Horizontal
4	3623.500	38.87		-14.88	74.00	35.13	100	64	Peak	Horizontal
5	4529.800	41.21		-12.67	74.00	32.79	100	337	Peak	Horizontal
6	6640.750	42.80		-5.69	74.00	31.20	100	104	Peak	Horizontal
7	8154.100	46.64		-1.32	74.00	27.36	100	342	Peak	Horizontal

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

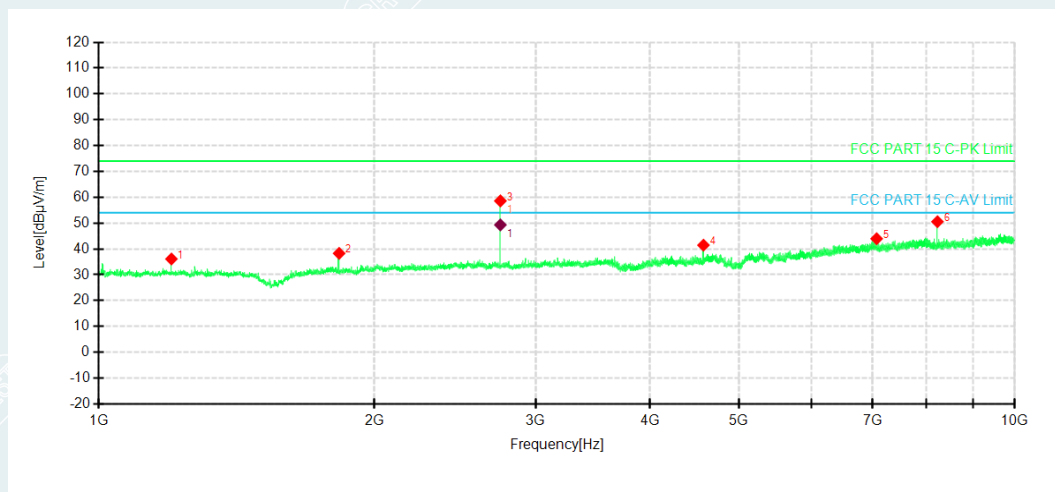


NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1811.800	41.92		-21.36	74.00	32.08	100	147	Peak	Vertical
2	2717.650	65.19		-18.10	74.00	8.81	100	46	Peak	Vertical
3	2717.650		45.02	-18.10	54.00	8.98	146	92.9	AV	Vertical
4	3623.950	39.84		-14.89	74.00	34.16	200	28	Peak	Vertical
5	4529.800	39.69		-12.67	74.00	34.31	100	322	Peak	Vertical
6	6341.950	42.27		-6.71	74.00	31.73	200	42	Peak	Vertical
7	8154.100	44.94		-1.32	74.00	29.06	200	8	Peak	Vertical

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

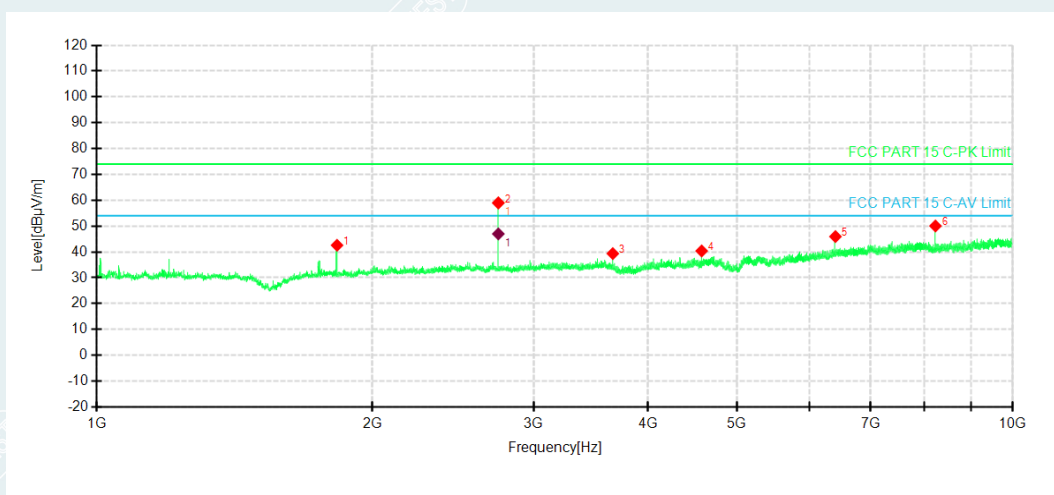
Middle channel 907MHz



NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1200.700	36.10		-23.85	74.00	37.90	100	98	Peak	Horizontal
2	1830.250	38.28		-21.41	74.00	35.72	100	290	Peak	Horizontal
3	2745.100	58.59		-18.22	74.00	15.41	100	286	Peak	Horizontal
4	2745.100		49.30	-18.22	54.00	4.70	100	286	AV	Horizontal
5	4573.450	41.46		-12.63	74.00	32.54	100	8	Peak	Horizontal
6	7067.800	43.96		-3.68	74.00	30.04	200	357	Peak	Horizontal
7	8235.100	50.54		-1.32	74.00	23.46	100	14	Peak	Horizontal

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

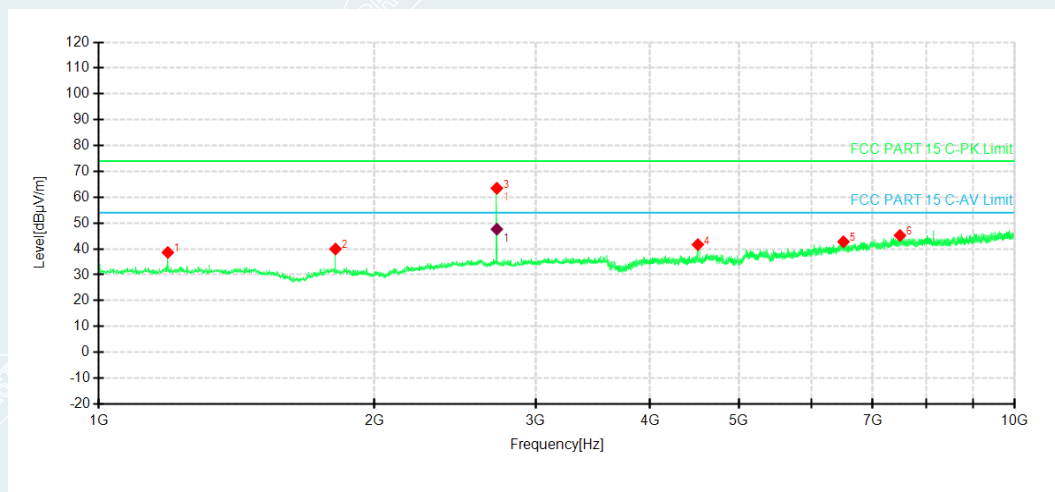


NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1829.800	42.57		-21.36	74.00	18.08	100	240	Peak	Vertical
2	2744.650	58.96		-21.36	74.00	11.91	100	240	Peak	Vertical
3	2744.650		46.99	-18.22	54.00	7.01	100	82	AV	Vertical
4	3659.950	39.35		-18.11	74.00	15.60	100	172	Peak	Vertical
5	4575.250	40.38		-18.11	74.00	10.75	100	172	Peak	Vertical
6	6404.950	45.94		-14.89	74.00	29.14	100	308	Peak	Vertical
7	8235.100	50.04		-12.66	74.00	32.64	100	357	Peak	Vertical

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

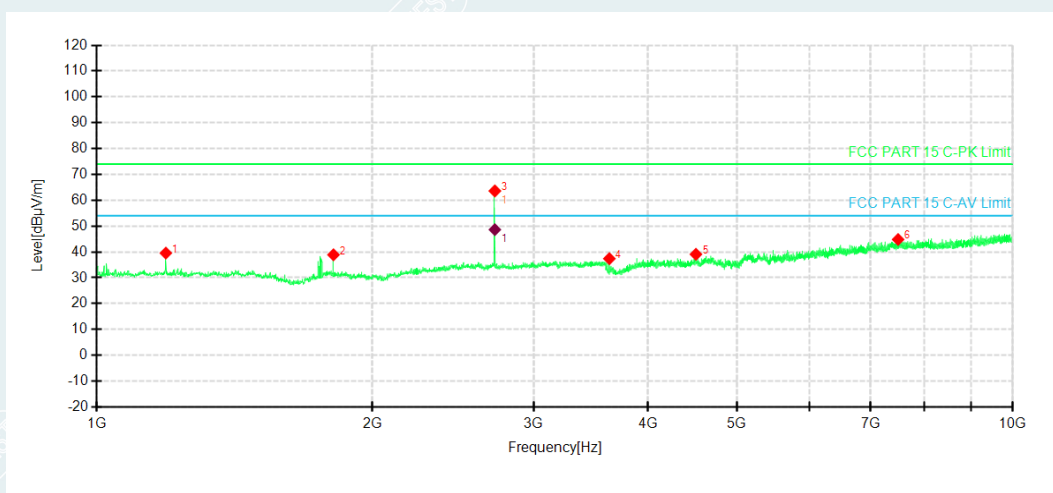
Highest channel 915MHz



NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1189.900	38.61		-23.88	74.00	35.39	100	294	Peak	Horizontal
2	1813.600	39.96		-21.36	74.00	34.04	100	245	Peak	Horizontal
3	2720.800	63.48		-18.11	74.00	10.52	100	127	Peak	Horizontal
4	2720.800		47.63	-18.11	54.00	6.37	100	127	AV	Horizontal
5	4509.100	41.67		-12.68	74.00	32.33	200	171	Peak	Horizontal
6	6502.600	42.78		-5.68	74.00	31.22	200	163	Peak	Horizontal
7	7494.400	45.21		-2.55	74.00	28.79	200	331	Peak	Horizontal

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.



NO.	Freq. [MHz]	Level [dBμV/m]	AV Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1189.900	39.55		-23.88	74.00	34.45	200	22	Peak	Vertical
2	1813.600	38.89		-21.36	74.00	35.11	100	342	Peak	Vertical
3	2720.800	63.60		-18.11	74.00	10.40	100	268	Peak	Vertical
4	2720.800		48.63	-18.11	54.00	5.37	100	268	AV	Vertical
5	3628.000	37.40		-14.89	74.00	36.60	100	134	Peak	Vertical
6	4510.000	39.08		-12.68	74.00	34.92	100	197	Peak	Vertical
7	7497.100	44.81		-2.53	74.00	29.19	200	77	Peak	Vertical

Remark:

- 1 Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.
- 2 According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it's unnecessary to perform an average measurement.
- 3 The IF bandwidth of Receiver between above was 1MHz
- 4 Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain.

BANDEDGE**Lowest channel 906MHz**

NO.	Freq. [MHz]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	900.6300	41.41	-14.23	46.00	4.59	100	50	QP	Horizontal
2	902.0100	36.96	-14.21	46.00	9.04	100	58	QP	Horizontal
3	928.0200	32.88	-13.37	46.00	13.12	200	264	QP	Horizontal

NO.	Freq. [MHz]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	901.2900	42.54	-13.62	46.00	3.46	100	283	QP	Vertical
2	902.0100	37.68	-13.60	46.00	8.32	100	200	QP	Vertical
3	928.0200	34.19	-12.71	46.00	11.81	100	208	QP	Vertical

Highest channel 915MHz

NO.	Freq. [MHz]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	901.4100	36.37	-14.22	46.00	9.63	100	345	QP	Horizontal
2	902.0100	31.54	-14.21	46.00	14.46	200	20	QP	Horizontal
3	928.0200	31.90	-13.37	46.00	14.10	100	71	QP	Horizontal
4	929.3700	36.43	-13.31	46.00	9.57	100	340	QP	Horizontal

NO.	Freq. [MHz]	Level [dB μ V/m]	Factor [dB]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	901.7700	37.11	-13.61	46.00	8.89	200	143	QP	Vertical
2	902.0100	33.48	-13.60	46.00	12.52	100	82	QP	Vertical
3	928.0200	34.28	-12.71	46.00	11.72	100	183	QP	Vertical

Remark:

- 1 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.
- 2 Below 1GHz: factor = Antenna Factor + Cable Loss.

7. 20DB BANDWIDTH

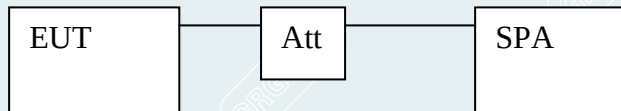
7.1. LIMITS

The test of the item was performed in accordance with the standards §15.215(c).

7.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set the spectrum analyzer as RBW=1%to 3% OBW, VBW=3RBW, Span>Declare bandwidth, Sweep = auto.
- 3) Record 20dB of the bandwidth value.
- 4) Repeat above procedures until all frequencies measured were complete.

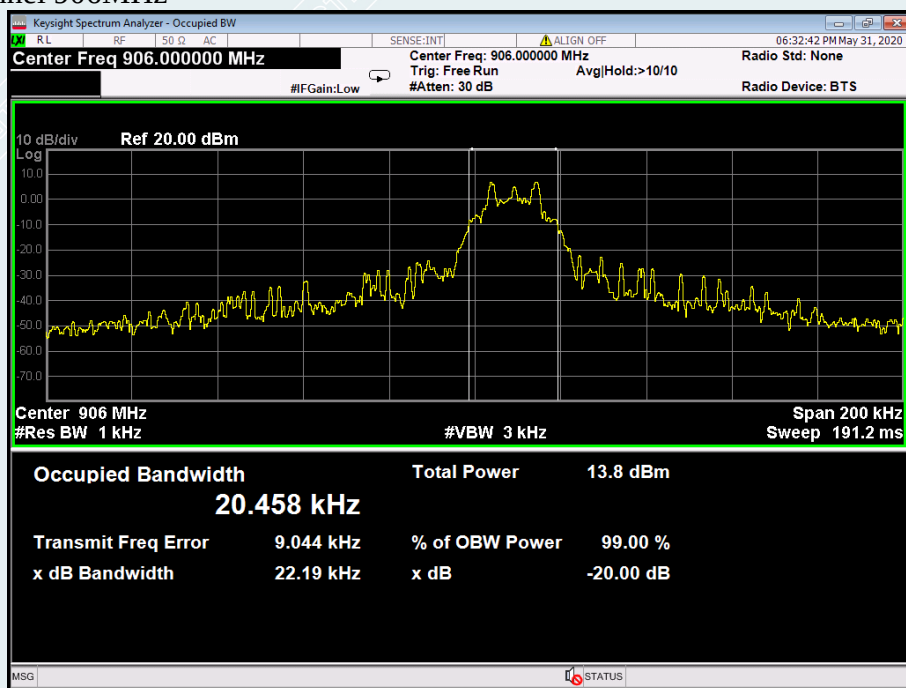
7.3. TEST SETUP



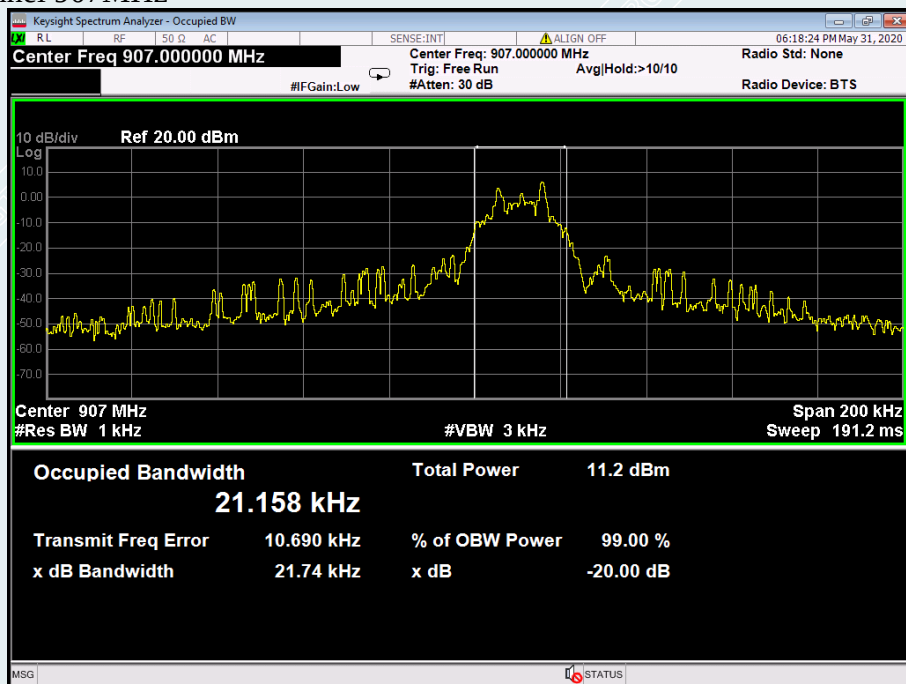
7.4. TEST RESULTS

Channel	Frequency (MHz)	20dB Bandwidth (KHz)	Test Result
Low	906	22.19	PASS
Mid	907	21.74	PASS
High	915	21.84	PASS

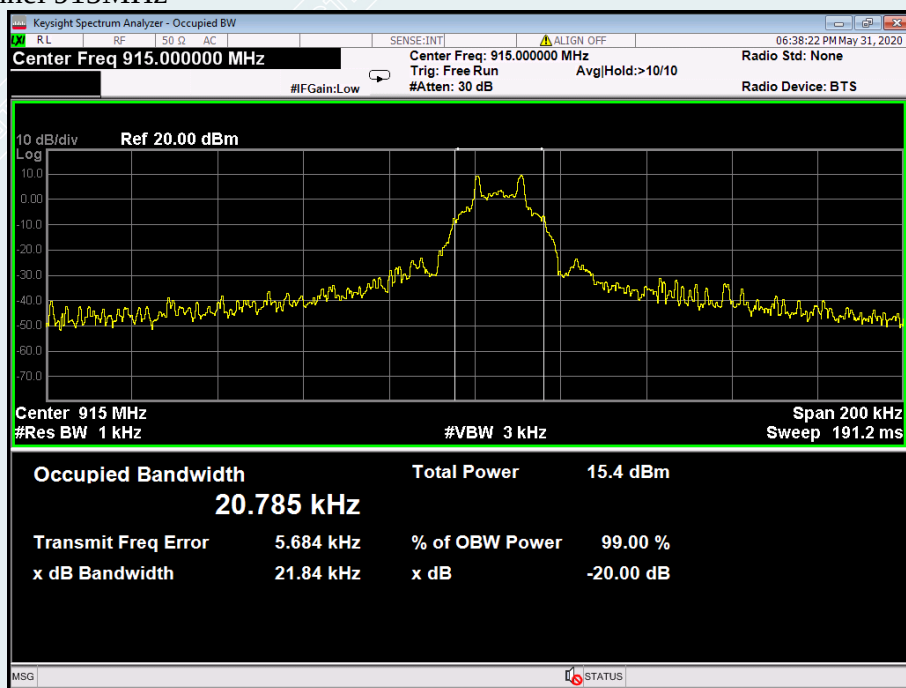
Lowest Channel 906MHz



Lowest Channel 907MHz



Lowest Channel 915MHz



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