Radio Test Report

FCC ID: 2A233-AYANEO01

Change II

Report No.	:	TB-FCC186115
Applicant	:	Shenzhen Konkr Technology Co., Ltd
Equipment Under Test (EUT)		
EUT Name	:	tablet computer
Model No.	:	AYANEO NEXT
Series Model No.	:	AYANEO 2021, AYANEO 2021 Pro, AYANEO B.Duck Limited Edition, AYANEO Pro B.DUCK Limited Edition
Brand Name	:	AYANEO
Sample ID	:	20211222-08-01& 20211222-08-02
Receipt Date	:	2021-12-29
Test Date	:	2021-12-30 to 2022-02-10
Issue Date	:	2022-02-14
Standards	:	FCC Part 15 Subpart E 15.407
Test Method	:	ANSI C63.10: 2013 KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Conclusions	:	**PASS** In the configuration tested, the EUT complied with the standards specified above.

Witness Engineer	:	Wade. LV Wade. Lv
Engineer Supervisor	:	Ivan Su Ivan Su
Engineer Manager	:	Ray Lai Ray Lai

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Contents

Revision History

Report No.	Version	Description	Issued Date
TB-FCC186115	Rev.01	Initial issue of report	2022-02-14

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen Konkr Technology Co., Ltd
Address	:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China
Manufacturer	:	Shenzhen Konkr Technology Co., Ltd
Address	:	Room 215, Building 22, Maker Town, No. 4109, Liuxian Avenue, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	tablet computer	
Models No.	:	AYANEO NEXT, AYANEO 2021, AYANEO 2021 Pro, AYANEO B.Duck Limited Edition, AYANEO Pro B.DUCK Limited Edition	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name.	
Product Description	:	Operation Frequency: U-NII-1: 5180MHz~5240MHz, U-NII-3: 5745MHz~5825MHz	
		Antenna Gain:	FPC0 antenna, Maximum Gain: 0.73dBi FPC1 antenna, Maximum Gain: 0.73dBi
		Modulation Type:	802.11a: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11n: OFDM(QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM(QPSK, BPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK,16QAM, 64QAM, 256QAM, 1024QAM)
		Bit Rate of Transmitter:	5GHz: Up to 1201Mbps (2*2 80MHz)
Power Rating	:	Input: AC 100-240V, 50/60Hz, 1.5A(MAX) Output: 5V3A, 9V3A, 12V3A, 15V3A, 20V3A DC 11.55V by 4100mAh/47.4Wh Rechargeable Li-ion Battery	
Software Version	:	----	
Hardware Version	:	----	

Remark:

(1) The antenna gain and adapter provided by the applicant, the verified for the RF conduction test provided by TOBY test lab.

(2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(3) Antenna information provided by the applicant.

(4) Channel List:

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5180~5240MHz **(U-NII-1)**	36	5180 MHz	44	5220 MHz
	38	5190 MHz	46	5230 MHz
	40	5200 MHz	48	5240 MHz
	42	5210 MHz		
For 20 MHz Bandwidth, use channel 36, 40, 44, 48. For 40 MHz Bandwidth, use channel 38, 46. For 80 MHz Bandwidth, use channel 42.				

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
5745~5825MHz **(U-NII-3)**	149	5745 MHz	157	5785 MHz
	151	5755 MHz	159	5795 MHz
	153	5765 MHz	161	5805 MHz
	155	5775 MHz	165	5825 MHz
For 20 MHz Bandwidth, use channel 149, 153, 157, 161, 165. For 40 MHz Bandwidth, use channel 151, 159. For 80 MHz Bandwidth, use channel 155.				

(5) Antenna information

Mode	TX Antenna (s)	Remark
802.11a	2	ANT. 0+ ANT. 1
802.11n(HT20)	2	ANT. 0+ ANT. 1
802.11ac(VHT20)	2	ANT. 0+ ANT. 1
802.11ac(VHT40)	2	ANT. 0+ ANT. 1
802.11n(HT40)	2	ANT. 0+ ANT. 1
802.11ac(VHT80)	2	ANT. 0+ ANT. 1
802.11ax(HE20)	2	ANT. 0+ ANT. 1
802.11ax(HE40)	2	ANT. 0+ ANT. 1
802.11ax(HE80)	2	ANT. 0+ ANT. 1

Antenna	Brand	Model Name	Type	Antenna Gain(dBi)
ANT. 0	N/A	N/A	FPC	0.73
ANT. 1	N/A	N/A	FPC	0.73

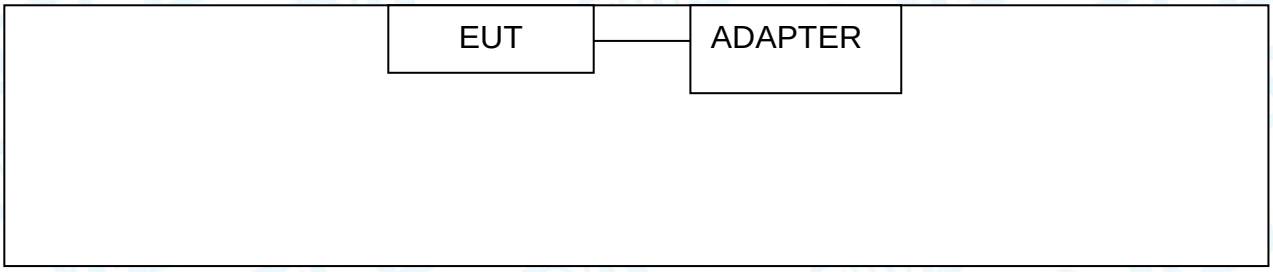
Note:

For MIMO mode: Directional Gain=ANT. Gain+10*LOG(NANT) =3.74dBi

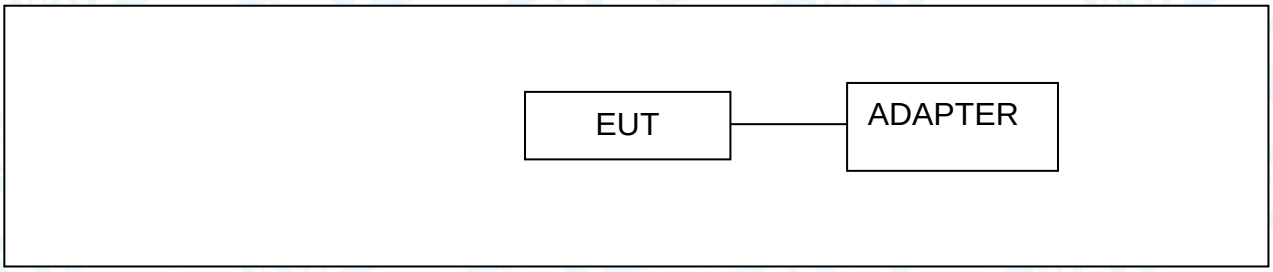
5G working with 802.11a/n/ac/ax has MIMO mode.

1.3 Block Diagram Showing the Configuration of System Tested

Conducted Test



Radiated Test



1.4 Description of Support Units

Equipment Information				
Name	**Model**	**FCC ID/SDOC**	**Manufacturer**	**Used "√"**
Adapter	S-TR-140	----	SHELL	√
Cable Information				
Number	**Shielded Type**	**Ferrite Core**	**Length**	**Note**
Cable 1	----	----	0.8M	----

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	**Description**
Mode 1	TX a Mode(5180MHz)
For Radiated Test Below 1GHz	
Final Test Mode	**Description**
Mode 2	TX a Mode(5180MHz)

For Radiated Above 1GHz and RF Conducted Test		
Test Band	**Final Test Mode**	**Description**
U-NII-1	Mode 3	TX Mode 802.11a Mode Channel 36/40/48
	Mode 4	TX Mode 802.11n(HT20) Mode Channel 36/40/48
	Mode 5	TX Mode 802.11ac(VHT20) Mode Channel 36/40/48
	Mode 6	TX Mode 802.11n(HT40) Mode Channel 38/46
	Mode 7	TX Mode 802.11ac(VHT40) Mode Channel 38/46
	Mode 8	TX Mode 802.11ac(VHT80) Mode Channel 42
	Mode 9	TX Mode 802.11ax(HE20) Mode Channel 36/40/48
	Mode 10	TX Mode 802.11ax(HE40) Mode Channel 38/46
	Mode 11	TX Mode 802.11ax(HE80) Mode Channel 42
U-NII-3	Mode 12	TX Mode 802.11a Mode Channel 149/157/165
	Mode 13	TX Mode 802.11n(HT20) Mode Channel 149/157/165
	Mode 14	TX Mode 802.11ac(vHT20) Mode Channel 149/157/165
	Mode 15	TX Mode 802.11n(HT40) Mode Channel 151/159
	Mode 16	TX Mode 802.11ac(VHT40) Mode Channel 151/159
	Mode 17	TX Mode 802.11ac(VHT80) Mode Channel 155
	Mode 18	TX Mode 802.11ax(HE20) Mode Channel 149/157/165
	Mode 19	TX Mode 802.11ax(HE40) Mode Channel 151/159
	Mode 20	TX Mode 802.11ax(HE80) Mode Channel 155

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

802.11a Mode: OFDM (6 Mbps)
802.11n (HT20) Mode: MCS 0
802.11n (HT40) Mode: MCS 0
802.11ac(VHT20) Mode: MCS 0/ Nss1
802.11ac(VHT40) Mode: MCS 0/ Nss1
802.11ac(VHT80) Mode: MCS 0/ Nss1
802.11ax(HE20) Mode: MCS 0/ Nss1
802.11ax(HE40) Mode: MCS 0/ Nss1
802.11ax(HE80) Mode: MCS 0/ Nss1

(2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.

(3) The EUT is considered a portable unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software: QATool_Dbg		
U-NII-1		
Mode	Frequency (MHz)	Parameters
802.11a	5180	5
	5200	5
	5240	5
802.11n(HT20)	5180	10
	5200	10
	5240	10
802.11ac(VHT20)	5180	10
	5200	10
	5240	10
802.11n(HT40)	5190	10
	5230	10
802.11ac(VHT40)	5190	10
	5230	10
802.11ac(VHT80)	5210	10
802.11ax(HE20)	5180	10
	5200	10
	5240	10
802.11ax(HE40)	5190	10
	5230	10
802.11ax(HE80)	5210	10

U-NII-3		
Mode	**Frequency (MHz)**	**Parameters**
802.11a	**5745**	**5**
	5785	**5**
	5825	**5**
802.11n(HT20)	**5745**	**10**
	5785	**10**
	5825	**10**
802.11ac(VHT20)	**5745**	**10**
	5785	**10**
	5825	**10**
802.11n(HT40)	**5755**	**10**
	5795	**10**
802.11ac(VHT40)	**5755**	**10**
	5795	**10**
802.11ac(VHT80)	**5775**	**10**
802.11ax(HE20)	**5745**	**10**
	5785	**10**
	5825	**10**
802.11ax(HE40)	**5755**	**10**
	5795	**10**
802.11ax(HE80)	**5775**	**10**

1.7 Measurement Uncertainty

The reported uncertainty of measurement y±U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

Test Item	**Parameters**	**Expanded Uncertainty (U_{Lab})**
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

2. Test Summary

Standard Section FCC	Test Item	Test Sample(s)	Judgment	Remark
FCC 15.207(a)	Conducted Emission	20211222-08-01	PASS	N/A
FCC 15.209 & 15.407(b)	Radiated Unwanted Emissions	20211222-08-01	PASS	**Note(3)**
FCC 15.203	Antenna Requirement	20211222-08-02	PASS	N/A
FCC 15.407(a)	-26dB Emission Bandwidth	/	N/A	**Note(2)**
FCC 15.407(a)	99% Occupied Bandwidth	/	N/A	**Note(2)**
FCC 15.407(e)	-6dB Min Emission Bandwidth	/	N/A	**Note(2)**
FCC 15.407(a)	Maximum Conducted Output Power	/	N/A	**Note(2)**
FCC 15.407(a)	Power Spectral Density	/	N/A	**Note(2)**
FCC 15.407(b)& 15.205	Emissions in Restricted Bands	/	N/A	**Note(2)**
FCC 15.407(b)&15.209	Conducted Unwanted Emissions	/	N/A	**Note(2)**
FCC 15.407(g)	Frequency Stability	/	N/A	**Note(2)**
/	On Time and Duty Cycle	/	/	**Note(2)**

Note:

(1) N/A is an abbreviation for Not Applicable.

(2) This report is Class II change report for the original equipment have changed, the transmitter module itself has not changed. More information about the test data please refer to the original test report.

(3) As there is no change regard RF transmitter portion and Antenna assembly, the change will not have effect on Radiated emission above 1GHz by judging for experience, thus testing is performed up to 1GHz only.

3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0
RF Test System	JS1120	Tonscend	V2.6.88.0336

4. Test Equipment

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 02, 2021	Jul. 01, 2022
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 02, 2021	Jul. 01, 2022
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 02, 2021	Jul. 01, 2022
LISN	Rohde & Schwarz	ENV216	101131	Jul. 02, 2021	Jul. 01, 2022
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 02, 2021	Jul. 01, 2022
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 02, 2021	Jul. 01, 2022
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.01, 2020	Feb. 28, 2022
Horn Antenna	ETS-LINDGREN	BBHA 9170	BBHA9170582	Mar.01, 2020	Feb. 28, 2022
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jul. 06, 2021	Jul. 05, 2022
Pre-amplifier	Sonoma	310N	185903	Feb. 25, 2021	Feb. 24, 2022
Pre-amplifier	HP	8449B	3008A00849	Feb. 25, 2021	Feb. 24, 2022
Pre-amplifier	SKET	LNPA_1840G-50	SK201904032	Feb. 25, 2021	Feb. 24, 2022
Cable	HUBER+SUHNER	100	SUCOFLEX	Feb. 25, 2021	Feb. 24, 2022
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal. Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 02, 2021	Jul. 01, 2022
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jul. 02, 2021	Jul. 01, 2022
MXA Signal Analyzer	Agilent	N9020A	MY49100060	Sep. 03, 2021	Sep. 02, 2022
Vector Signal Generator	Agilent	N5182A	MY50141294	Sep. 03, 2021	Sep. 02, 2022
Analog Signal Generator	Agilent	N5181A	MY50141953	Sep. 03, 2021	Sep. 02, 2022
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Sep. 03, 2021	Sep. 02, 2022
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Sep. 03, 2021	Sep. 02, 2022
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Sep. 03, 2021	Sep. 02, 2022
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Sep. 03, 2021	Sep. 02, 2022

5. Conducted Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard

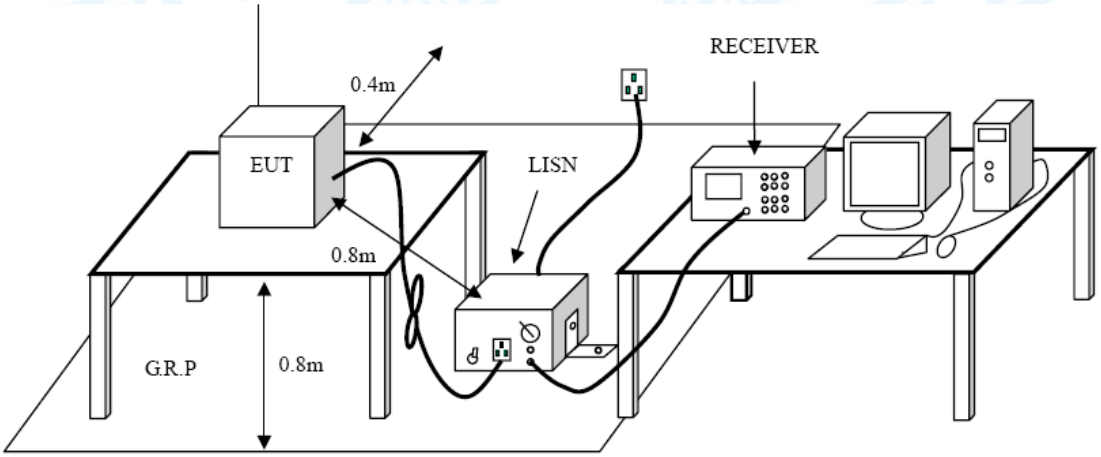
FCC Part 15.207

5.1.2 Test Limit

Frequency	Maximum RF Line Voltage (dBμV)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:
(1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequencies.
(3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.2 Test Setup



5.3 Test Procedure

●The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
●Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
●I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
●LISN at least 80 cm from nearest part of EUT chassis.
●The bandwidth of EMI test receiver is set at 9 kHz, and the test frequency band is from 0.15MHz to 30MHz.

5.4 Deviation From Test Standard

No deviation

5.5 EUT Operating Mode

Please refer to the description of test mode.

5.6 Test Data

Please refer to the Attachment A.

6. Radiated and Conducted Unwanted Emissions

6.1 Test Standard and Limit

6.1.1 Test Standard

FCC Part 15.209 & FCC Part 15.407(b)

6.1.2 Test Limit

General field strength limits at frequencies Below 30MHz		
Frequency (MHz)	**Field Strength (microvolt/meter)**	**Measurement Distance (meters)**
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
Note: 1, The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.		

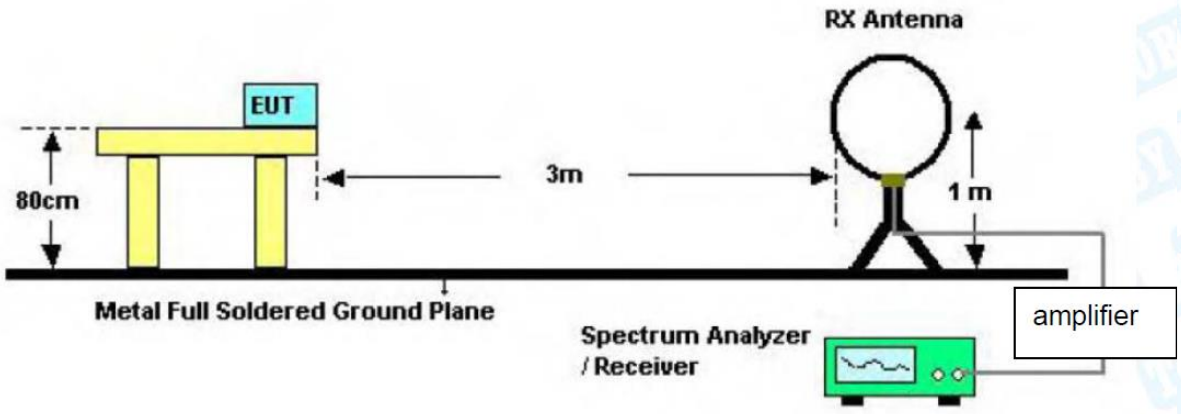
General field strength limits at frequencies above 30 MHz		
Frequency (MHz)	**Field strength (μV/m at 3 m)**	**Measurement Distance (meters)**
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

General field strength limits at frequencies Above 1000MHz		
Frequency (MHz)	**Distance of 3m (dBuV/m)**	
	Peak	**Average**
Above 1000	74	54
Note: (1) The tighter limit applies at the band edges. (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)		

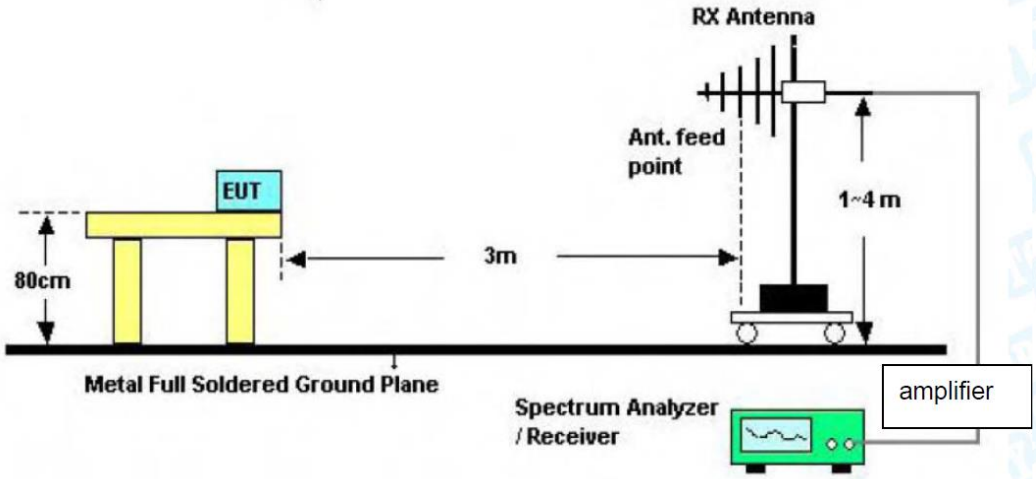
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

6.2 Test Setup

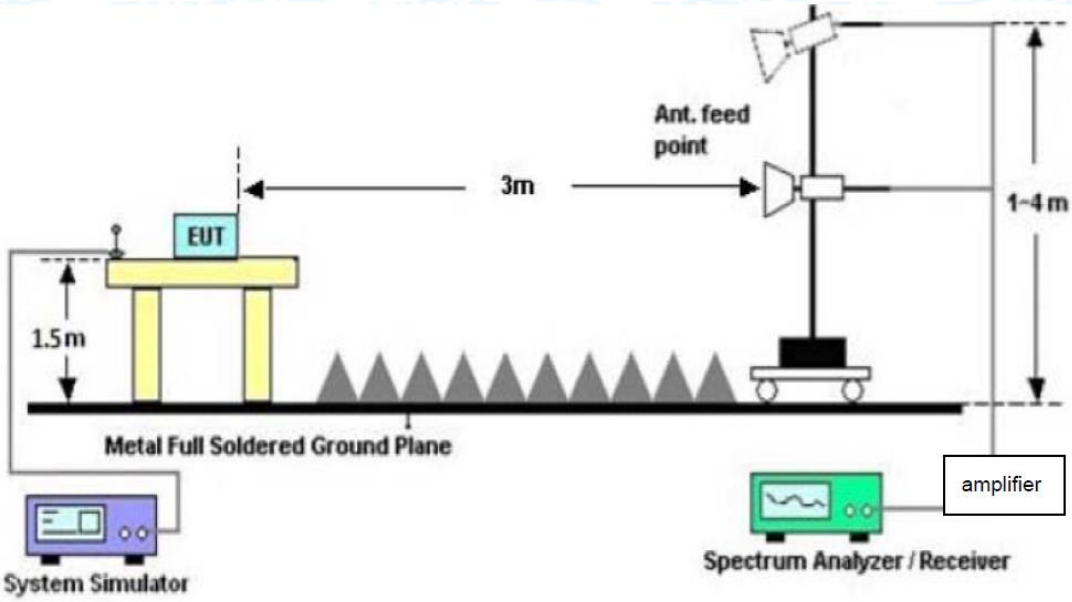
Radiated measurement



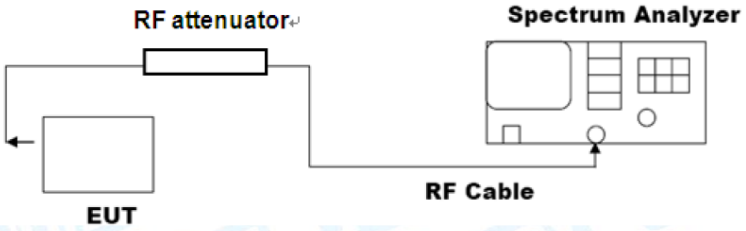
Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup
Conducted measurement



6.3 Test Procedure

---Radiated measurement

●The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

● Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

● The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

●The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

●If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

●Testing frequency range 30MHz-1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection. Testing frequency range 9KHz-150Hz the measuring instrument use VBW=200Hz with Quasi-peak detection. Testing frequency range 9KHz-30MHz the measuring instrument use VBW=9kHz with Quasi-peak detection.

●Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

●For the actual test configuration, please see the test setup photo.

--- Conducted measurement

●Reference level measurement

Establish a reference level by using the following procedure:

a) Set instrument center frequency to DTS channel center frequency.

b) Set the span to≥1.5 times the DTS bandwidth.

c) Set the RBW = 100 kHz.

d) Set the VBW≥[3*RBW].

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

●Emission level measurement

Establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

b) Set the RBW = 100 kHz.

c) Set the VBW≥[3*RBW].

d) Detector = peak.

e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

6.4 Deviation From Test Standard

No deviation

6.5 EUT Operating Mode

Please refer to the description of test mode.

6.6 Test Data

Radiated measurement please refer to the Attachment B.

7. Maximum Conducted Output Power

7.1 Test Standard and Limit

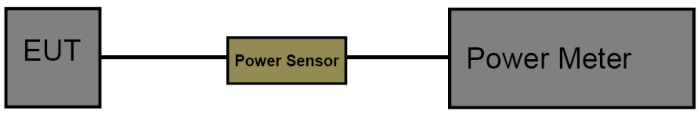
7.1.1 Test Standard

FCC Part 15.407(a)

7.1.2 Test Limit

FCC Part 15 Subpart E(15.407)				
Limit	**Frequency Range(MHz)**			
	5150~5250	**5250~5350**	**5500~5725**	**5725~5850**
Max Conducted TX Power	Master Device: 1 Watt(30dBm) Client Device: 250mW(24dBm)	24dBm (250 mW) or 11 dBm+ 10 log B, whichever is lower (B= 26-dB emission BW)		1 Watt (30dBm)
Max E.I.R.P	4 W (36 dBm) with 6 dBi antenna	1 W (30 dBm) with 6 dBi antenna		4 W (36 dBm) with 6 dBi antenna
	200 W (53 dBm) for fixed P-t-P application with 23 dBiantenna			
	Additional rule for outdoor operation: Max_EIRP< 125 mW(21 dBm) at any elevation angle > 30°from horizon			
TPC	NO	YES, if Max_EIRP ≥ 500 mW (27 dBm) and able to lower EIRP below 24dBm		NO
		NO, if Max_EIRP < 500mW (27dBm)		

7.2 Test Setup



7.3 Test Procedure

●The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

7.4 Deviation From Test Standard

No deviation

7.5 EUT Operating Mode

Please refer to the description of test mode.

7.6 Test Data

Please refer to the Attachment C.

8. Antenna Requirement

8.1 Test Standard and Limit

8.1.1 Test Standard

FCC Part 15.203

8.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

8.2 Deviation From Test Standard

No deviation

8.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 0.73dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

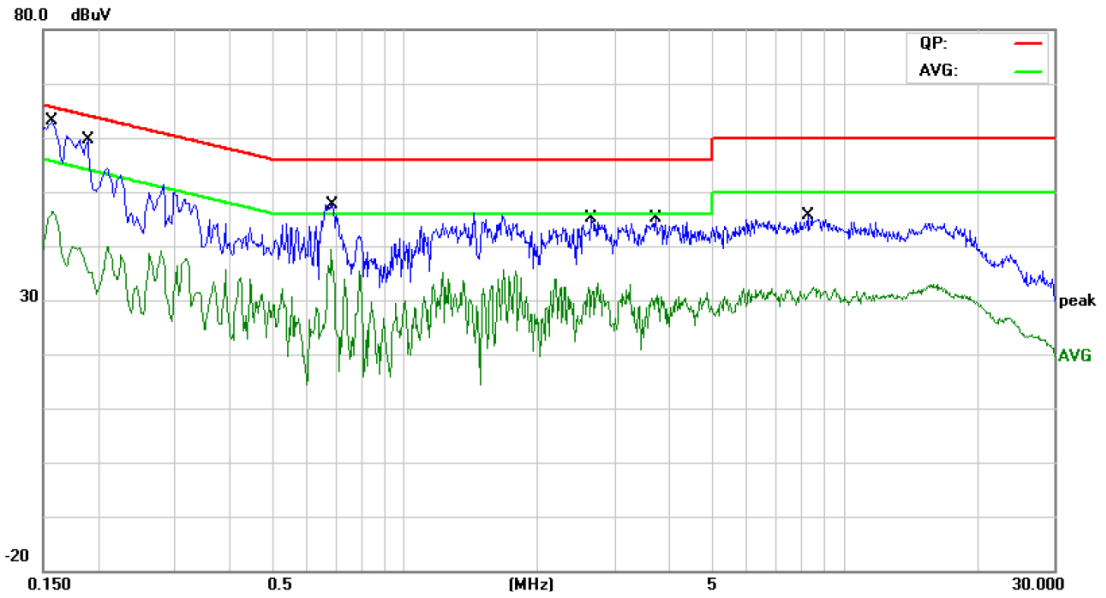
8.4 Test Data

The EUT antenna is a FPC Antenna. It complies with the standard requirement.

Antenna Type
☐Permanent attached antenna
☒Unique connector antenna
☐Professional installation antenna

Attachment A-- Conducted Emission Test Data

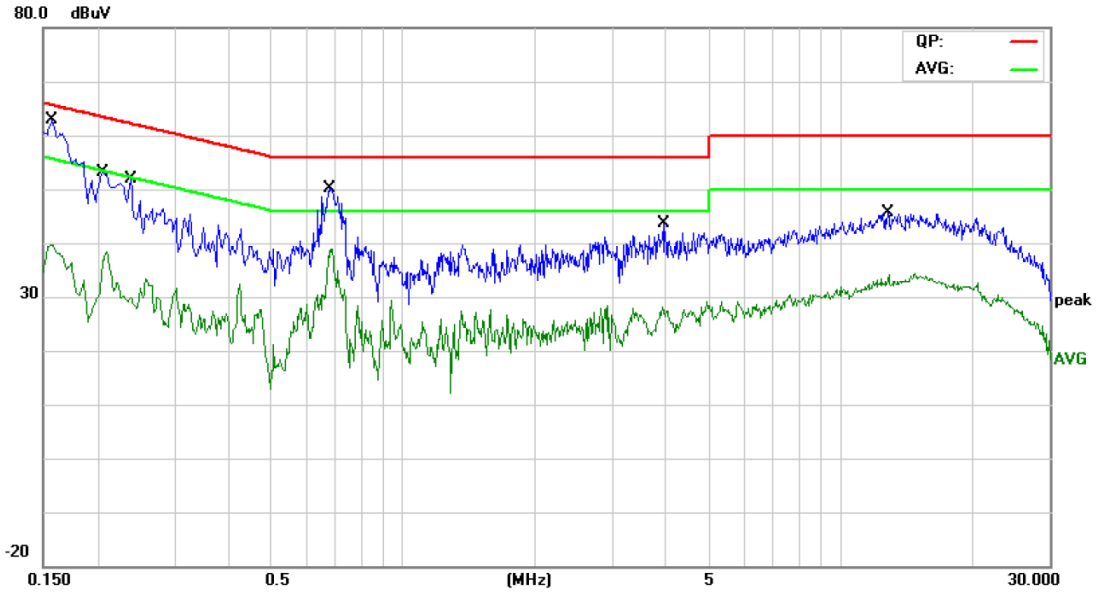
Temperature:	24.3℃	**Relative Humidity:**	45%
Test Voltage:	AC 120V 60Hz		
Terminal:	Line		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1580	51.57	11.60	63.17	65.56	-2.39	QP
2		0.1580	34.87	11.60	46.47	55.56	-9.09	AVG
3		0.1900	48.01	11.66	59.67	64.03	-4.36	QP
4		0.1900	24.45	11.66	36.11	54.03	-17.92	AVG
5		0.6860	36.21	11.44	47.65	56.00	-8.35	QP
6		0.6860	27.90	11.44	39.34	46.00	-6.66	AVG
7		2.6619	34.90	10.27	45.17	56.00	-10.83	QP
8		2.6619	22.84	10.27	33.11	46.00	-12.89	AVG
9		3.7299	34.96	10.13	45.09	56.00	-10.91	QP
10		3.7299	20.79	10.13	30.92	46.00	-15.08	AVG
11		8.2499	35.51	10.07	45.58	60.00	-14.42	QP
12		8.2499	22.40	10.07	32.47	50.00	-17.53	AVG

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Temperature:	24.3℃	**Relative Humidity:**	45%
Test Voltage:	AC 120V 60Hz		
Terminal:	Neutral		
Test Mode:	Mode 1		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1580	49.44	11.60	61.04	65.56	-4.52	QP
2		0.1580	28.03	11.60	39.63	55.56	-15.93	AVG
3		0.2058	41.40	11.66	53.06	63.37	-10.31	QP
4		0.2058	26.77	11.66	38.43	53.37	-14.94	AVG
5		0.2379	40.14	11.64	51.78	62.17	-10.39	QP
6		0.2379	18.32	11.64	29.96	52.17	-22.21	AVG
7		0.6820	38.77	11.45	50.22	56.00	-5.78	QP
8		0.6820	27.55	11.45	39.00	46.00	-7.00	AVG
9		3.9260	33.39	10.12	43.51	56.00	-12.49	QP
10		3.9260	18.07	10.12	28.19	46.00	-17.81	AVG
11		12.8299	35.43	10.26	45.69	60.00	-14.31	QP
12		12.8299	23.84	10.26	34.10	50.00	-15.90	AVG

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

Attachment B--Unwanted Emissions Data

---Radiated Unwanted Emissions

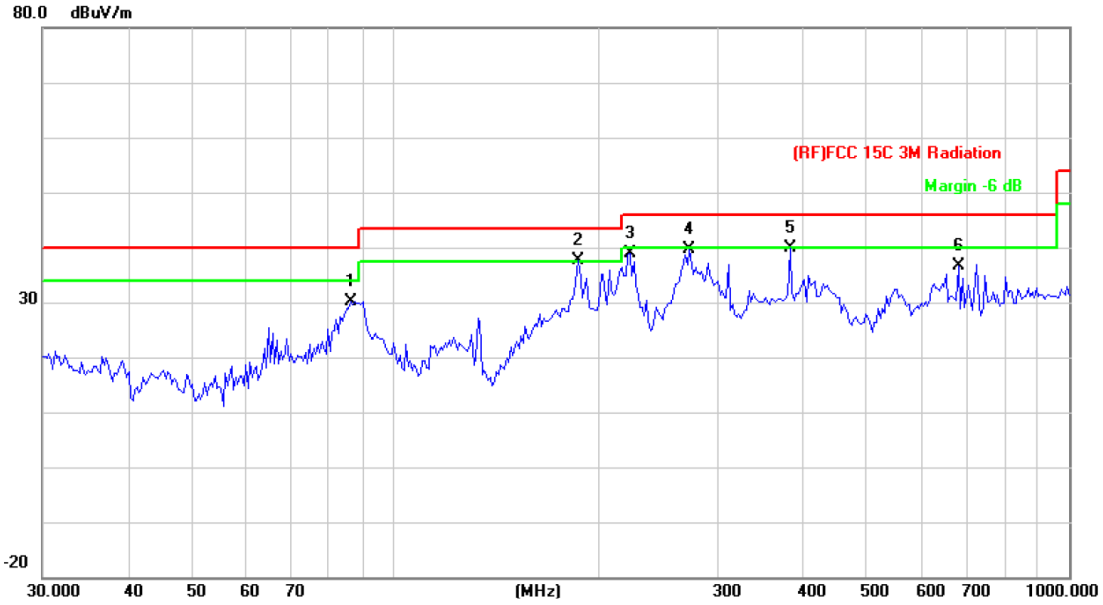
9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB Below the permissible value has no need to be reported.

30MHz~1GHz

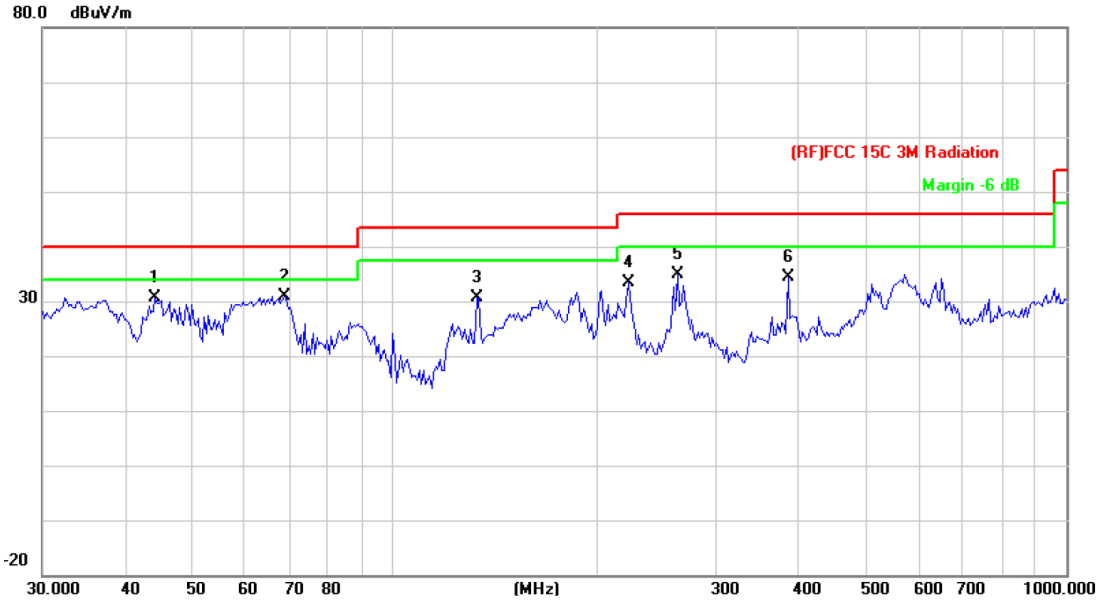
Temperature:	23.5℃	**Relative Humidity:**	46%
Test Voltage:	AC 120V 60Hz		
Ant. Pol.	Horizontal		
Test Mode:	Mode 2		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		85.8983	52.56	-22.34	30.22	40.00	-9.78	peak
2	*	187.0954	57.74	-20.06	37.68	43.50	-5.82	peak
3		222.9499	57.59	-18.82	38.77	46.00	-7.23	peak
4		273.2341	56.50	-16.83	39.67	46.00	-6.33	peak
5		385.2805	52.96	-13.07	39.89	46.00	-6.11	peak
6		684.7454	43.75	-7.15	36.60	46.00	-9.40	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)

Temperature:	23.5℃	Relative Humidity:	46%
Test Voltage:	AC 120V 60Hz		
Ant. Pol.	Vertical		
Test Mode:	Mode 2		
Remark:	Only worse case is reported.		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		44.1200	52.03	-21.48	30.55	40.00	-9.45	peak
2	*	68.6310	54.82	-23.83	30.99	40.00	-9.01	peak
3		132.6850	53.28	-22.59	30.69	43.50	-12.81	peak
4		222.9499	52.08	-18.82	33.26	46.00	-12.74	peak
5		263.8190	51.80	-17.02	34.78	46.00	-11.22	peak
6		385.2805	47.54	-13.07	34.47	46.00	-11.53	peak

Remark:
1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
3. Margin (dB) = QuasiPeak (dBμV/m)-Limit QPK(dBμV/m)

-----END OF REPORT------