Certificate # 2861.01

FCC TEST REPORT

Verified code: 334284

Report No.:	E20200312766501-5	**Application No.:**	E20200312766501
Client:	TianJin HuaLai Technology Co., Ltd.		
Address:	No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China		
Sample Description:	Neos Smart Motion Sensor		
Model:	NS-SMS-US1		
FCC ID:	2ANJHNS-SMS-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:	2020/06/10		
Test Result:	**PASS**		

Prepared By:	**Reviewed By:**	**Approved By:**
Test Engineer	Technical Manager	Manager
Wu Haoting	Wu Chengrong	GUANGZHOU GRG METROLOGY & TEST CO.,LTD. APPROVED(03)

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.

TABLE OF CONTENTS

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
§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:	TianJin HuaLai Technology Co., Ltd.
Address:	No.10 JinPing Road, Ya An Street, Nankai District Tianjin, China

2.2 MANUFACTURER

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

2.3 FACTORY

Name:	TianJin HuaLai 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 Motion Sensor
Model No.:	NS-SMS-US1
Adding Model	/
Trade Name:	
Power supply	3.0V dc powered by 1*3.0V dc type “CR2450” battery.
Frequency List:	906MHz, 906.6MHz, 906.8MHz, 907MHz, 907.4MHz, 909.6MHz, 909.8MHz, 915MHz
Transmit Power:	Peak: 100.53dBuV/m (Max.) Average: 91.06dBuV/m (Max.)
Type of Modulation:	GFSK
Antenna Specification:	Integrated Antenna, -0.32dBi
Temperature Range:	-10 ℃ ~ +50 ℃
Hardware Version:	1.10
Software Version:	2.0.0.12
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 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China

P.C. : 518000

Telephone : 0755-61180008

Fax : 0755-61180008

3.2 ACCREDITATIONS

A2LA	Certificate Number 2861.01

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

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

5. CONDUCTED EMISSIONS

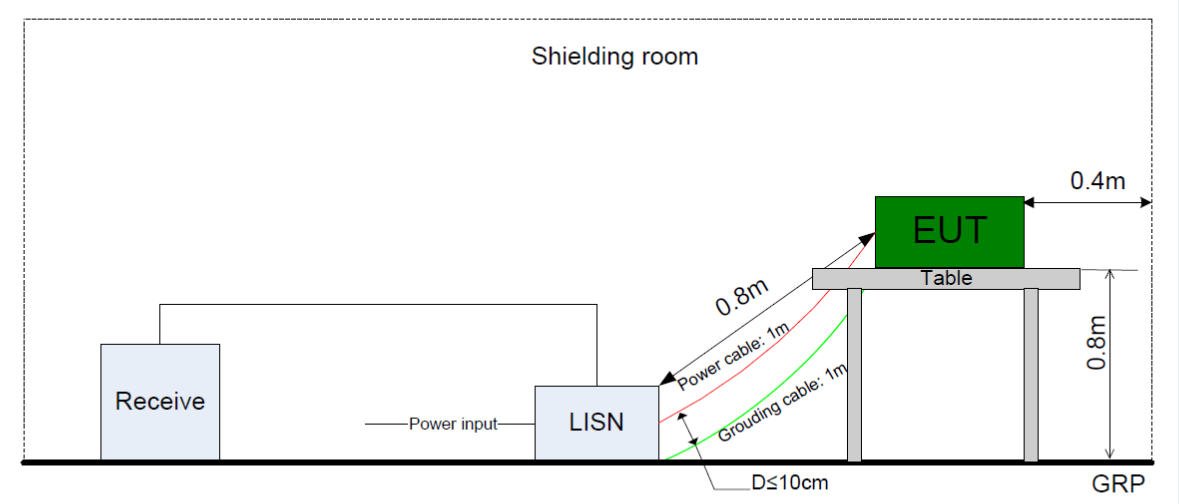
5.1. TEST METHOD:

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of theEUT 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 dBμV	AV Limit dBμV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linear.

Test Result: Not Applicable.

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 (μV/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) (μA/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 (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

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 (±45 °) 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 (±45 °) 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/duty cycle)).

6.3. TEST SETUP

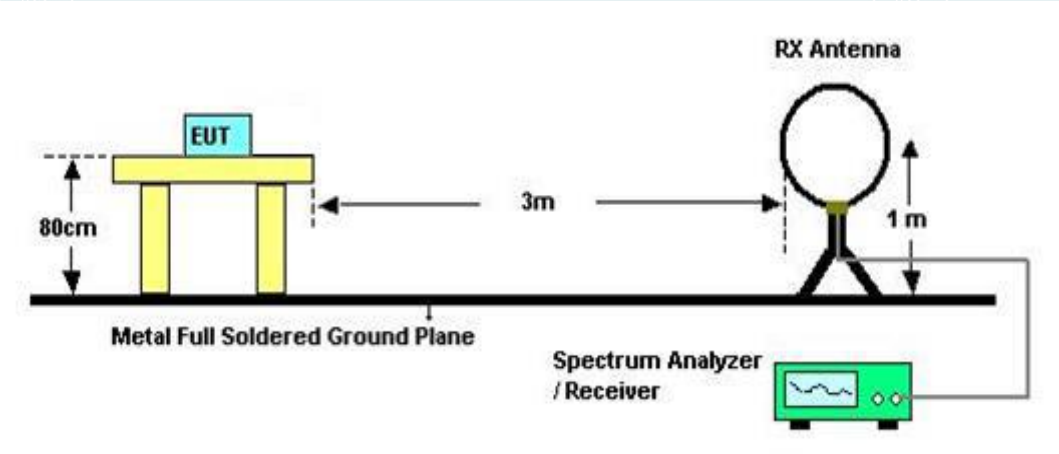


Figure 1.9KHz to 30MHz radiated emissions test configuration

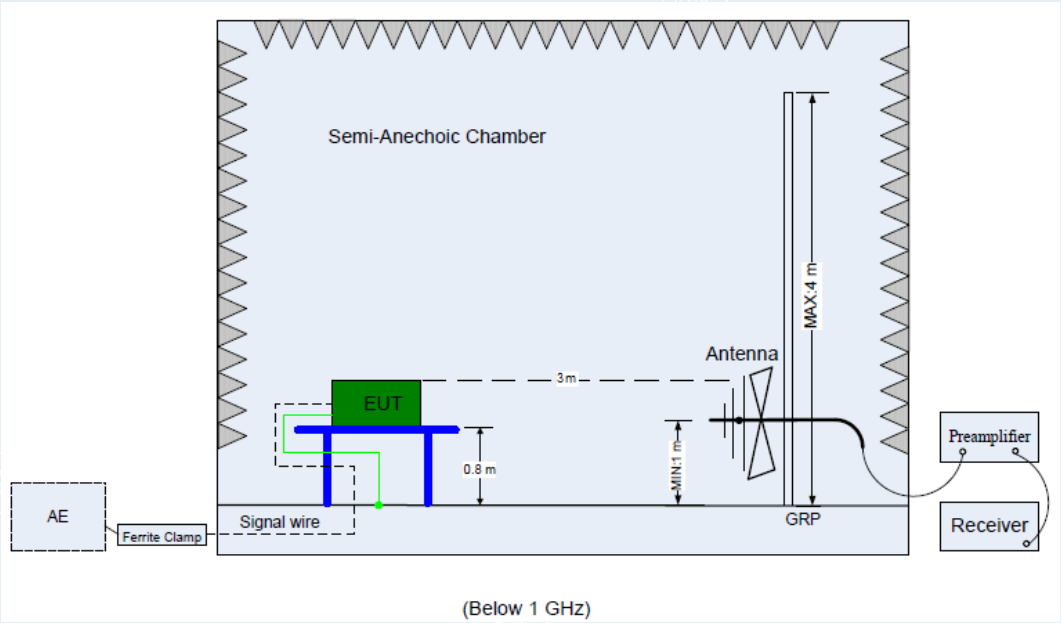


Figure 2. 30MHz to 1GHz radiated emissions test configuration

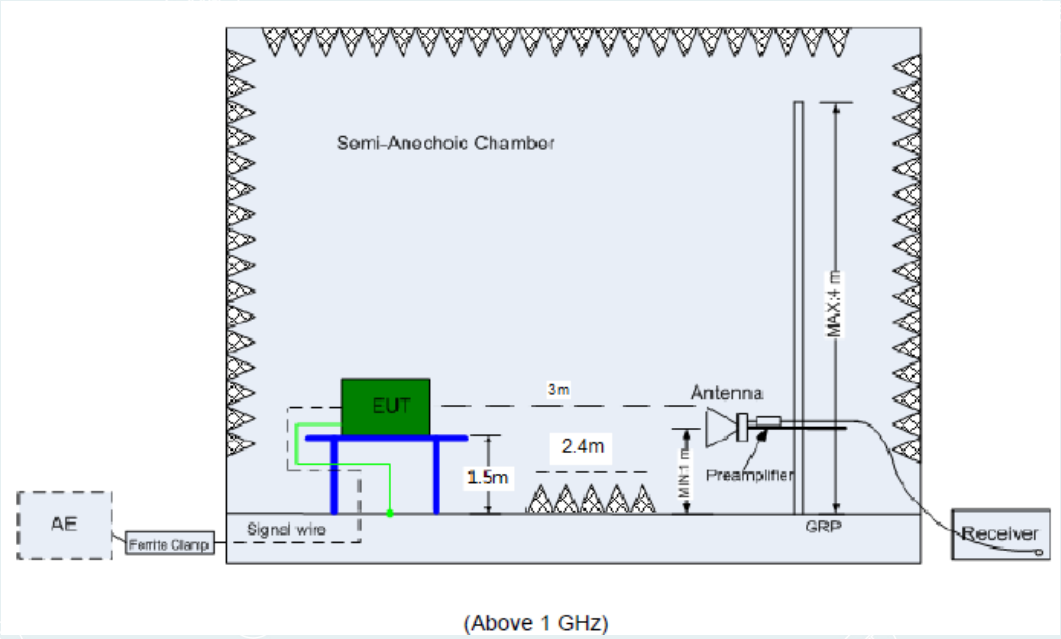


Figure 3. Above 1GHz radiated emissions test configuration

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	109.26	-14.14	95.12	114.00	18.88	Peak	Horizontal
906	94.52	-14.14	80.38	94.00	13.62	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
906	114.06	-13.53	100.53	114.00	13.47	Peak	Vertical
906	104.59	-13.53	91.06	94.00	2.94	AV	Vertical

TX 915MHz

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
907	108.14	-14.13	92.01	114.00	21.99	Peak	Horizontal
907	93.21	-14.13	72.46	94.00	21.54	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
907	114.02	-13.51	100.51	114.00	13.49	Peak	Vertical
907	86.59	-13.51	82.61	94.00	11.39	AV	Vertical

TX 915MHz

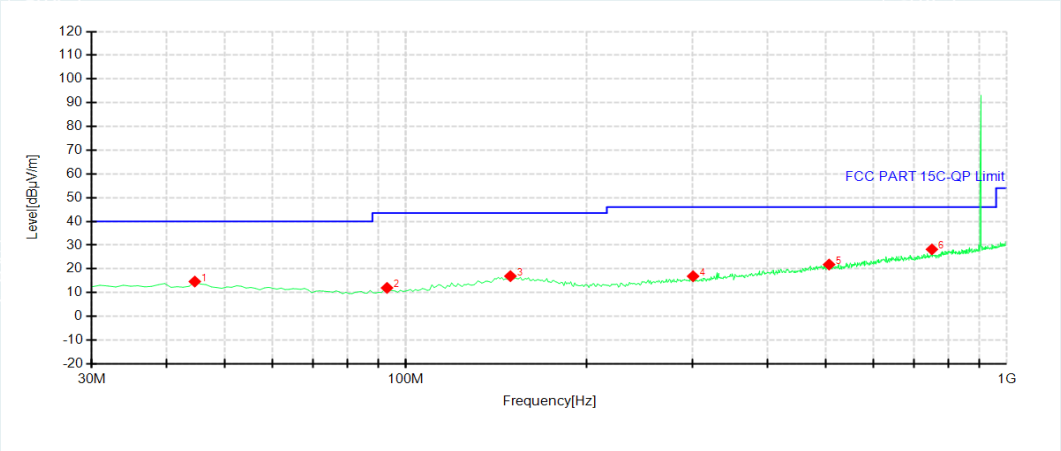
Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
915	109.67	-13.88	95.79	114.00	18.21	Peak	Horizontal
915	93.21	-13.88	79.33	94.00	14.67	AV	Horizontal

Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
915	113.47	-13.25	100.22	114.00	13.78	Peak	Vertical
915	103.78	-13.25	90.53	94.00	3.47	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	44.5500	14.66	-29.78	40.00	25.34	100	3	QP	Horizontal
2	93.0500	11.99	-32.04	43.50	31.51	200	85	QP	Horizontal
3	149.3100	16.94	-26.35	43.50	26.56	200	213	QP	Horizontal
4	300.6300	16.90	-26.63	46.00	29.10	200	151	QP	Horizontal
5	506.2700	21.84	-21.10	46.00	24.16	200	50	QP	Horizontal
6	750.7100	28.21	-15.76	46.00	17.79	100	360	QP	Horizontal

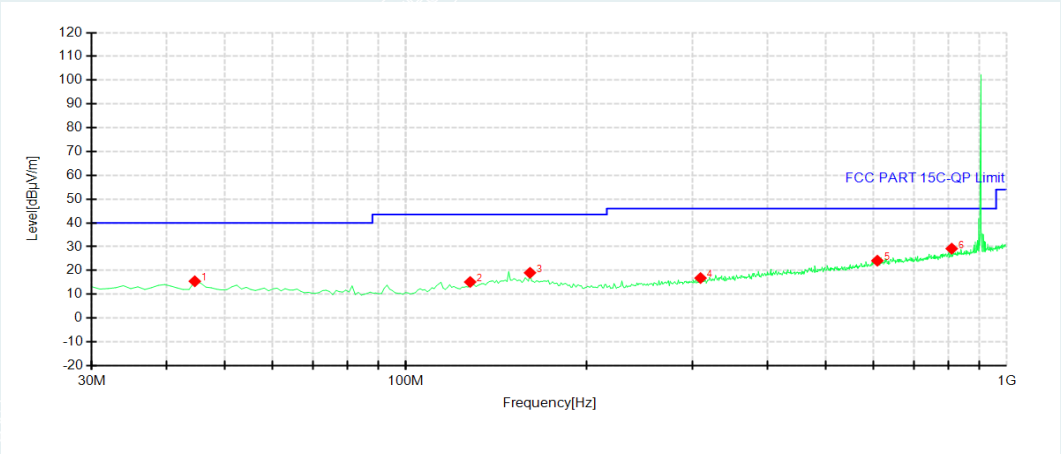
Remark:

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	44.5500	15.46	-29.78	40.00	24.54	100	27	QP	Vertical
2	127.9700	15.16	-29.10	43.50	28.34	200	269	QP	Vertical
3	160.9500	19.04	-26.65	43.50	24.46	100	3	QP	Vertical
4	309.3600	16.81	-26.42	46.00	29.19	200	325	QP	Vertical
5	609.0900	24.11	-18.60	46.00	21.89	200	210	QP	Vertical
6	809.8800	29.18	-14.97	46.00	16.82	100	266	QP	Vertical

Remark:

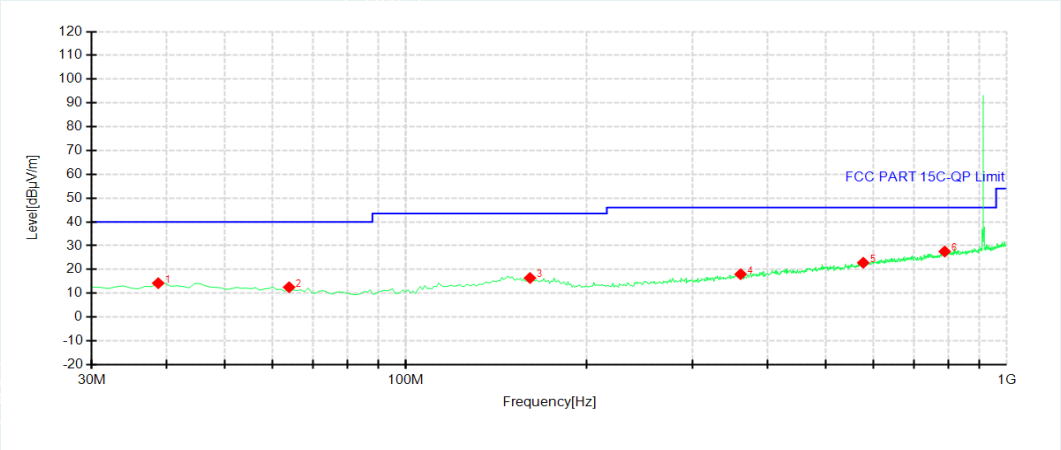
1 *No emission found between lowest internal used/generated frequency to 30MHz.*

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	38.7300	14.25	-29.67	40.00	25.75	100	162	QP	Horizontal
2	63.9500	12.54	-30.97	40.00	27.46	200	21	QP	Horizontal
3	160.9500	16.42	-26.65	43.50	27.08	200	146	QP	Horizontal
4	360.7700	18.02	-24.70	46.00	27.98	100	360	QP	Horizontal
5	577.0800	22.84	-19.71	46.00	23.16	100	266	QP	Horizontal
6	788.5400	27.55	-15.10	46.00	18.45	100	258	QP	Horizontal

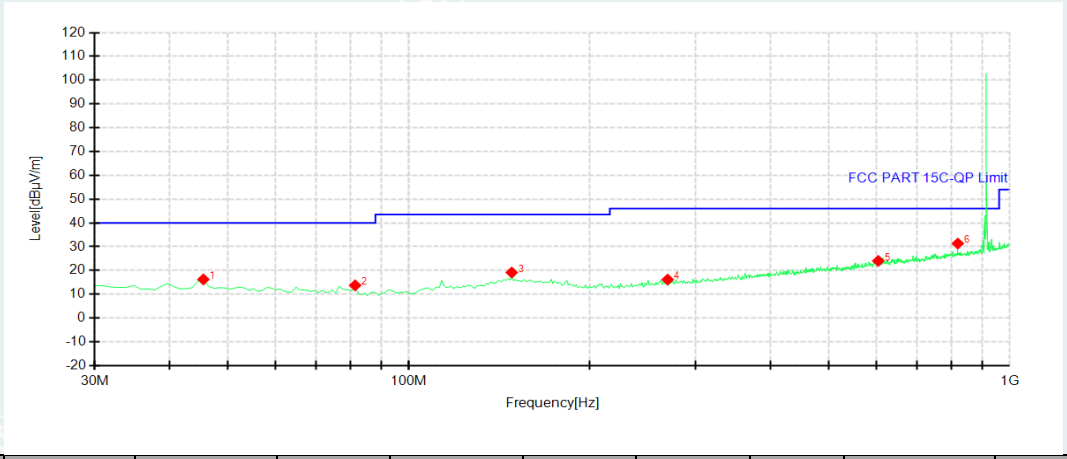
Remark:

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	45.5200	16.25	-29.82	40.00	23.75	200	264	QP	Vertical
2	81.4100	13.74	-32.48	40.00	26.26	200	142	QP	Vertical
3	148.3400	19.15	-26.43	43.50	24.35	100	307	QP	Vertical
4	269.5900	16.17	-27.24	46.00	29.83	200	14	QP	Vertical
5	604.2400	24.02	-18.79	46.00	21.98	200	176	QP	Vertical
6	819.5800	31.33	-14.78	46.00	14.67	100	19	QP	Vertical

Remark:

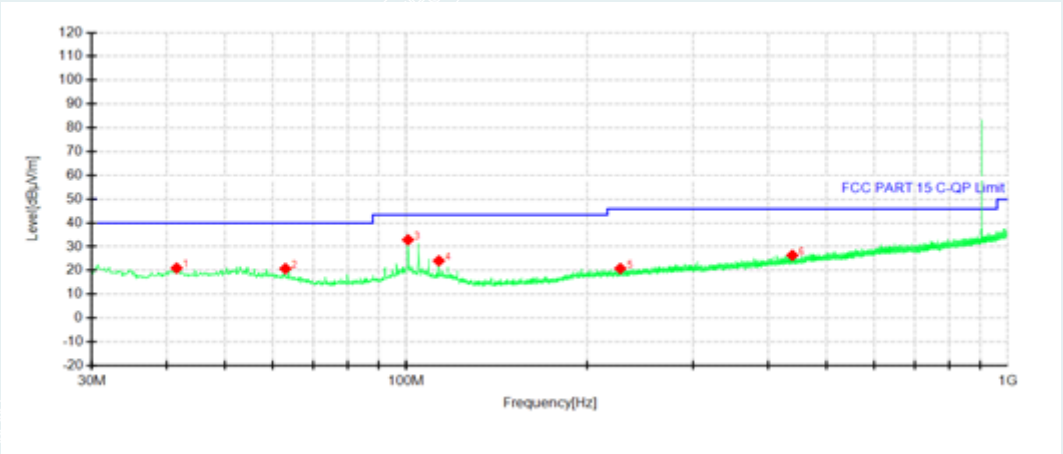
1 *No emission found between lowest internal used/generated frequency to 30MHz.*

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	41.5430	20.97	-29.53	40.00	19.03	100	257	QP	Horizontal
2	62.9800	20.76	-30.43	40.00	19.24	150	41	QP	Horizontal
3	100.7130	32.88	-29.89	43.50	10.62	150	360	QP	Horizontal
4	113.3230	24.05	-30.28	43.50	19.45	100	238	QP	Horizontal
5	227.0070	20.83	-28.17	46.00	25.17	150	212	QP	Horizontal
6	438.6610	26.36	-22.49	46.00	19.64	150	45	QP	Horizontal

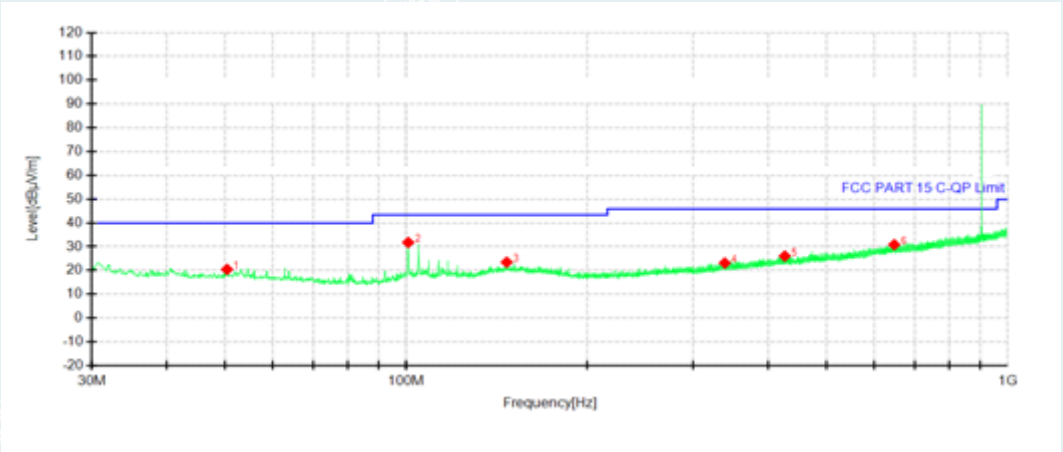
Remark:

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	50.3700	20.43	-30.01	40.00	19.57	150	310	QP	Vertical
2	100.8100	31.77	-31.67	43.50	11.73	150	113	QP	Vertical
3	146.9820	23.46	-26.55	43.50	20.04	100	349	QP	Vertical
4	338.6540	23.13	-25.31	46.00	22.87	100	41	QP	Vertical
5	426.0510	26.05	-22.70	46.00	19.95	100	199	QP	Vertical
6	647.6960	30.84	-17.78	46.00	15.16	100	0	QP	Vertical

Remark:

1 *No emission found between lowest internal used/generated frequency to 30MHz.*

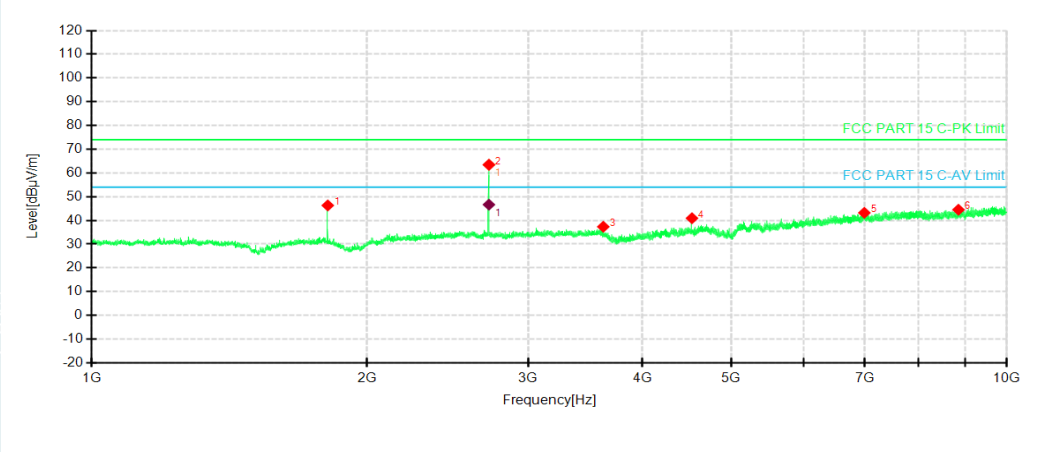
2 *Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Quasi-peak detector mode.*

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]	PK Level [dBµV/m]	AV Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1811.800	46.31		-21.36	74.00	27.69	200	171	Peak	Horizontal
2	2717.650	63.45		-18.10	74.00	10.55	100	214	Peak	Horizontal
3	2717.650		46.64	-18.10	54.00	7.36	100	214	AV	Horizontal
4	3623.950	37.33		-14.89	74.00	36.67	200	8	Peak	Horizontal
5	4529.800	40.92		-12.67	74.00	33.08	100	148	Peak	Horizontal
6	6988.600	43.20		-3.98	74.00	30.80	200	131	Peak	Horizontal
7	8856.100	44.50		-0.17	74.00	29.50	200	166	Peak	Horizontal

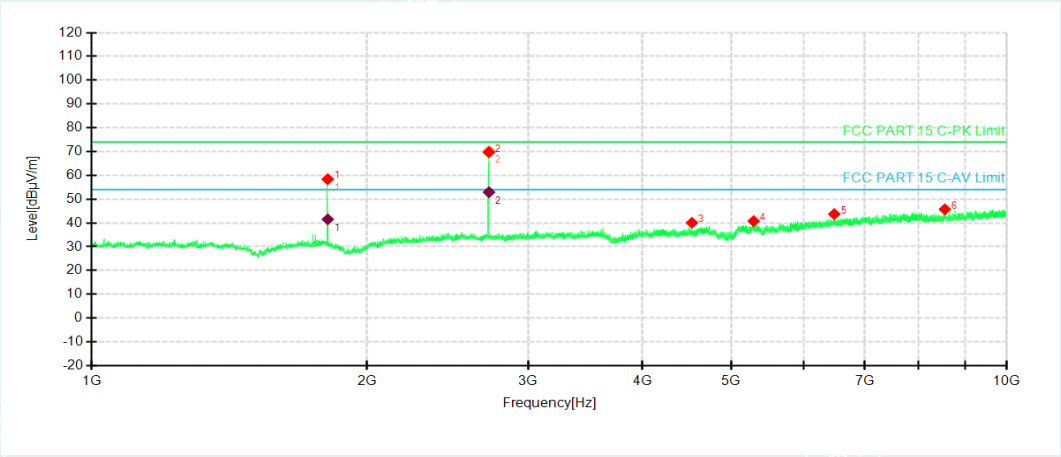
Remark:

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	58.36		-21.36	74.00	15.64	100	171	Peak	Vertical
2	1811.800		41.48	-21.36	54.00	12.52	100	171	AV	Vertical
3	2717.650	69.68		-18.10	74.00	4.32	200	253	Peak	Vertical
4			52.90	-18.10	54.00	1.10	166	187	AV	Vertical
5	4528.900	40.06		-12.67	74.00	33.94	100	297	Peak	Vertical
6	5290.300	40.75		-9.57	74.00	33.25	100	302	Peak	Vertical
7	6479.650	43.69		-5.83	74.00	30.31	100	70	Peak	Vertical
8	8559.100	45.71		-0.55	74.00	28.29	100	242	Peak	Vertical

Remark:

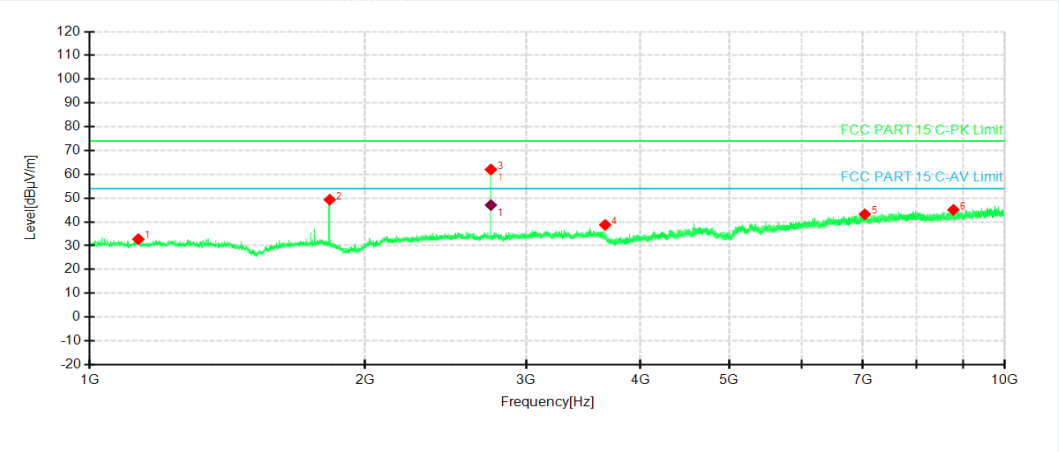
1 *Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.*

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	1130.500	32.75		-24.04	74.00	41.25	100	174	Peak	Horizontal
2	1829.800	49.30		-21.41	74.00	24.70	200	253	Peak	Horizontal
3	1829.800		47.06	-21.41	54.00	6.94	200	253	AV	Horizontal
4	2745.100	61.99		-18.22	74.00	12.01	100	218	Peak	Horizontal
5	3659.950	38.73		-14.97	74.00	35.27	200	133	Peak	Horizontal
6	7032.700	43.19		-3.81	74.00	30.81	100	306	Peak	Horizontal
7	8788.600	45.07		-0.37	74.00	28.93	100	199	Peak	Horizontal

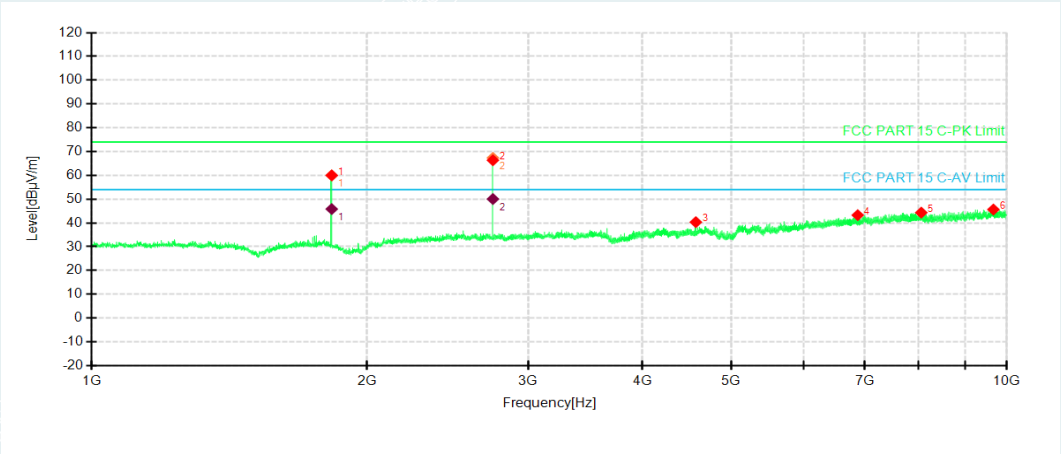
Remark:

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]	QP Level [dBµV/m]	AV Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	1829.800	59.98		-21.41	74.00	14.02	200	170	Peak	Vertical
	1829.800		45.82	-21.41	54.00	8.18	200	170	AV	Vertical
2	2745.100	66.33		-18.22	74.00	7.67	200	301	Peak	Vertical
	2745.100		50.03	-18.22	54.00	3.97	200	301	AV	Vertical
3	4573.900	40.31		-12.63	74.00	33.69	100	215	Peak	Vertical
4	6873.400	43.25		-4.60	74.00	30.75	100	170	Peak	Vertical
5	8065.000	44.33		-1.40	74.00	29.67	200	64	Peak	Vertical
6	9670.150	45.61		2.72	74.00	28.39	100	266	Peak	Vertical

Remark:

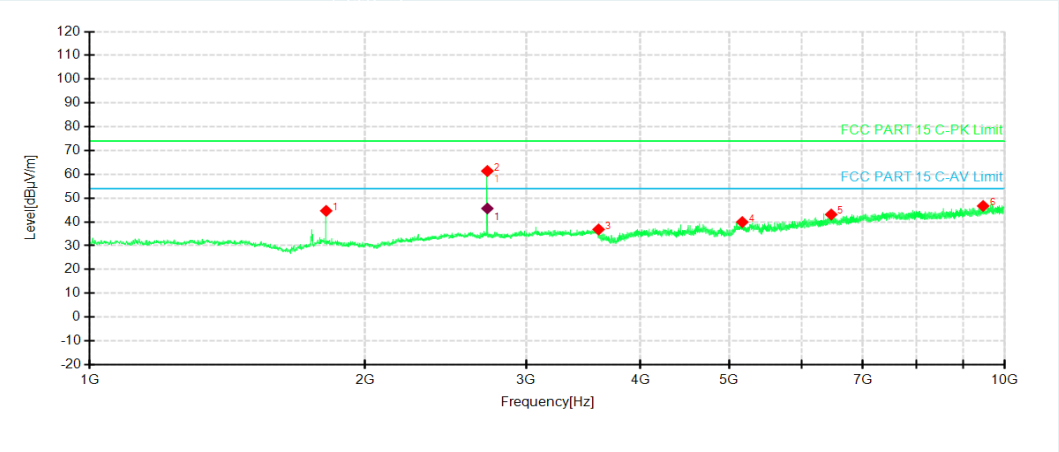
1 *Radiated emissions measured in frequency range from 1GHz – 10GHz were made with an instrument using Peak/AV detector mode.*

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	1813.600	44.65		-21.36	74.00	29.35	100	89	Peak	Horizontal
2	2720.800	61.37		-18.11	74.00	12.63	100	208	Peak	Horizontal
3	2720.800		45.63	-18.11	54.00	8.37	100	208	AV	Horizontal
4	3599.200	36.83		-14.84	74.00	37.17	200	346	Peak	Horizontal
5	5167.000	39.93		-8.73	74.00	34.07	200	18	Peak	Horizontal
6	6462.100	43.11		-5.97	74.00	30.89	100	182	Peak	Horizontal
7	9470.800	46.71		1.77	74.00	27.29	200	33	Peak	Horizontal

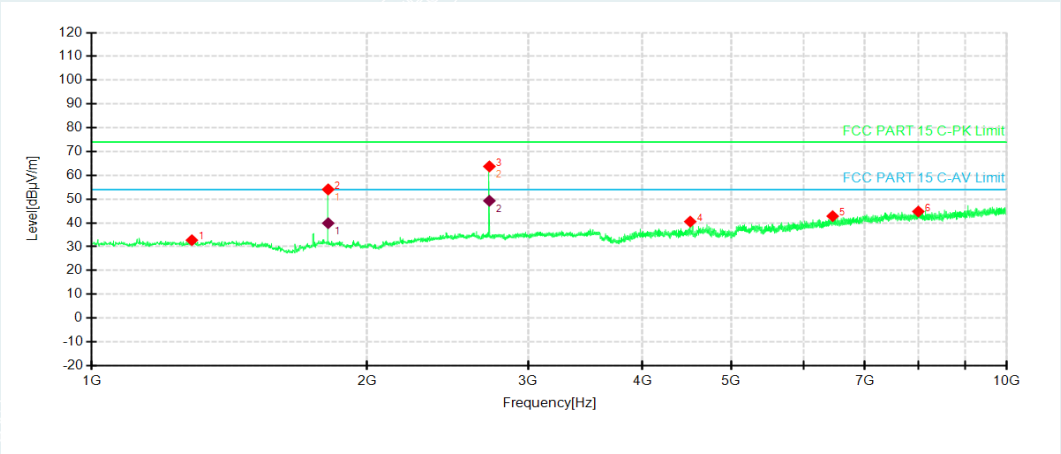
Remark:

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	1813.600	44.65		-21.36	74.00	29.35	100	89	Peak	Vertical
2	1813.600		49.30	-21.36	54.00	4.70	100	89	AV	Vertical
3	2720.800	61.37		-18.11	74.00	12.63	100	208	Peak	Vertical
4	2720.800		45.63	-18.11	54.00	8.37	100	208	AV	Vertical
5	3599.200	36.83		-14.84	74.00	37.17	200	346	Peak	Vertical
6	5167.000	39.93		-8.73	74.00	34.07	200	18	Peak	Vertical
7	6462.100	43.11		-5.97	74.00	30.89	100	182	Peak	Vertical
8	9470.800	46.71		1.77	74.00	27.29	200	33	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 [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	901.6500	35.71	-14.21	46.00	10.29	100	115	QP	Horizontal
2	928.0200	32.38	-13.37	46.00	13.62	200	151	QP	Horizontal

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	901.4700	39.84	-13.61	46.00	6.16	200	158	QP	Vertical
2	902.0100	35.22	-13.60	46.00	10.78	200	30	QP	Vertical
4	928.0200	33.43	-12.71	46.00	12.57	200	100	QP	Vertical
5	929.0700	34.85	-12.67	46.00	11.15	100	352	QP	Vertical

Highest channel 915MHz

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	902.0100	32.18	-14.21	46.00	13.82	100	267	QP	Horizontal
3	928.0200	33.02	-13.37	46.00	12.98	200	195	QP	Horizontal

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity
1	902.0100	31.47	-14.21	46.00	14.53	100	310	QP	Vertical
2	928.0200	33.08	-13.37	46.00	12.92	100	161	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

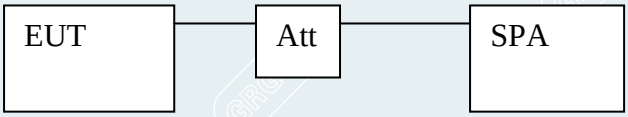
7.1. LIMITS

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.

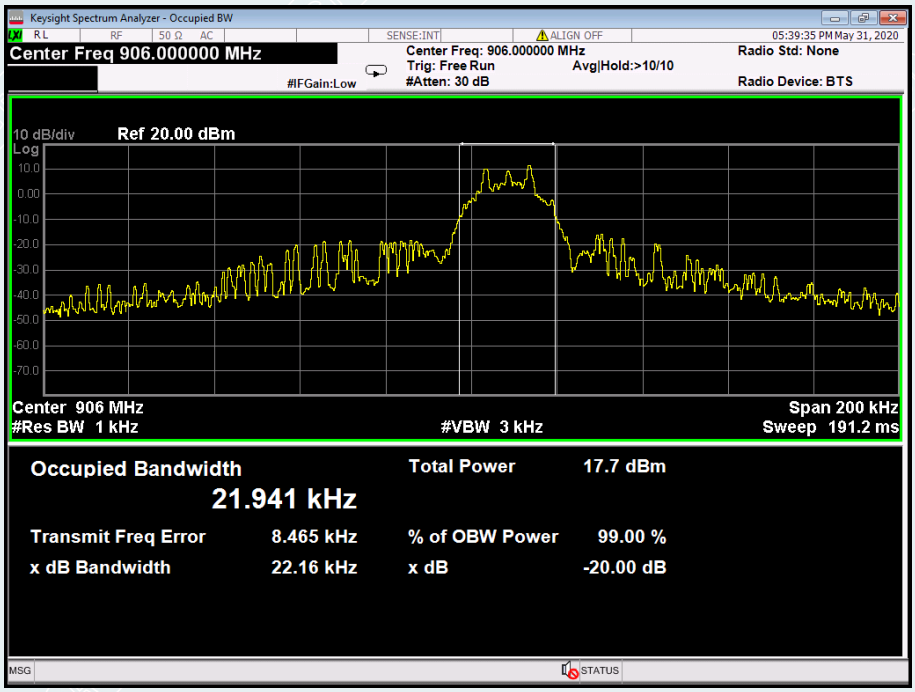
7.3. TEST SETUP



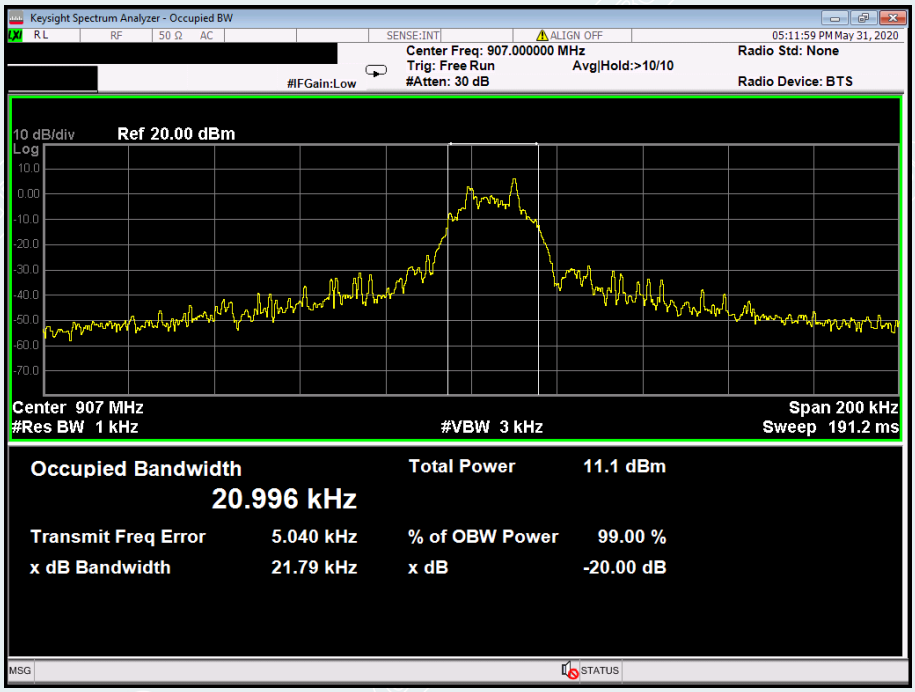
7.4. TEST RESULTS

Channel	Frequency (MHz)	20dB Bandwidth (KHz)	Test Result
Low	906	22.16	PASS
Mid	907	21.79	PASS
High	915	21.37	PASS

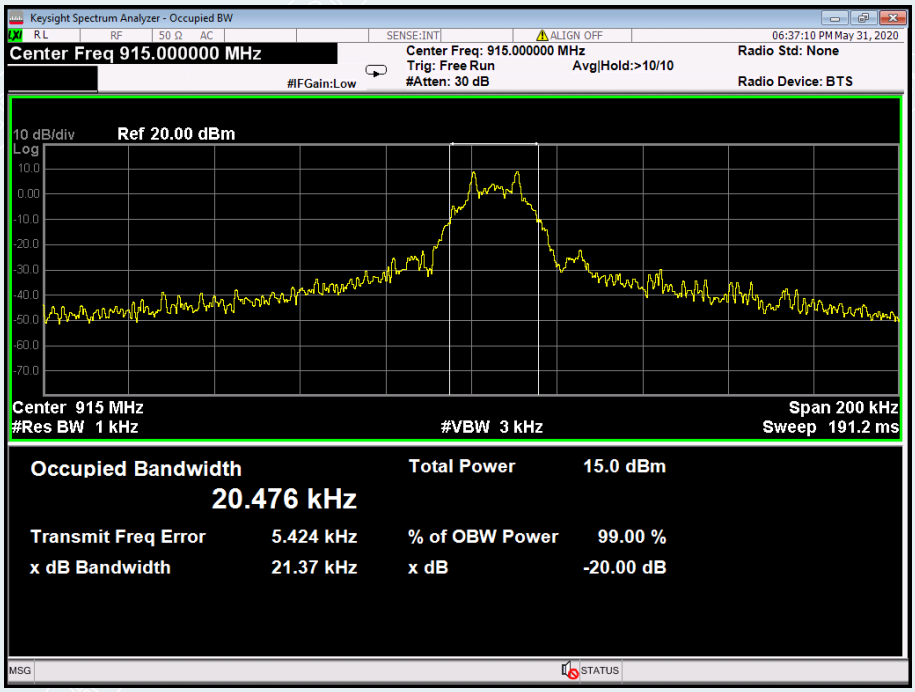
Lowest Channel 906MHz



Lowest Channel 907



Lowest Channel 915MHz



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