

FCC REPORT

Product Name : Set-Top Box
Trade mark : Infomir
Model : MAG500A
Extension Model : MAG520w3, MAG522w3, MAG524w3
FCC ID : 2AUIR-IM010CXXX1
Report Number : BLA-EMC-202105-A0707
Date of sample receipt : 2022/1/4
Date of Test : 2022/1/4 to 2022/1/26
Date of Issue : 2022/1/26
Test standard : FCC CFR Title 47 Part 15 Subpart E Section 15.407
Test result : PASS

Prepared for:

TELECOMMUNICATION TECHNOLOGIES, LLC
1, Mytna Sq., Odesa, 65026, Ukraine

Prepared by:

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Date: 2022/1/26



Version

Version No.	Date	Description
00	2022/1/26	Original

BlueAsia

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1 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.407 (g)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.407 (a)	Pass
26dB Occupied Bandwidth	15.407 (a)	Pass
6dB Emission Bandwidth	15.407(e)	Pass
Power Spectral Density	15.407 (a)	Pass
Band Edge	15.407(b)	Pass
Spurious Emission	15.205/15.209	Pass
Frequency Stability	15.407(g)	Pass

Pass: The EUT complies with the essential requirements in the standard.

2 General Information

2.1 Client Information

Applicant	TELECOMMUNICATION TECHNOLOGIES, LLC
Address	1, Mytna Sq., Odesa, 65026, Ukraine
Manufacturer	TELECOMMUNICATION TECHNOLOGIES, LLC
Address	1, Mytna Sq., Odesa, 65026, Ukraine
Factory	TELECOMMUNICATION TECHNOLOGIES, LLC
Address	1, Mytna Sq., Odesa, 65026, Ukraine
Product Name	Set-Top Box
Test Model No.	MAG500A

2.2 General Description of E.U.T.

Operation Frequency:	Band 2:5260MHz~5320MHz Band 3: 5500MHz~5700MHz; Band 4: 5745MHz-5825MHz
	Band 2: 802.11a/802.11n(HT20)/802.11ac(HT20): 4, 802.11n(HT40)/802.11ac(HT40):2, 802.11ac(HT80): 1
	Band 3: 802.11a/802.11n(HT20)/802.11ac(HT20):11, 802.11n(HT40)/802.11ac(HT40):5, 802.11ac(HT80): 3
	Band 4: 802.11a/802.11n(HT20)/802.11ac(HT20):5, 802.11n(HT40)/802.11ac(HT40):2, 802.11ac(HT80): 1
Channel separation:	802.11a/n/ac(HT2): 20MHz, 802.11n/ac(HT40): 40MHz, 802.11ac(HT80): 80MHz
Modulation technology: (IEEE 802.11a/n/ac)	BPSK, QPSK,16-QAM, 64-QAM, 256-QAM
Antenna Type:	Patch antenna
Antenna gain:	3.11 dBi(Provided by the customer)
Note:	Antenna number : 2 MIMO mode : 802.11n(HT20)/ 802.11n(HT40)/ 802.11ac(HT20)/ 802.11ac(HT40)/ 802.11ac(HT80) Directional gain of MIMO mode:2+10log2=6.12dBi
Remark:The Antenna Gain is supplied by the customer	

Operation Frequency each of channel

Band 2: 5250-5350MHz					
802.11a/802.11n20		802.11n40		802.11ac80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
52	5260MHz	54	5270MHz	58	5290MHz
56	5280MHz	62	5310MHz		
60	5300MHz				
64	5320MHz				
Band 3: 5470-5725MHz					
802.11a/802.11n20		802.11n40		802.11ac80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
100	5500MHz	102	5510MHz	106	5530MHz
120	5600MHz	118	5590MHz	122	5610MHz
140	5700MHz	124	5670MHz	138	5690MHz
Band 4: 5725-5850MHz					
802.11a/802.11n20		802.11n40		802.11ac80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745MHz	151	5755MHz	155	5775MHz
157	5785MHz	159	5795MHz		
165	5825MHz				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3 Test environment and mode

Operating Environment:	
Temperature:	25°C
Humidity:	52 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Continuously transmitting mode	Keep the EUT in 100% duty cycle transmitting with modulation.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11a	6Mbps
802.11n(HT20)	6.5Mbps
802.11n(HT40)	13Mbps
802.11ac(HT20)	6.5Mbps
802.11ac(HT40)	13.5Mbps
802.11ac(HT80)	29.3Mbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 6 Mbps for 802.11a, 6.5 Mbps for 802.11n20 and 13 Mbps for 802.11n40. All test items for 802.11a and 802.11n were performed with duty cycle above 98%, meet the requirements of KDB789033.

2.4 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Notebook computer	E470C	PF-10FB5C

2.5 Laboratory Location

All tests were performed at:

BlueAsia of Technical Services(Shenzhen) Co., Ltd.

Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673

No tests were sub-contracted.

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2.6 Test Instruments list

Test Equipment Of Power Spectrum Density					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2020/10/12	2021/10/11
Spectrum	Agilent	N9020A	MY49100060	2020/10/12	2021/10/11
Signal Generator	Agilent	N5182A	MY49060650	2020/10/12	2021/10/11
Signal Generator	Agilent	E8257D	MY44320250	2020/10/12	2021/10/11

Test Equipment Of Conducted Peak Output Power					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2020/10/12	2021/10/11
Spectrum	Agilent	N9020A	MY49100060	2020/10/12	2021/10/11
Signal Generator	Agilent	N5182A	MY49060650	2020/10/12	2021/10/11
Signal Generator	Agilent	E8257D	MY44320250	2020/10/12	2021/10/11

Test Equipment Of Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	2020/10/12	2021/10/11
Spectrum	Agilent	N9020A	MY49100060	2020/10/12	2021/10/11
Signal Generator	Agilent	N5182A	MY49060650	2020/10/12	2021/10/11

Signal Generator	Agilent	E8257D	MY44320250	2020/10/12	2021/10/11
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Test Equipment Of Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Shield room	SKET	833	N/A	2020/11/25	2023/11/24
Receiver	R&S	ESPI3	101082	2020/10/12	2021/10/11
LISN	R&S	ENV216	3560.6550.15	2020/10/12	2021/10/11
LISN	AT	AT166-2	AKK1806000003	2020/10/12	2021/10/11
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A

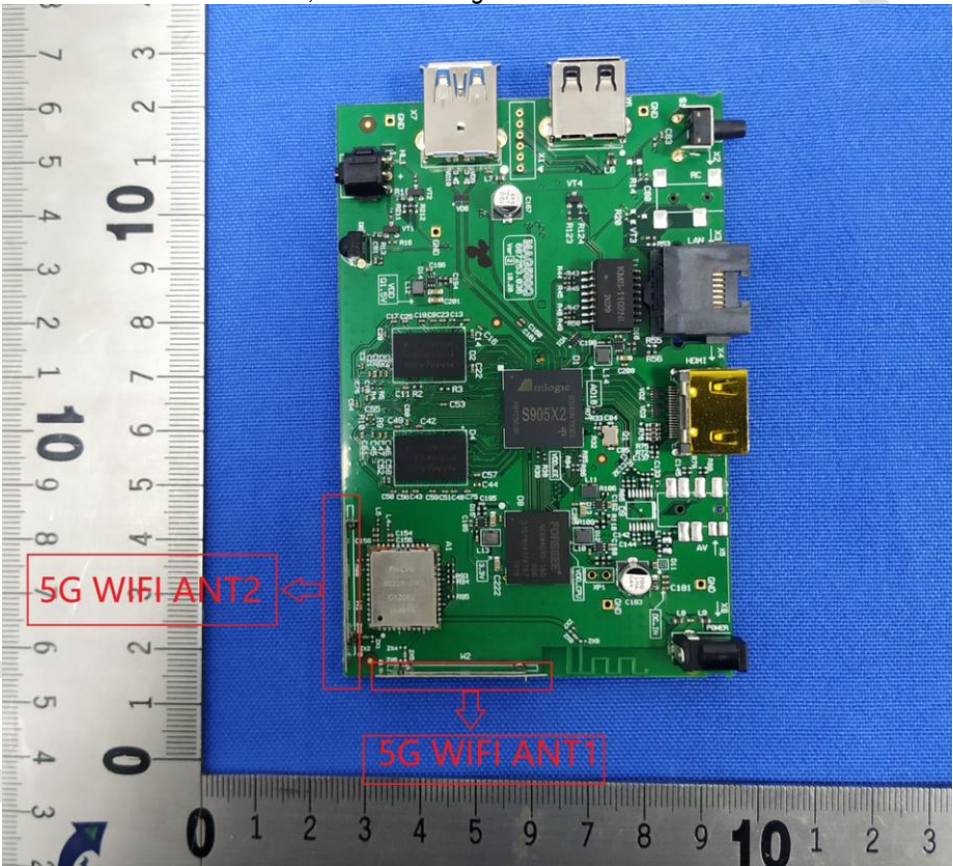
Test Equipment Of Radiated Spurious Emissions and Band-edge					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	2020/11/10	2023/11/9
Spectrum	R&S	FSP40	100817	2020/10/12	2021/10/11
Receiver	R&S	ESR7	101199	2020/10/12	2021/10/11
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	2020/9/26	2022/9/25
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	2020/9/26	2022/9/25

Amplifier	SKET	PA-000318G-45	N/A	2020/10/16	2021/10/15
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	2020/9/26	2022/9/25
Controller	SKET	N/A	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Test Equipment Of Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Chamber	SKET	966	N/A	2020/11/10	2023/11/9
Spectrum	R&S	FSP40	100817	2020/10/12	2021/10/11
Receiver	R&S	ESR7	101199	2020/10/12	2021/10/11
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	2020/9/26	2022/9/25
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	2020/9/26	2022/9/25
Amplifier	SKET	PA-000318G-45	N/A	2020/10/16	2021/10/15
EMI software	EZ	EZ-EMC	EEMC-3A1	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	2020/9/26	2022/9/25
Controller	SKET	N/A	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

3 Test results and Measurement Data

3.1 Antenna requirement

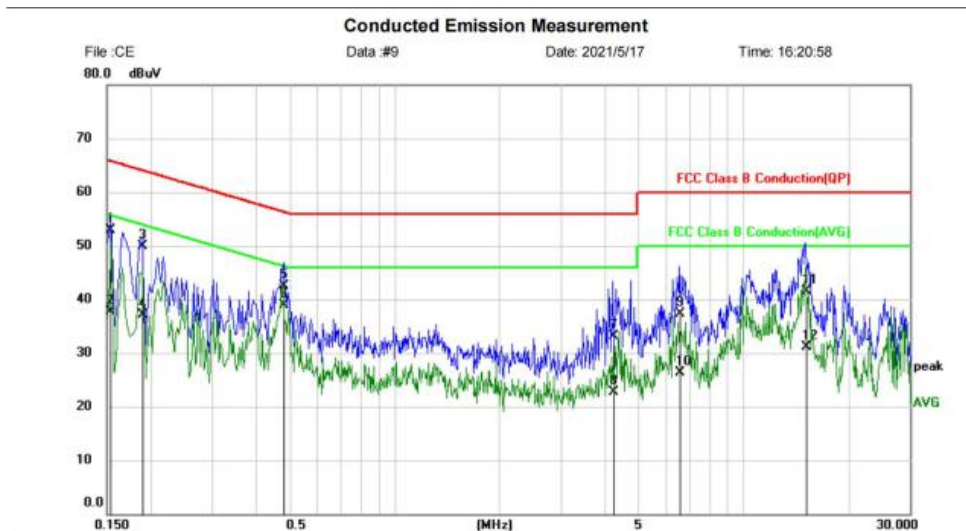
Standard requirement:	FCC Part15 E Section 15.203 /407(a)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	
E.U.T Antenna:	
The antenna is Internal Antenna, the best case gain of the antenna is 3.11dBi 	

4 Conducted Emission

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10: 2013														
Test Frequency Range:	150 kHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9 kHz, VBW=30 kHz														
Limit:	<table><thead><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr></thead><tbody><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></tbody></table> * Decreases with the logarithm of the frequency.	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test procedure	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). It provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2014 on conducted measurement.														
Test setup:	Reference Plane LISN 40cm AUX Equipment E.U.T Test table/Insulation plane 80cm LISN Filter AC power EMI Receiver Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Instruments:	Refer to section 5.7 for details														
Test mode:	Refer to section 5.3 for details.														
Test results:	Pass														

Measurement Data:

EUT:	Set-Top Box	Model:	MAG500A
Test By:	Eason	Test mode:	Wifi mode
Power Source:	AC120V/60Hz	Temp./Hum.(%H):	25℃/52%RH
Test Frequency:	150kHz to 30MHz	Phase:	Line



Site	Phase:	L1	Temperature:
Limit: FCC Class B Conduction(QP)	Power:		Humidity: %
EUT: Set-Top Box			
M/N: MAG500A			
Mode: 5G WIFI mode			
Note:			

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1539	43.14	9.81	52.95	65.79	-12.84	QP	
2	0.1539	27.96	9.81	37.77	55.79	-18.02	AVG	
3	0.1900	40.00	9.83	49.83	64.04	-14.21	QP	
4	0.1900	27.20	9.83	37.03	54.04	-17.01	AVG	
5	0.4820	32.64	9.87	42.51	56.30	-13.79	QP	
6 *	0.4820	29.02	9.87	38.89	46.30	-7.41	AVG	
7	4.2460	23.13	9.99	33.12	56.00	-22.88	QP	
8	4.2460	12.68	9.99	22.67	46.00	-23.33	AVG	
9	6.5900	27.25	10.08	37.33	60.00	-22.67	QP	
10	6.5900	16.30	10.08	26.38	50.00	-23.62	AVG	
11	15.1340	31.16	10.36	41.52	60.00	-18.48	QP	
12	15.1340	20.69	10.36	31.05	50.00	-18.95	AVG	

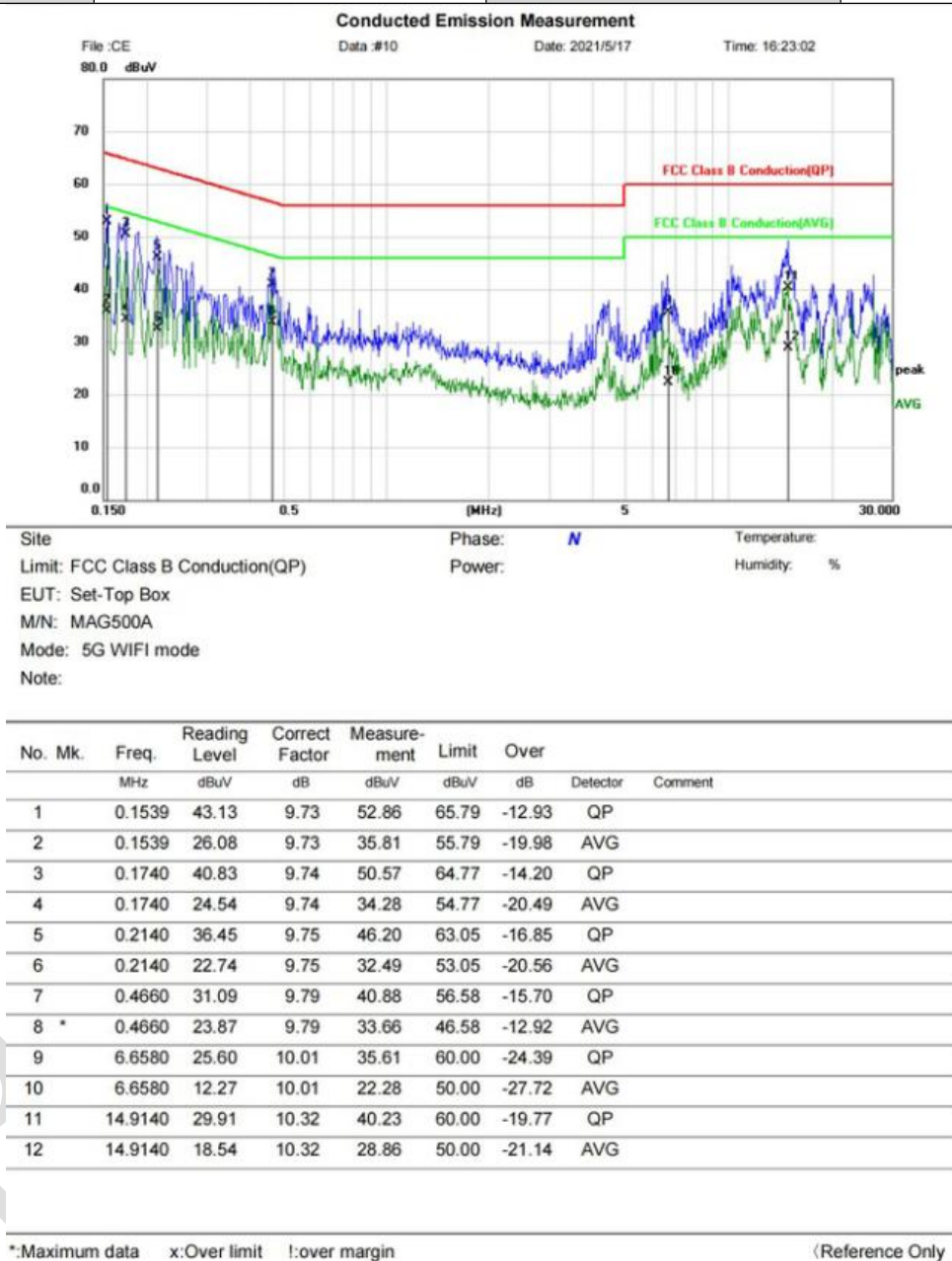
*:Maximum data x:Over limit l:over margin

(Reference Only)

Notes:

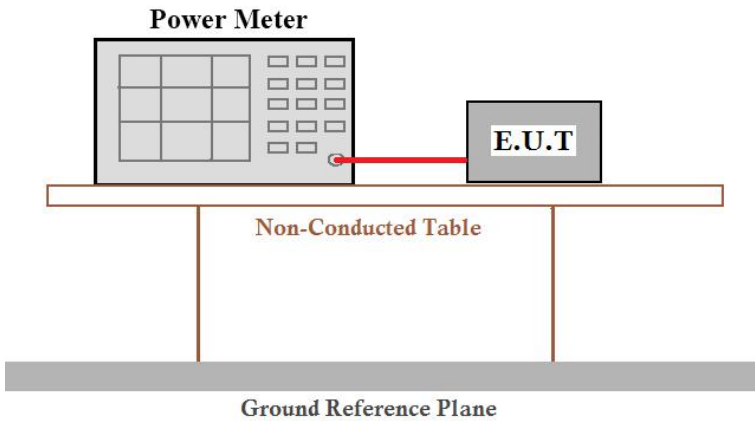
1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

EUT:	Set-Top Box	Model:	MAG500A
Test By:	Eason	Test mode:	Wifi mode
Power Source:	AC120V/60Hz	Temp./Hum.(%H):	25°C/52%RH
Test Frequency:	150kHz to 30MHz	Phase:	Neutral


Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

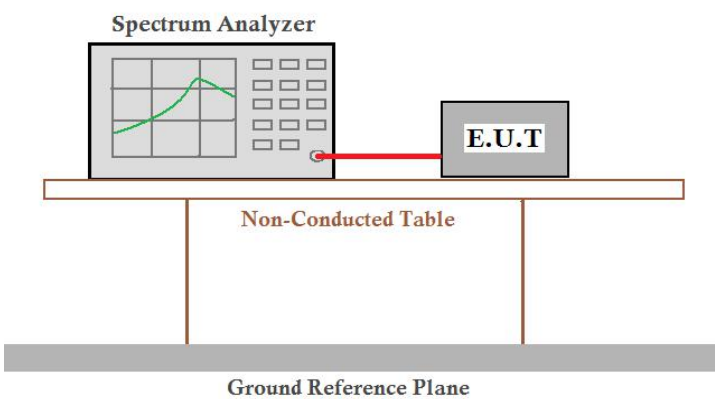
5 Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) (2)& (a) (3)
Test Method:	KDB 789033 D02 II E
Limit:	Band 1: 250mW, Band 2: 250mW, Band 3: 250mW, Band 4: 1000mW,
Test setup:	 The diagram illustrates the test setup for conducted output power. A Power Meter is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Power Meter and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

Please Refer To Appendix: Appendix3

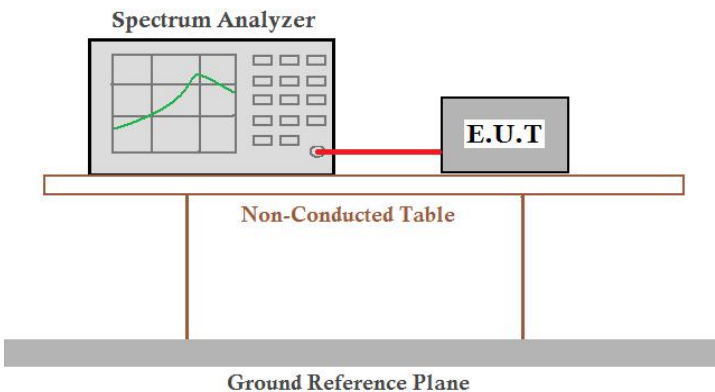
6 Occupy Bandwidth

Test Requirement:	FCC Part15 E Section 15.407 (a) (5) and Section 15.407 (e)
Test Method:	ANSI C63.10:2013 and KDB 789033
Limit:	500KHz(26dB Emission Bandwidth and 99% Occupy Bandwidth)
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

Please Refer To Appendix: Appendix3

7 Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407 (a) (1) (ii) (2)& (a) (3)
Test Method:	ANSI C63.10:2013, KDB 789033
Limit:	Band 1: 11 dBm/MHz, Band 2: 11 dBm/MHz, Band 3: 11 dBm/MHz, Band 4: 30 dBm/MHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

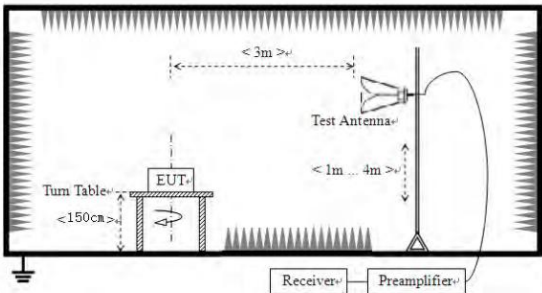
Measurement Data

Please Refer To Appendix: Appendix3

8 Spurious Emission

8.1.1 Band Edge and Restricted Band

Test Requirement:	FCC Part15 E Section 15.407 (b)																																	
Test Method:	ANSI C63.10:2013 , KDB 789033																																	
Receiver setup:	Band Edge: <table><tr><td>Detector</td><td>RBW</td><td>VBW</td><td colspan="2">Remark</td></tr><tr><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td colspan="2">Quasi-peak Value</td></tr><tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td colspan="2">Average Value</td></tr></table> Restricted Band: <table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr><tr><td>RMS</td><td>1MHz</td><td>3MHz</td><td>Average Value</td></tr></table>					Detector	RBW	VBW	Remark		Quasi-peak	120kHz	300kHz	Quasi-peak Value		RMS	1MHz	3MHz	Average Value		Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	RMS	1MHz	3MHz	Average Value
Detector	RBW	VBW	Remark																															
Quasi-peak	120kHz	300kHz	Quasi-peak Value																															
RMS	1MHz	3MHz	Average Value																															
Frequency	Detector	RBW	VBW	Remark																														
Above 1GHz	Peak	1MHz	3MHz	Peak Value																														
	RMS	1MHz	3MHz	Average Value																														
Limit:	Band Edge: <table><tr><td></td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="4">Band 2/3/4</td><td>68.20</td><td>Peak Value</td></tr><tr><td>54.00</td><td>Average Value</td></tr><tr><td>68.20</td><td>Peak Value</td></tr><tr><td>54.00</td><td>Average Value</td></tr></table> Remark: 1. Band 1/2/3/4 limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m}$,for $EIPR[dBm]=-27dBm$. Restricted Band: <table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>74.00</td><td>Peak Value</td></tr><tr><td>54.00</td><td>Average Value</td></tr></table>						Limit (dBuV/m @3m)	Remark	Band 2/3/4	68.20	Peak Value	54.00	Average Value	68.20	Peak Value	54.00	Average Value	Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	74.00	Peak Value	54.00	Average Value									
	Limit (dBuV/m @3m)	Remark																																
Band 2/3/4	68.20	Peak Value																																
	54.00	Average Value																																
	68.20	Peak Value																																
	54.00	Average Value																																
Frequency	Limit (dBuV/m @3m)	Remark																																
Above 1GHz	74.00	Peak Value																																
	54.00	Average Value																																
Remark:	The test methods for Band Edge and Restricted Band are the same. The following tests use the sideband limits as the minimum reference requirements to determine whether the results meet																																	
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																																	

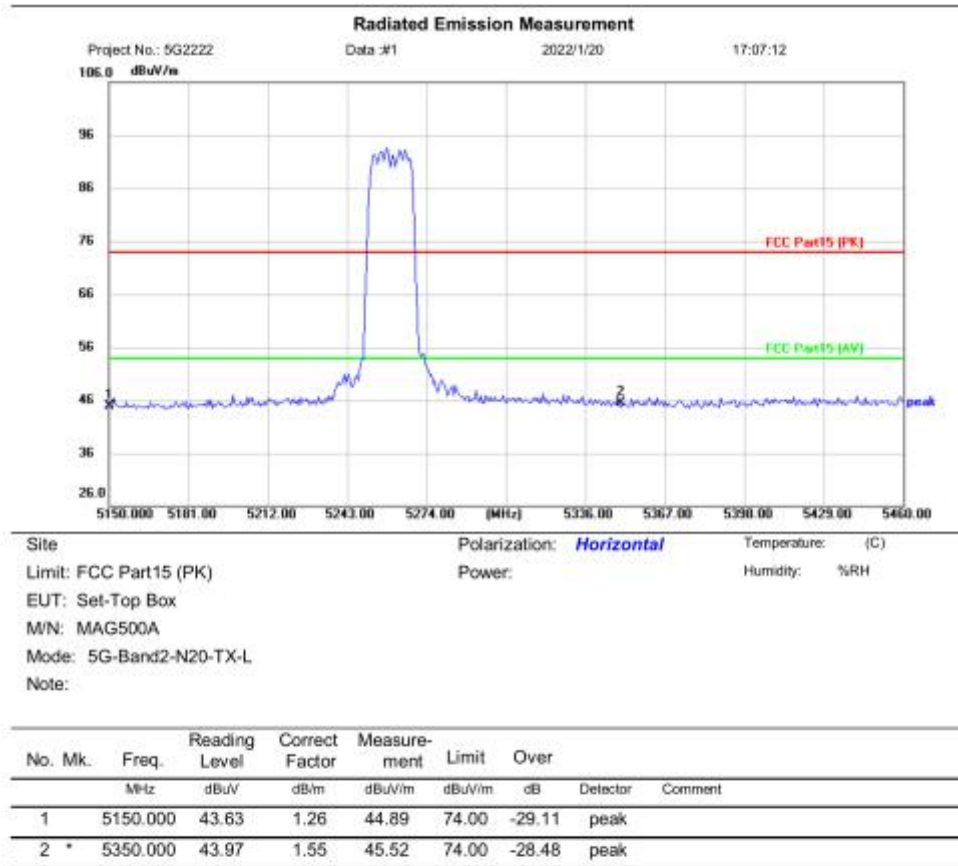
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

Remark: During the test, pre-scan the 802.11a/n/ac mode, and found the 802.11n20 mode which it is worse case.

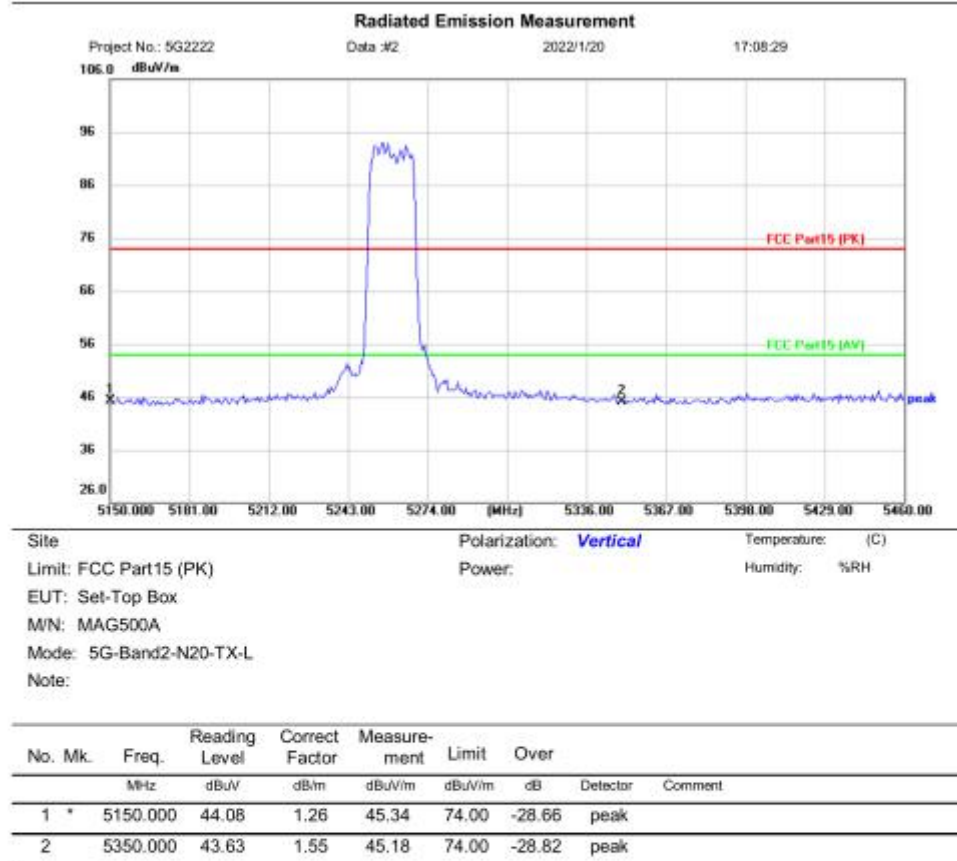
Band2:

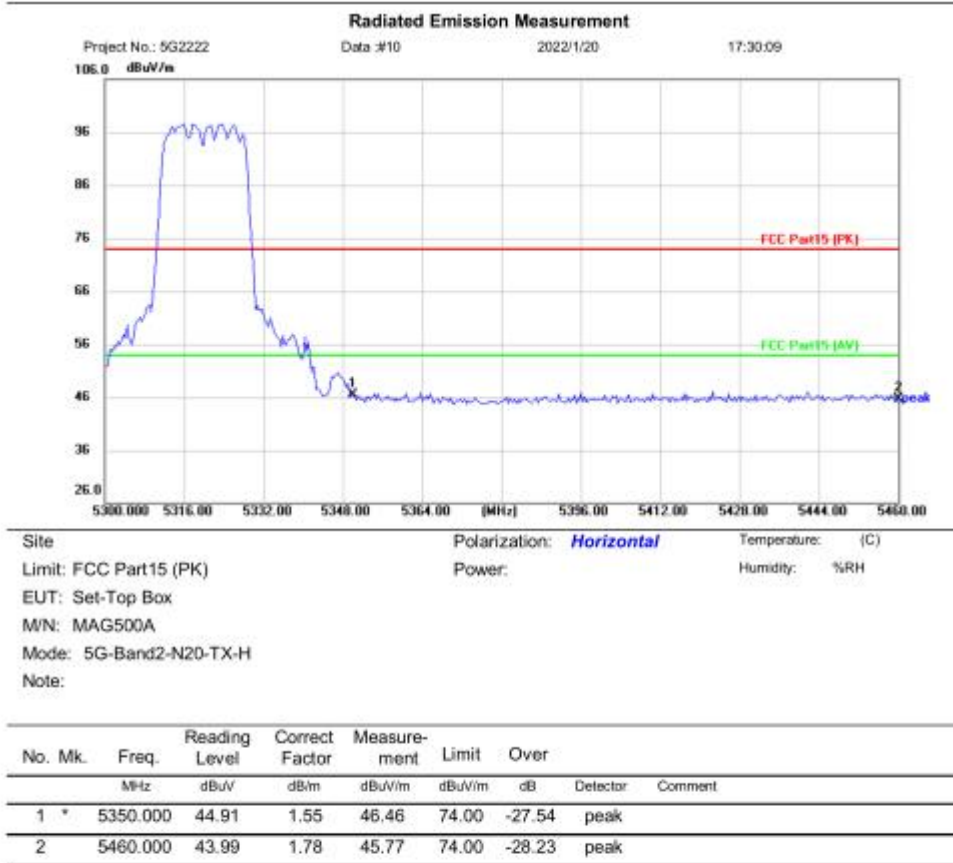
802.11n20:



*:Maximum data x:Over limit !:over margin

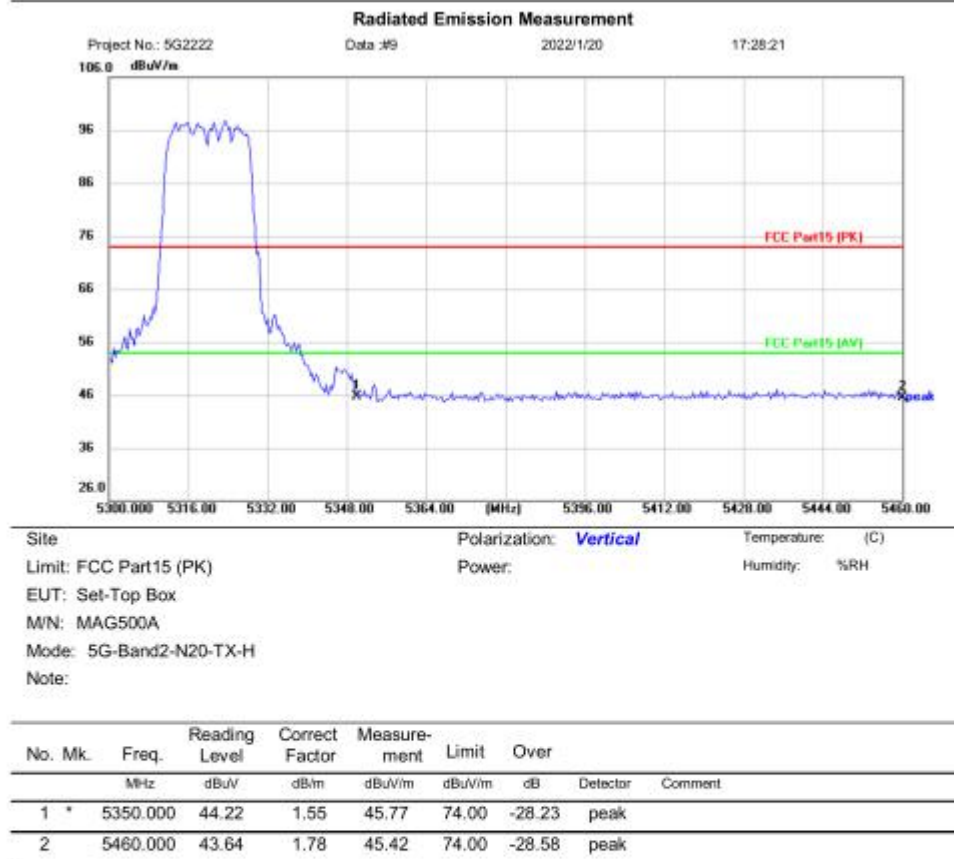
(Reference Only)





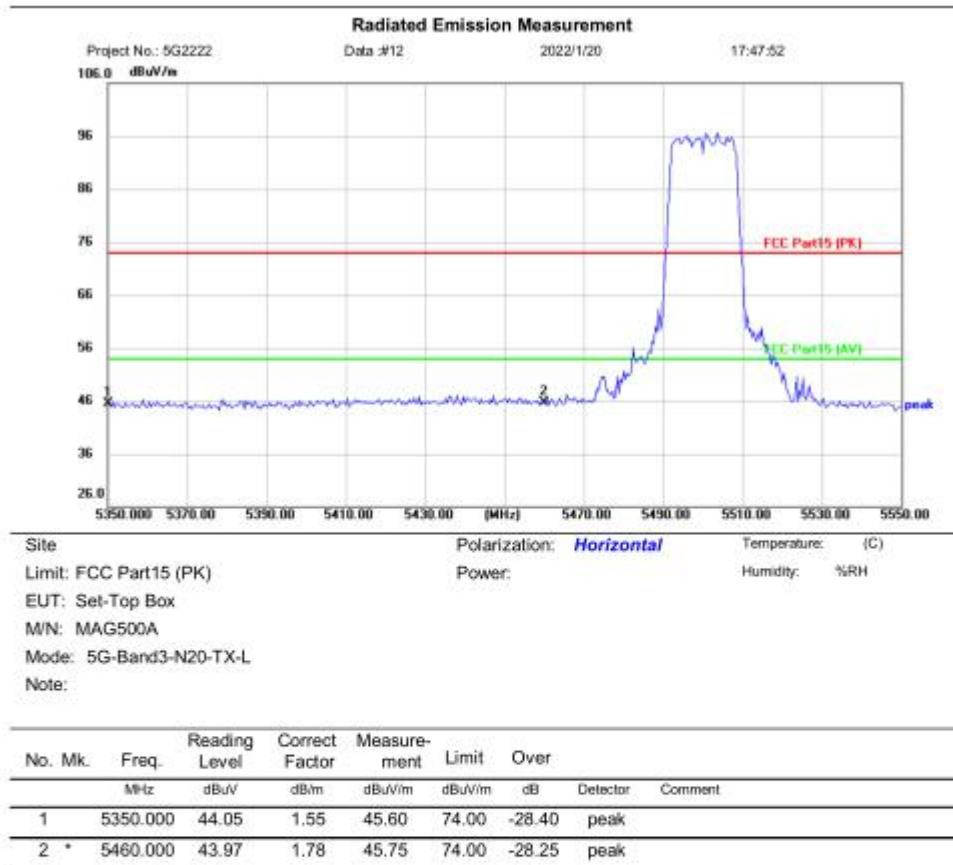
*:Maximum data x:Over limit !:over margin

(Reference Only)



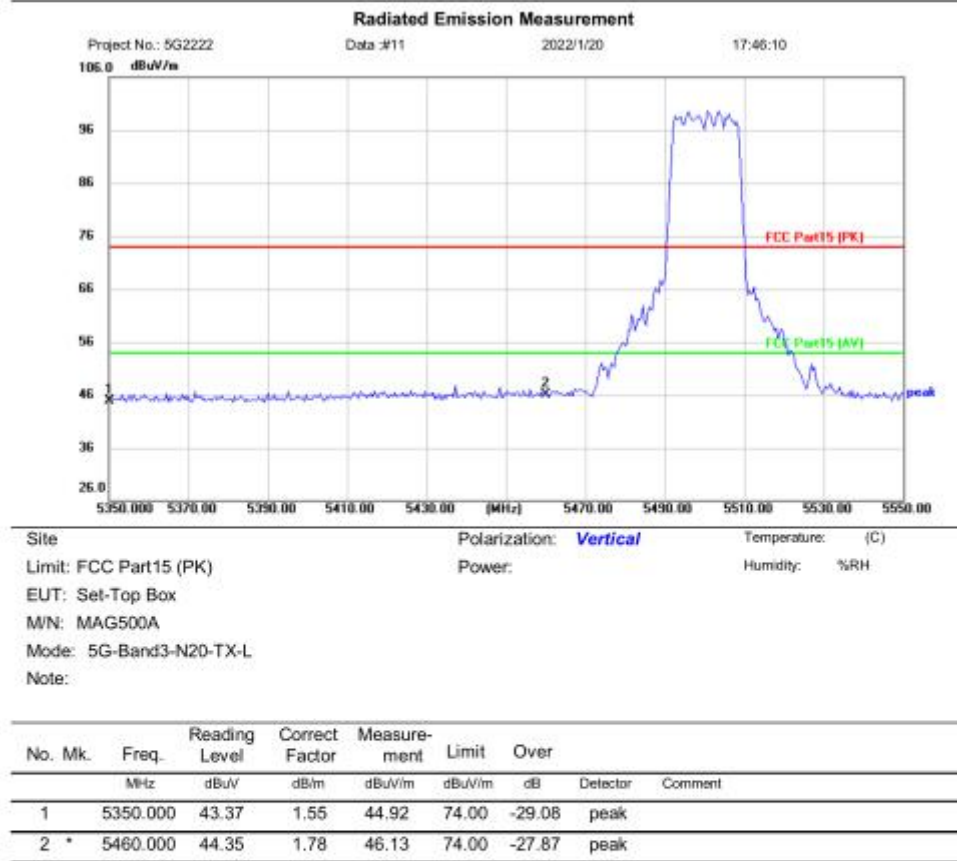
Band3:

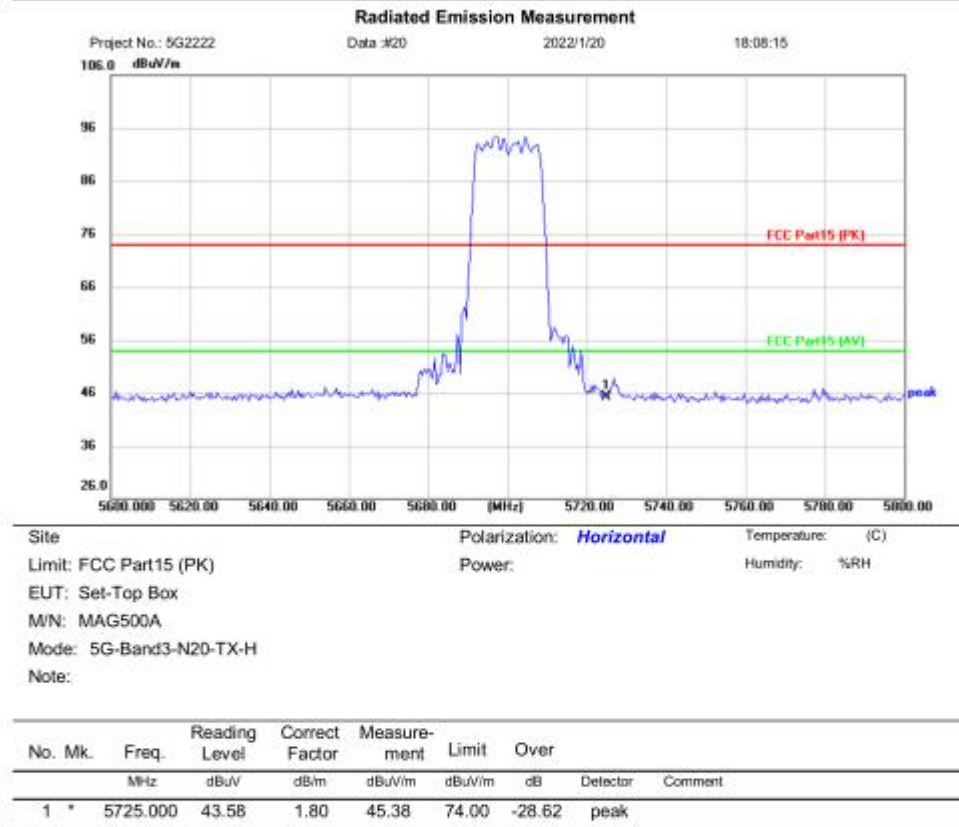
802.11n20:



*:Maximum data x:Over limit !:over margin

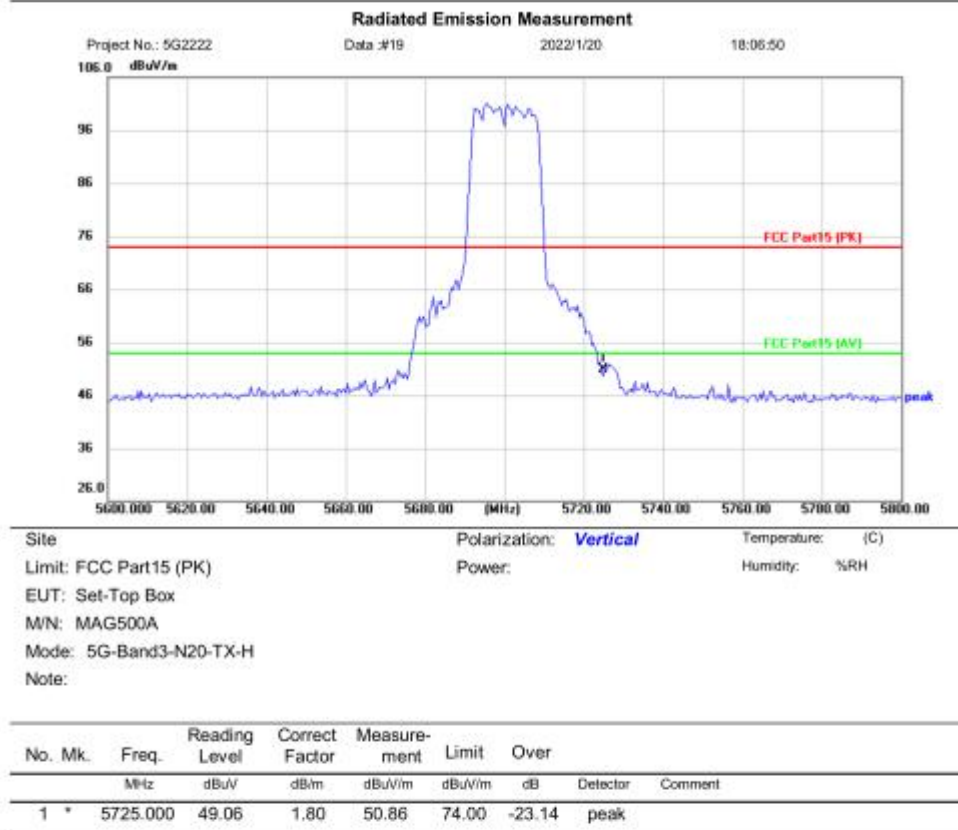
(Reference Only)





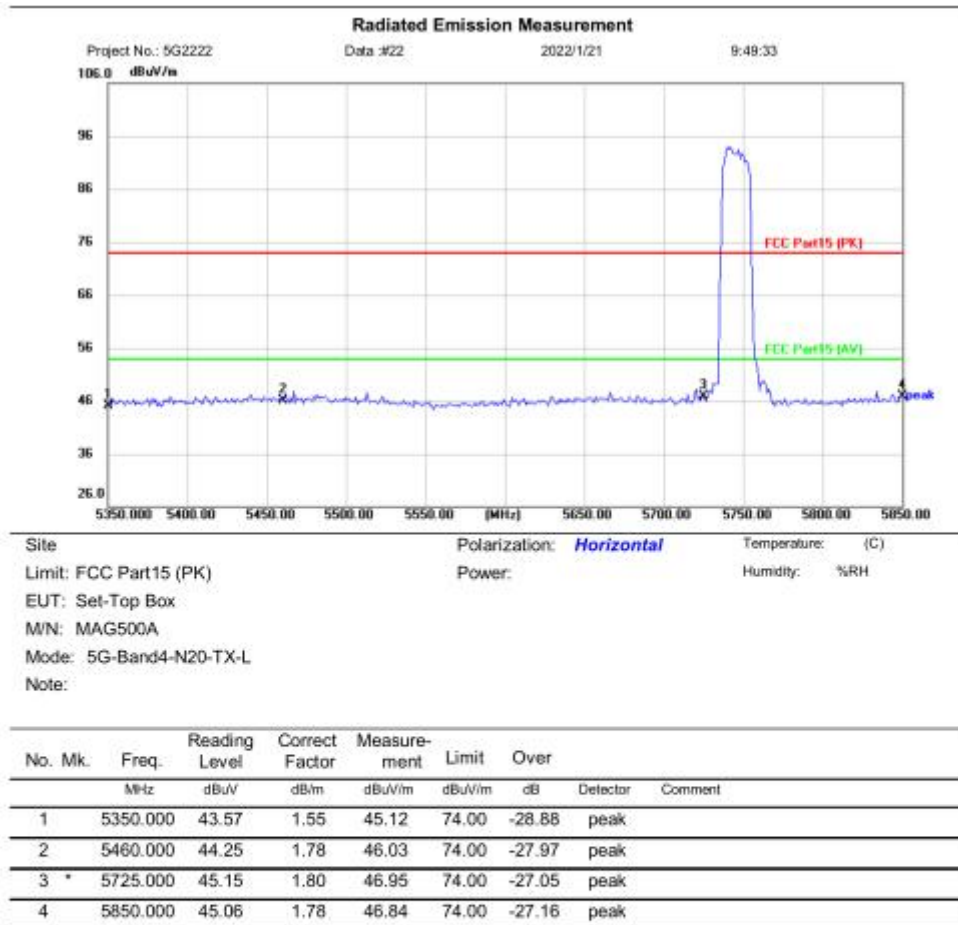
*:Maximum data x:Over limit !:over margin

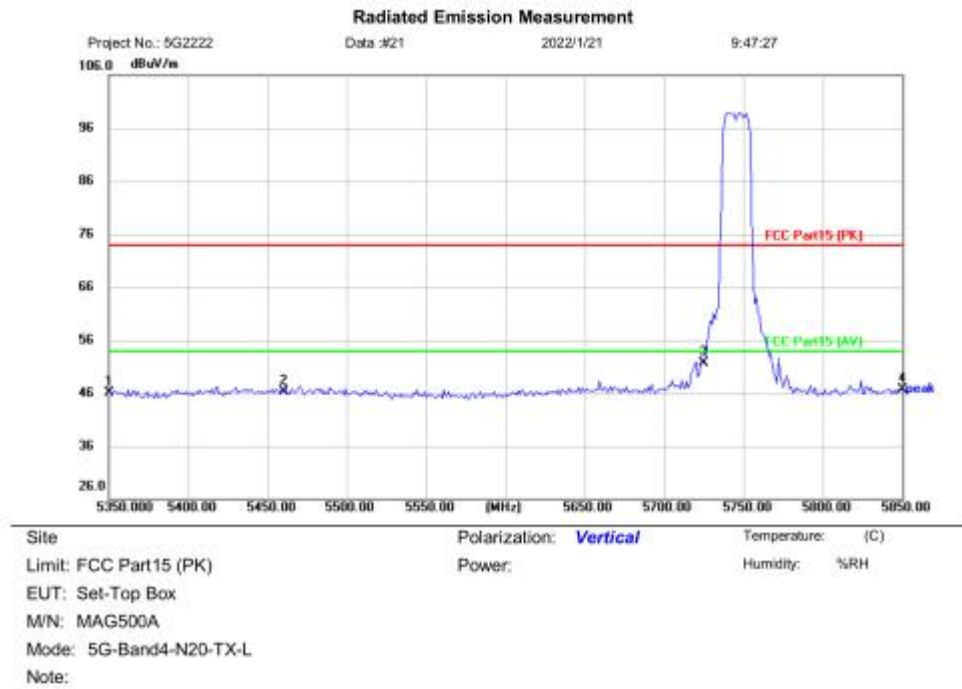
(Reference Only)



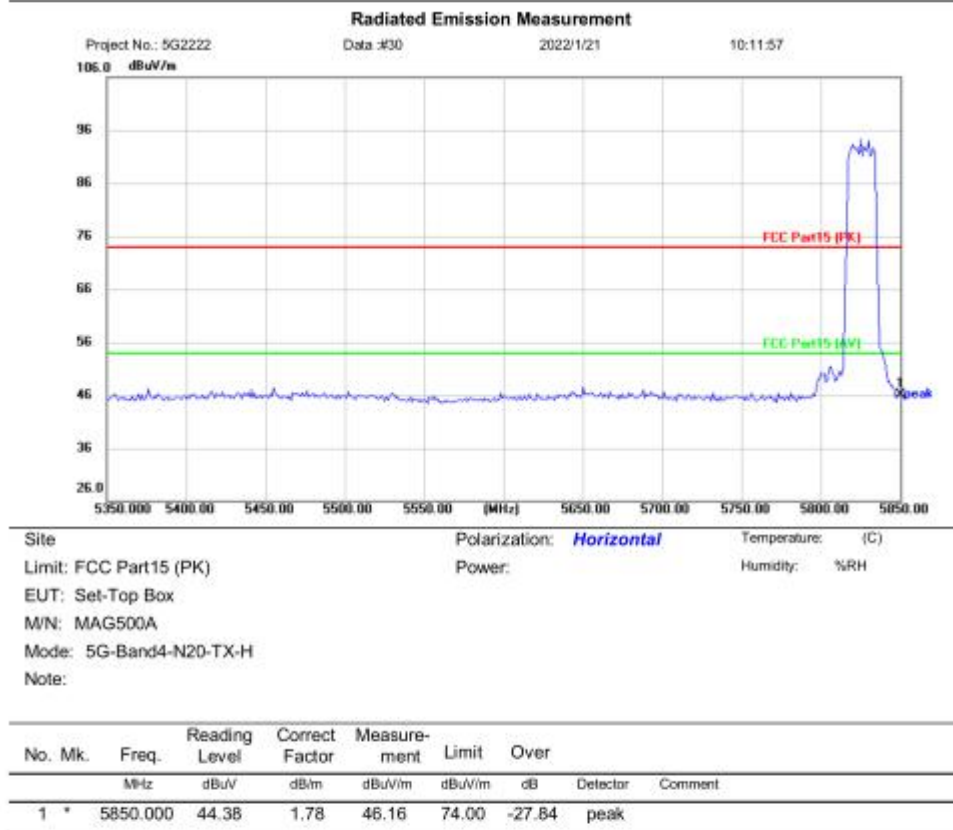
Band4:

802.11n20:



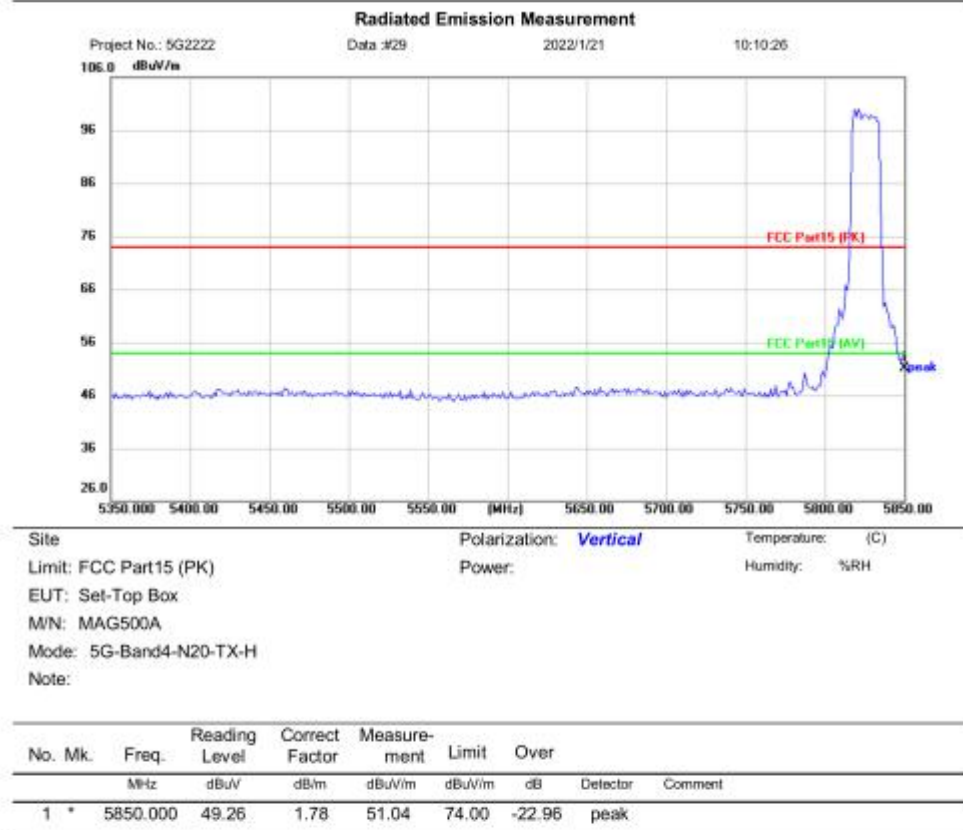


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dBm	dBuV/m	dBuV/m	dB		
1		5350.000	44.56	1.55	46.11	74.00	-27.89	peak	
2		5460.000	44.50	1.78	46.28	74.00	-27.72	peak	
3	*	5725.000	49.94	1.80	51.74	74.00	-22.26	peak	
4		5850.000	44.85	1.78	46.63	74.00	-27.37	peak	



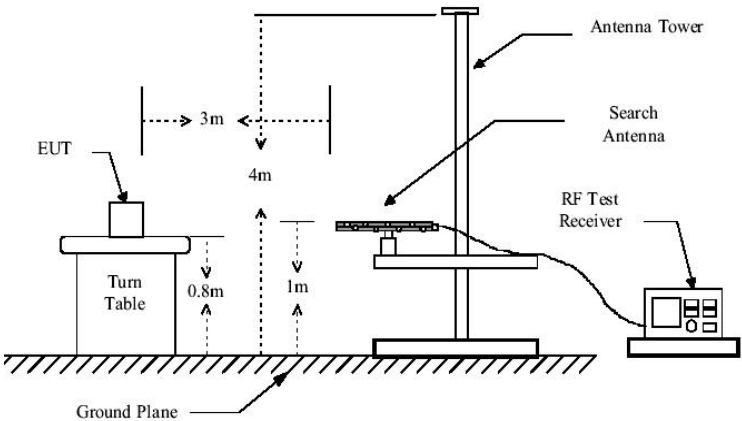
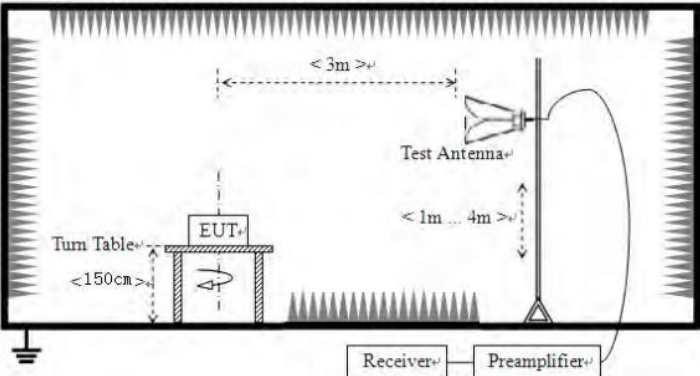
*:Maximum data x:Over limit !:over margin

(Reference Only)



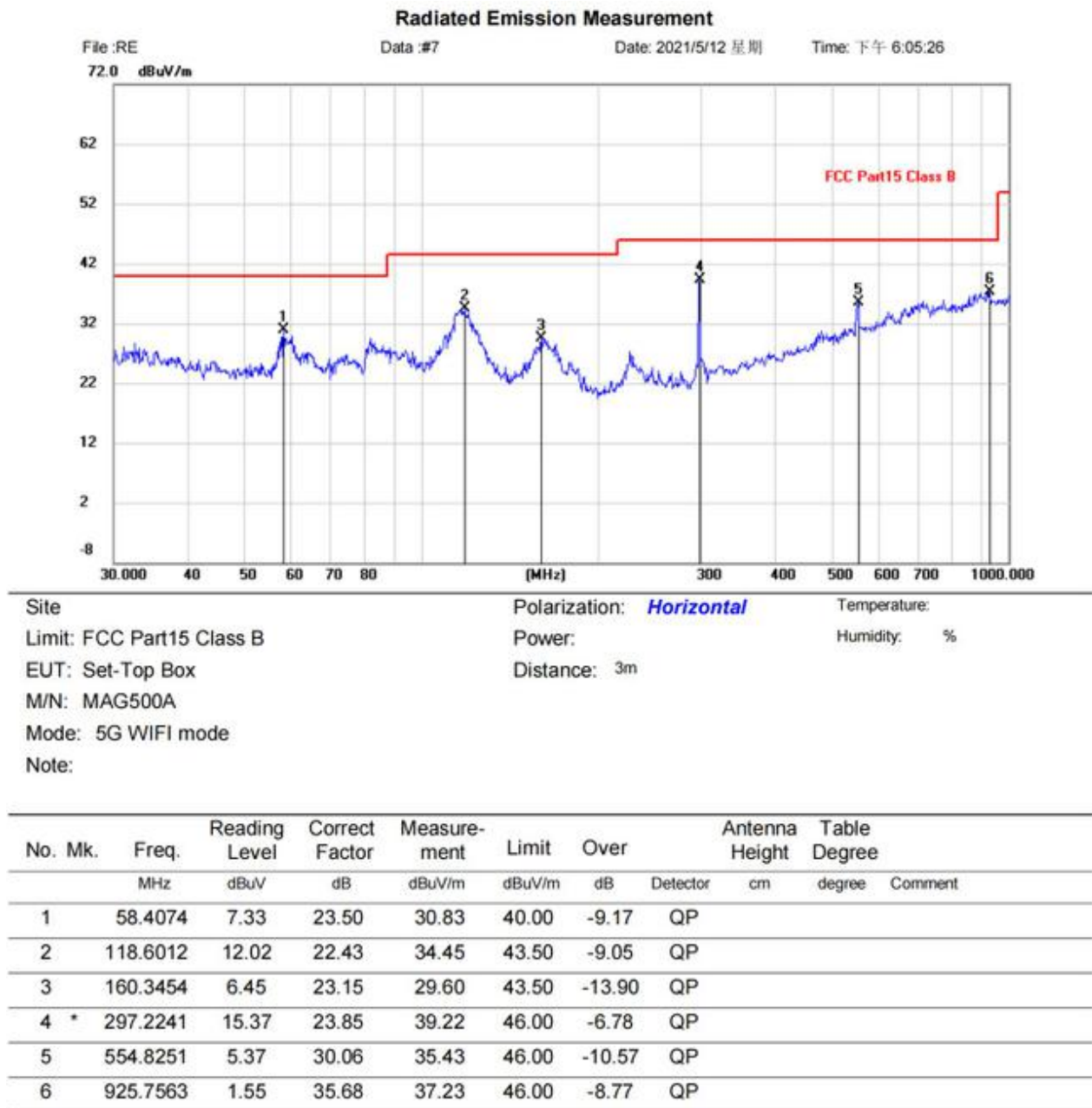
8.1.2 Unwanted Emissions in the Restricted Bands

Test Requirement:	FCC Part15 C Section 15.209 and 15.205																											
Test Method:	ANSI C63.10:2013																											
Test Frequency Range:	30MHz to 40GHz																											
Test site:	Measurement Distance: 3m																											
Receiver setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr><tr><td>Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr></table>					Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value								
Frequency	Detector	RBW	VBW	Remark																								
30MHz-1GHz	Quasi-peak	100kHz	300kHz	Quasi-peak Value																								
Above 1GHz	Peak	1MHz	3MHz	Peak Value																								
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr></table> <table><tr><td>Frequency</td><td>Limit (dBm/MHz)</td><td>Remark</td></tr><tr><td rowspan="2">Above 1GHz</td><td>68.20</td><td>Peak Value</td></tr><tr><td>54.00</td><td>Average Value</td></tr></table> Remark: 1. Above 1GHz limit: $E[dB\mu V/m] = EIRP[dBm] + 95.2=68.2 \text{ dBuV/m}$,for $EIPR[dBm]=-27dBm$.					Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Frequency	Limit (dBm/MHz)	Remark	Above 1GHz	68.20	Peak Value	54.00	Average Value
Frequency	Limit (dBuV/m @3m)	Remark																										
30MHz-88MHz	40.0	Quasi-peak Value																										
88MHz-216MHz	43.5	Quasi-peak Value																										
216MHz-960MHz	46.0	Quasi-peak Value																										
960MHz-1GHz	54.0	Quasi-peak Value																										
Frequency	Limit (dBm/MHz)	Remark																										
Above 1GHz	68.20	Peak Value																										
	54.00	Average Value																										
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the groundat a 3 meter camber. The table was rotated 360 degrees todetermine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, whichwas mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatablewas turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and SpecifiedBandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified andthen reported in a data sheet.																											

Test setup:	Below 1GHz  Above 1GHz 
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Below 1GHz

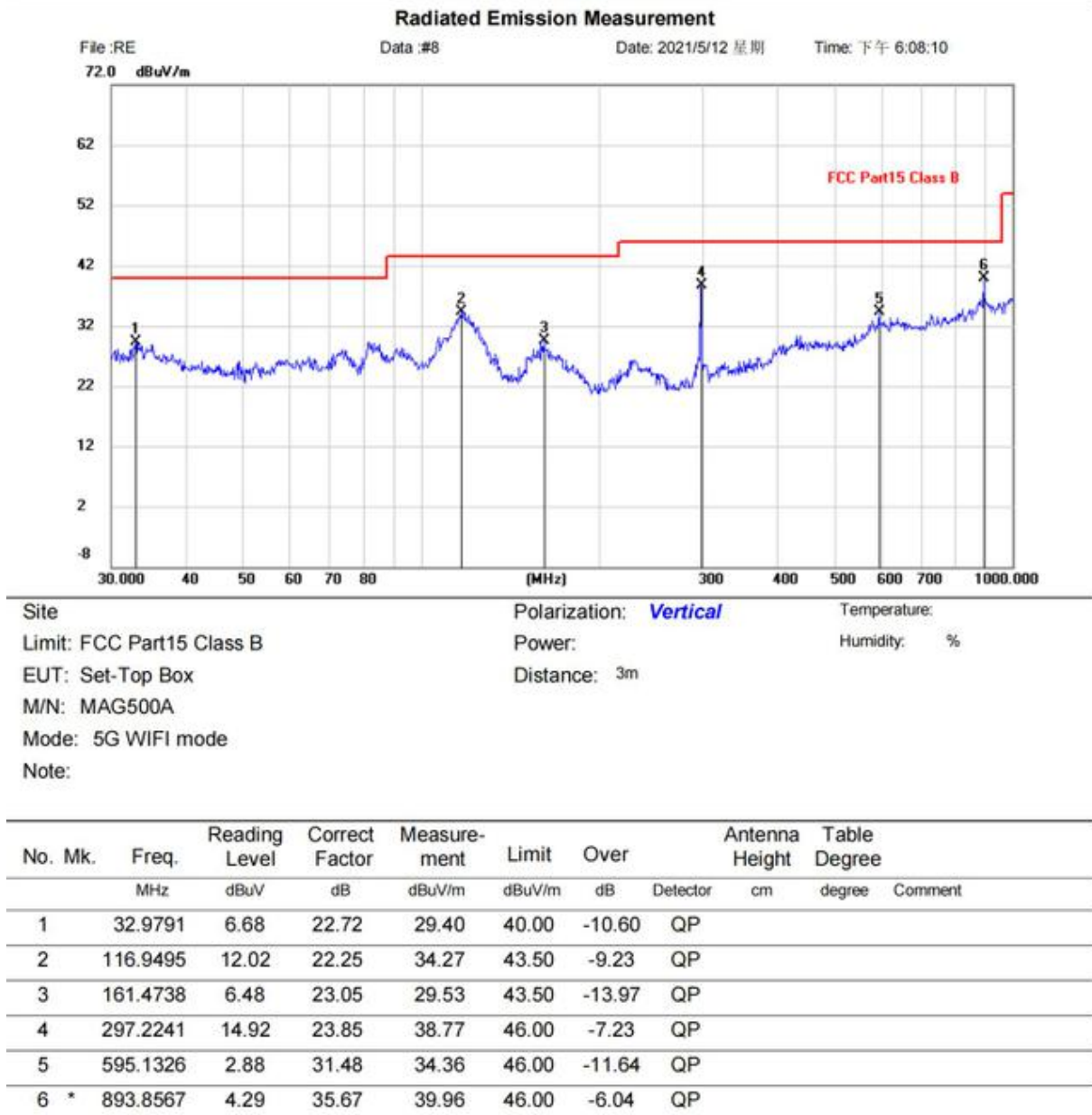
Horizontal:



*:Maximum data x:Over limit !:over margin

(Reference Only)

Vertical:



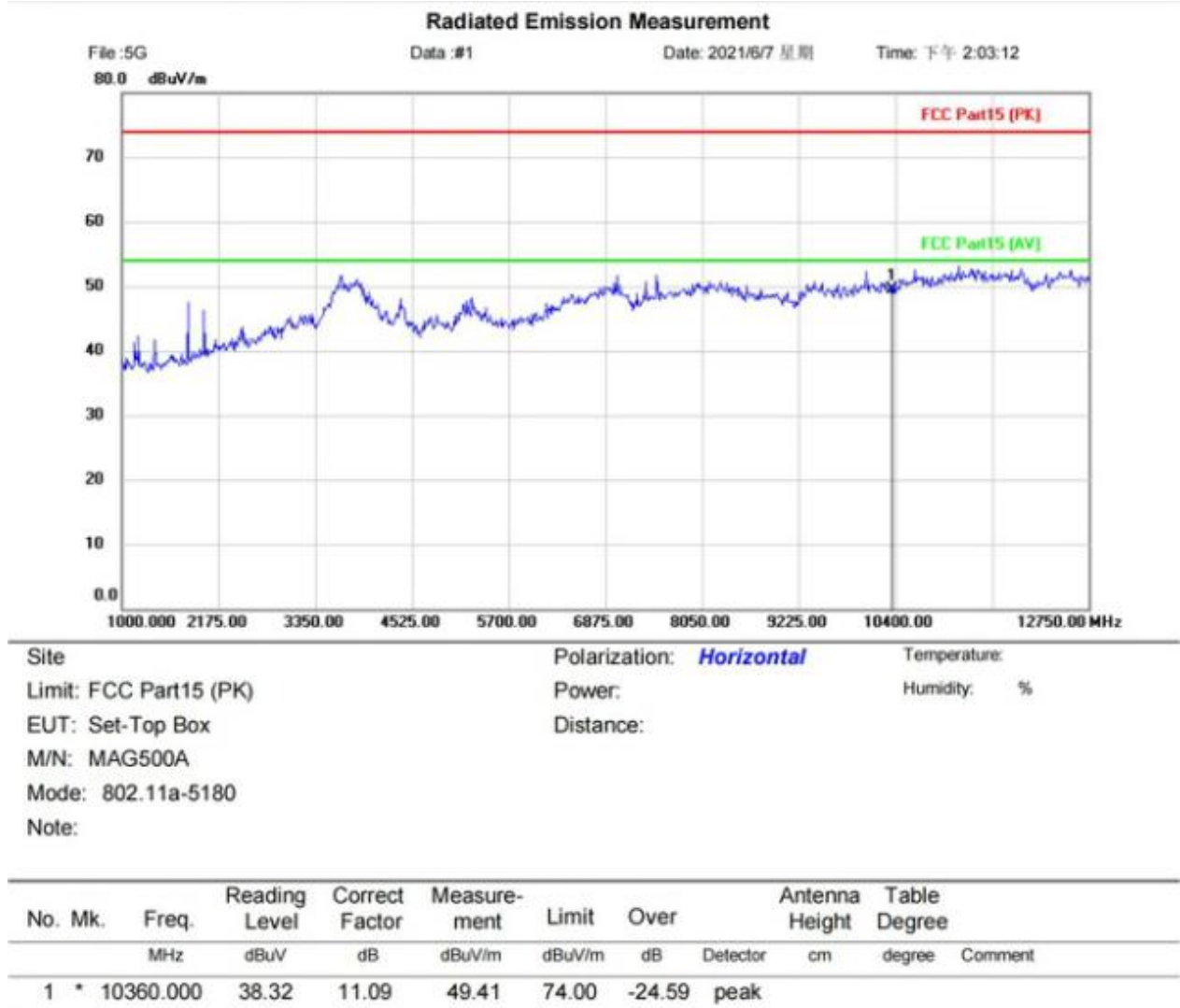
*:Maximum data x:Over limit !:over margin

(Reference Only)

Above 1GHz:

Band 1:802.11a mode(worst case)

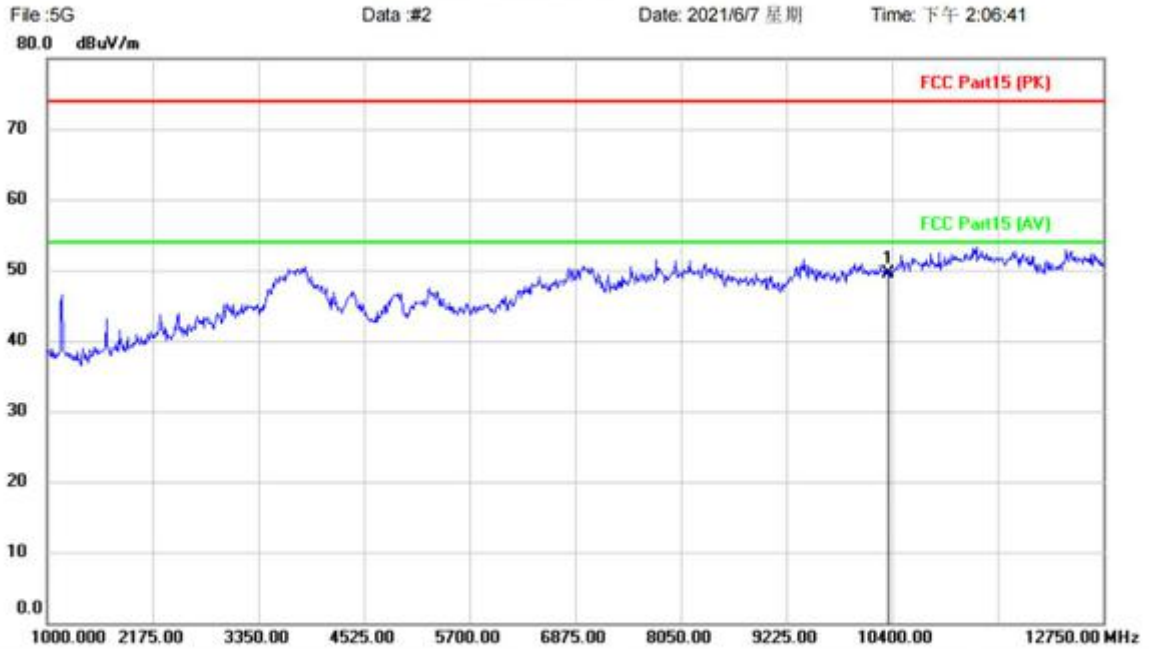
Lowest channel



*:Maximum data x:Over limit !:over margin

(Reference Only)

Radiated Emission Measurement



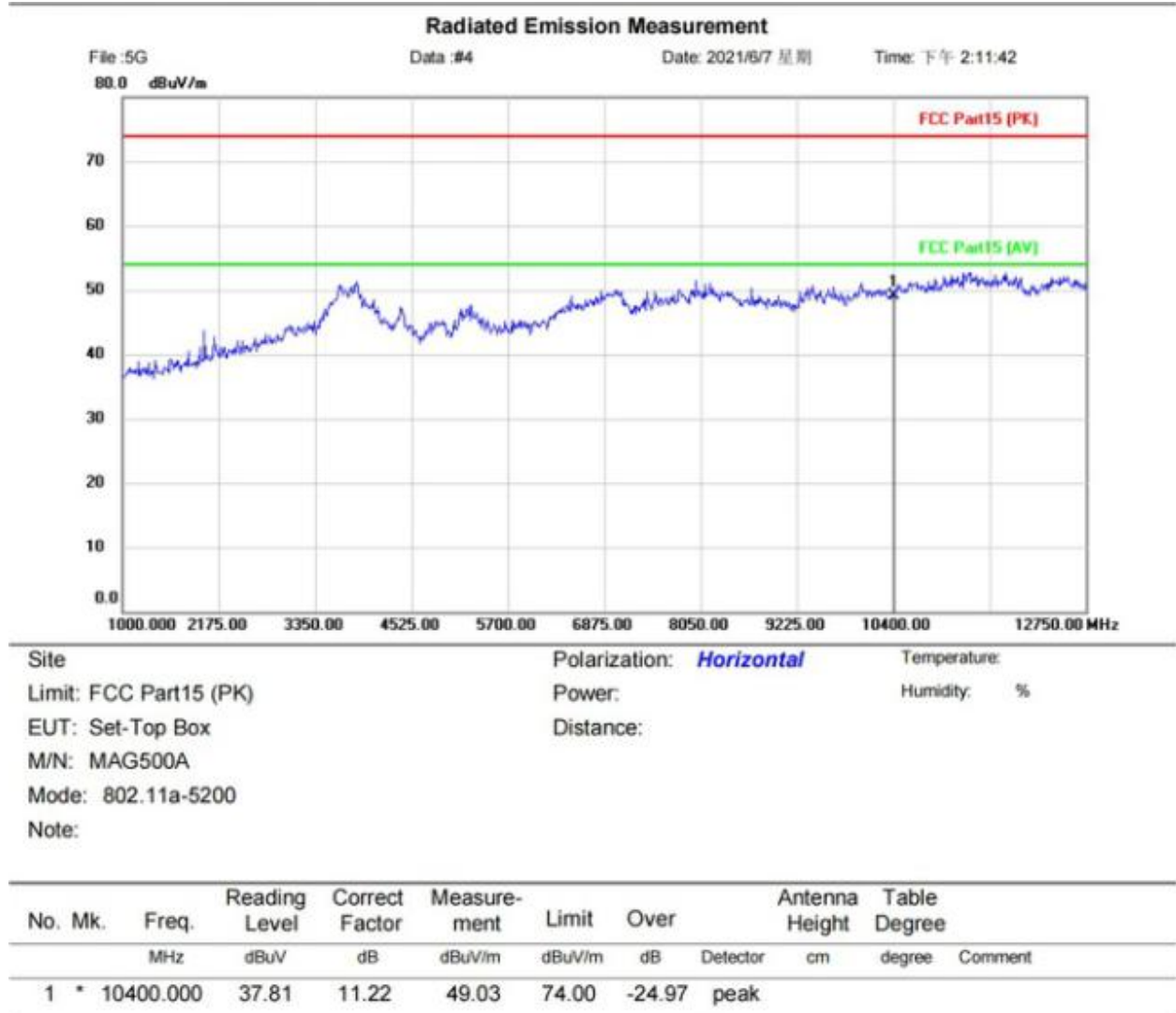
Site	Polarization: Vertical	Temperature:
Limit: FCC Part15 (PK)	Power:	Humidity: %
EUT: Set-Top Box	Distance:	
M/N: MAG500A		
Mode: 802.11a-5180		
Note:		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	10360.000	38.49	11.09	49.58	74.00	-24.42	peak		

*:Maximum data x:Over limit !:over margin

(Reference Only)

Middle channel



*:Maximum data x:Over limit !:over margin

(Reference Only)

Radiated Emission Measurement



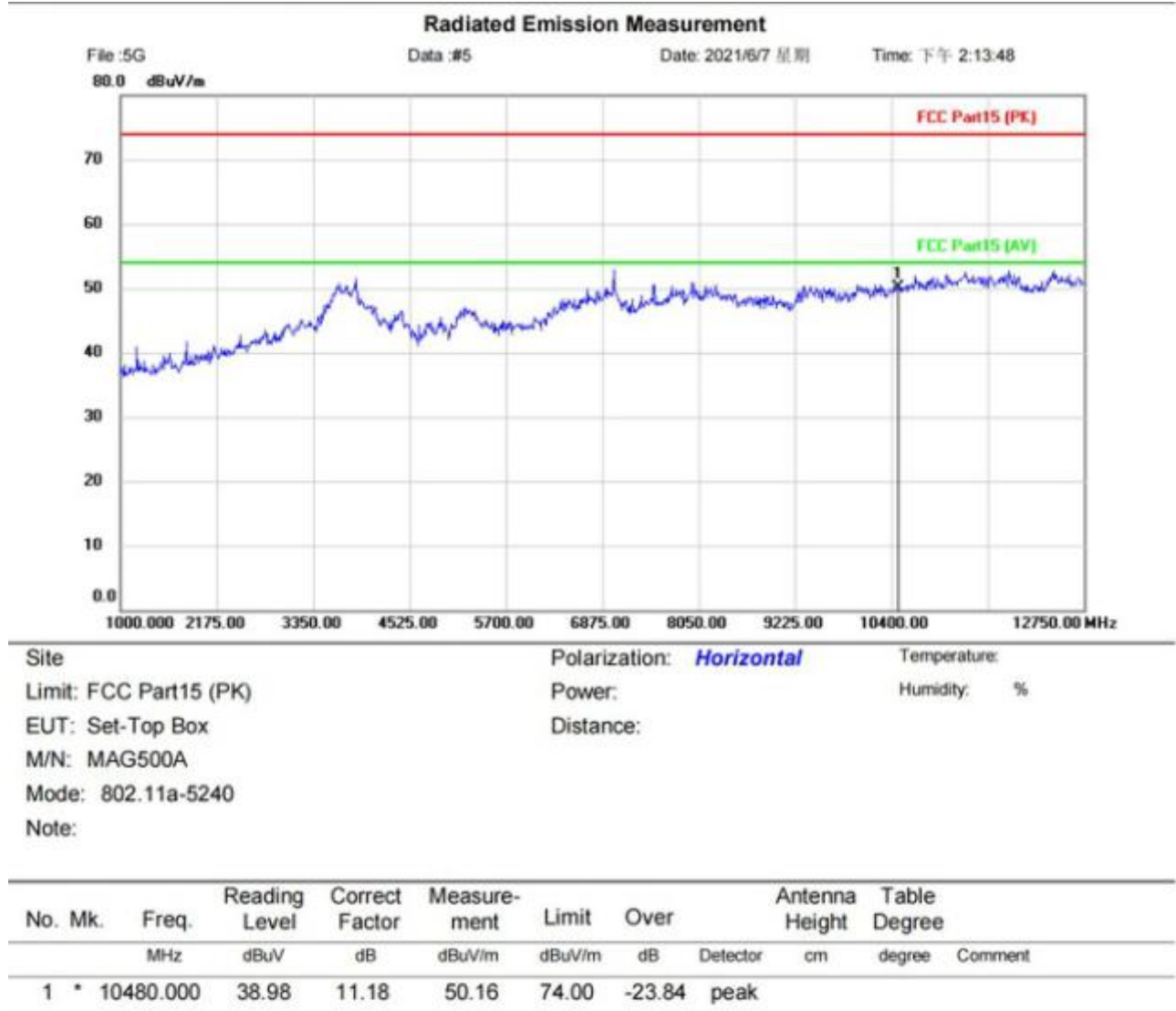
Site	Polarization: Vertical	Temperature:
Limit: FCC Part15 (PK)	Power:	Humidity: %
EUT: Set-Top Box	Distance:	
M/N: MAG500A		
Mode: 802.11a-5200		
Note:		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	10400.000	37.26	11.22	48.48	74.00	-25.52	peak		

*:Maximum data x:Over limit !:over margin

(Reference Only)

Highest channel



*:Maximum data x:Over limit !:over margin

(Reference Only)

Radiated Emission Measurement



Site	Polarization: Vertical	Temperature:
Limit: FCC Part15 (PK)	Power:	Humidity: %
EUT: Set-Top Box	Distance:	
M/N: MAG500A		
Mode: 802.11a-5240		
Note:		

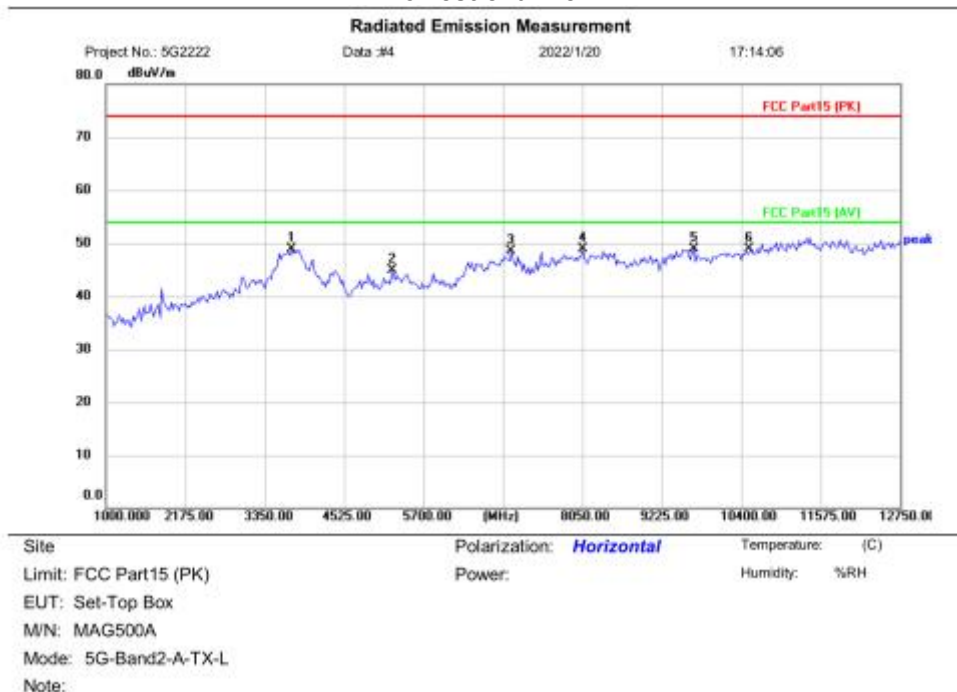
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	10480.000	38.95	11.18	50.13	74.00	-23.87	peak		

*:Maximum data x:Over limit !:over margin

(Reference Only)

Remark:

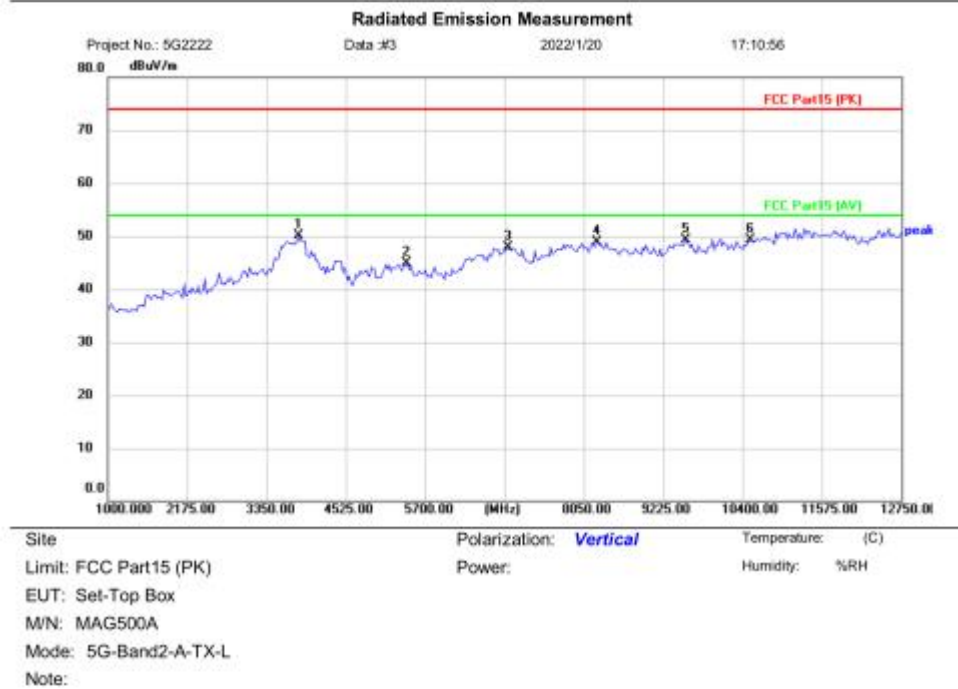
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. Correct factor = Antenna Factor + Cable Loss – Preamplifier Factor

Band 2:802.11a mode (worst case)
Lowest channel


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		3749.500	41.55	7.32	48.87	74.00	-25.13	peak	
2		5230.000	39.40	5.44	44.84	74.00	-29.16	peak	
3		6992.500	40.47	7.94	48.41	74.00	-25.59	peak	
4		8050.000	40.83	8.01	48.84	74.00	-25.16	peak	
5		9695.000	39.38	9.48	48.86	74.00	-25.14	peak	
6	*	10520.000	37.75	11.17	48.92	74.00	-25.08	peak	

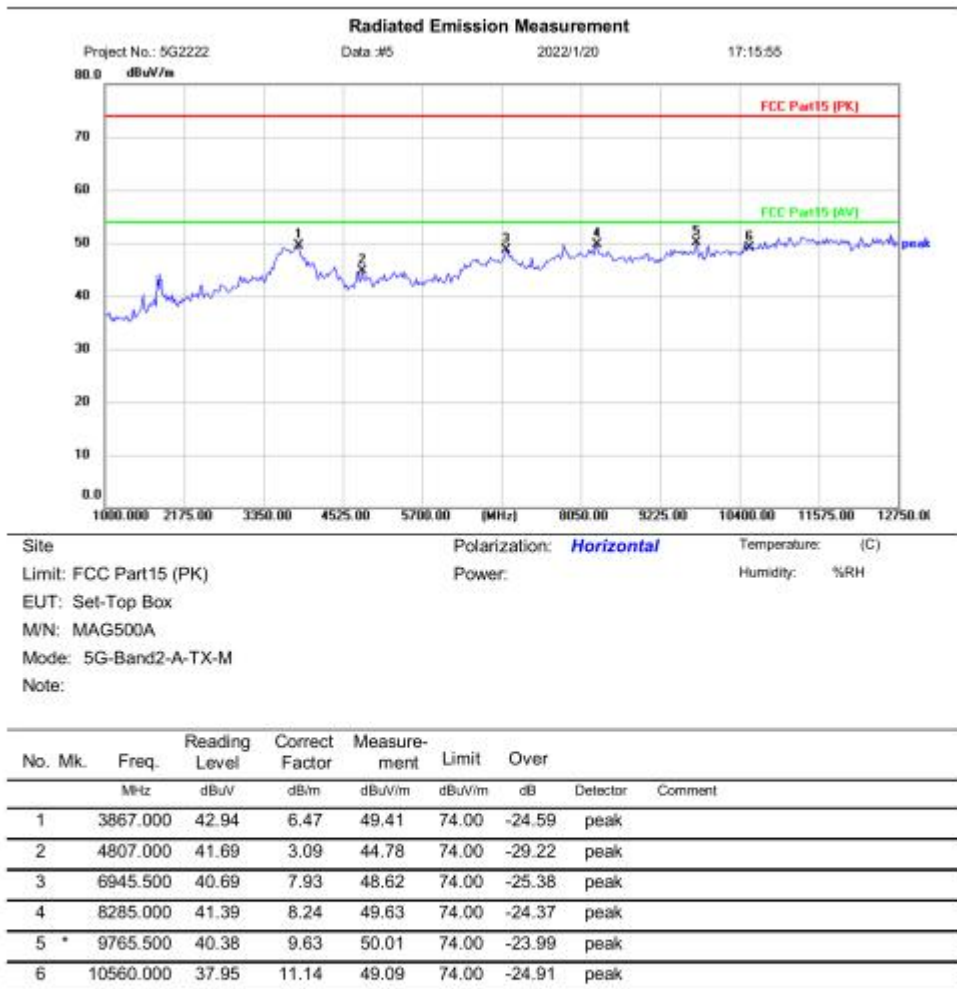
*:Maximum data x:Over limit !:over margin

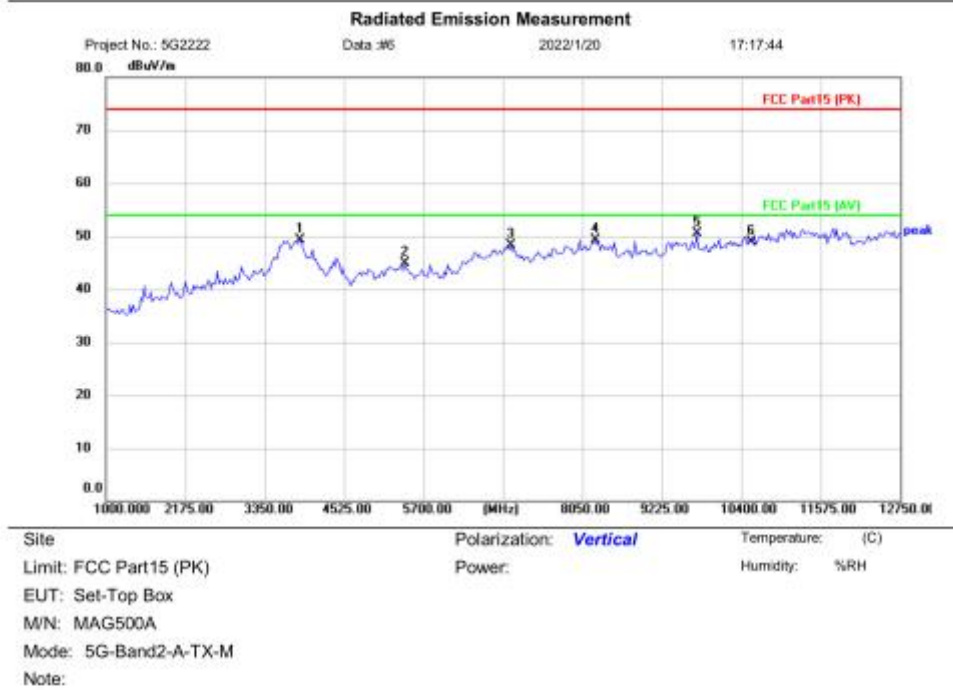
(Reference Only)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	*	3820.000	43.03	7.09	50.12	74.00	-23.88	peak	
2		5418.000	41.24	3.65	44.89	74.00	-29.11	peak	
3		6922.000	39.99	7.92	47.91	74.00	-26.09	peak	
4		8238.000	40.67	8.22	48.89	74.00	-25.11	peak	
5		9554.000	40.07	9.17	49.24	74.00	-24.76	peak	
6		10520.000	38.05	11.17	49.22	74.00	-24.78	peak	

Middle channel



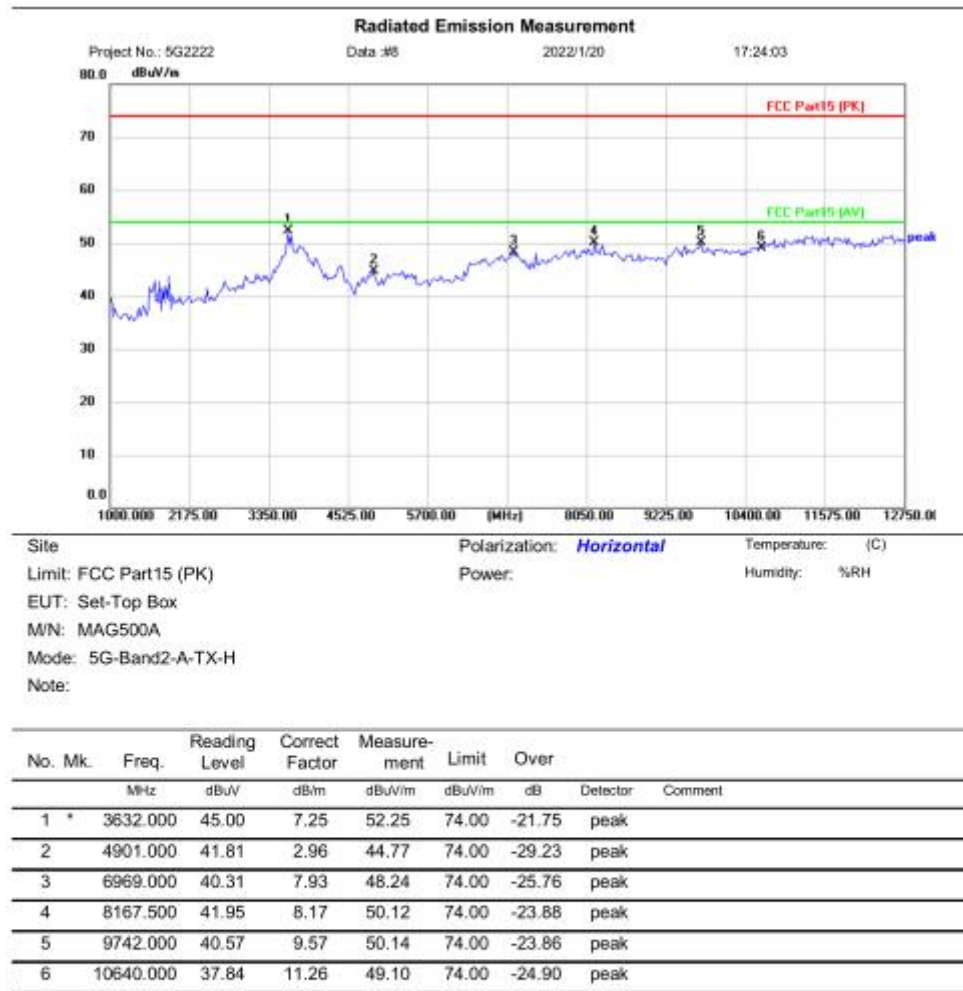


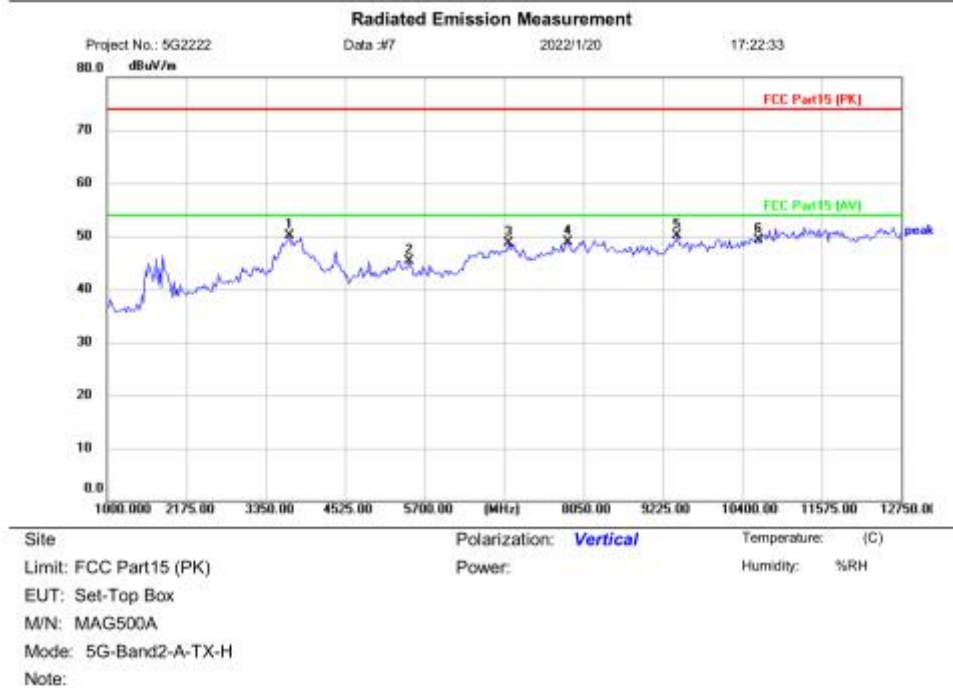
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		3867.000	42.86	6.47	49.33	74.00	-24.67	peak	
2		5418.000	41.19	3.65	44.84	74.00	-29.16	peak	
3		6992.500	40.27	7.94	48.21	74.00	-25.79	peak	
4		8238.000	41.00	8.22	49.22	74.00	-24.78	peak	
5	*	9742.000	40.95	9.57	50.52	74.00	-23.48	peak	
6		10560.000	37.78	11.14	48.92	74.00	-25.08	peak	

*:Maximum data x:Over limit !:over margin

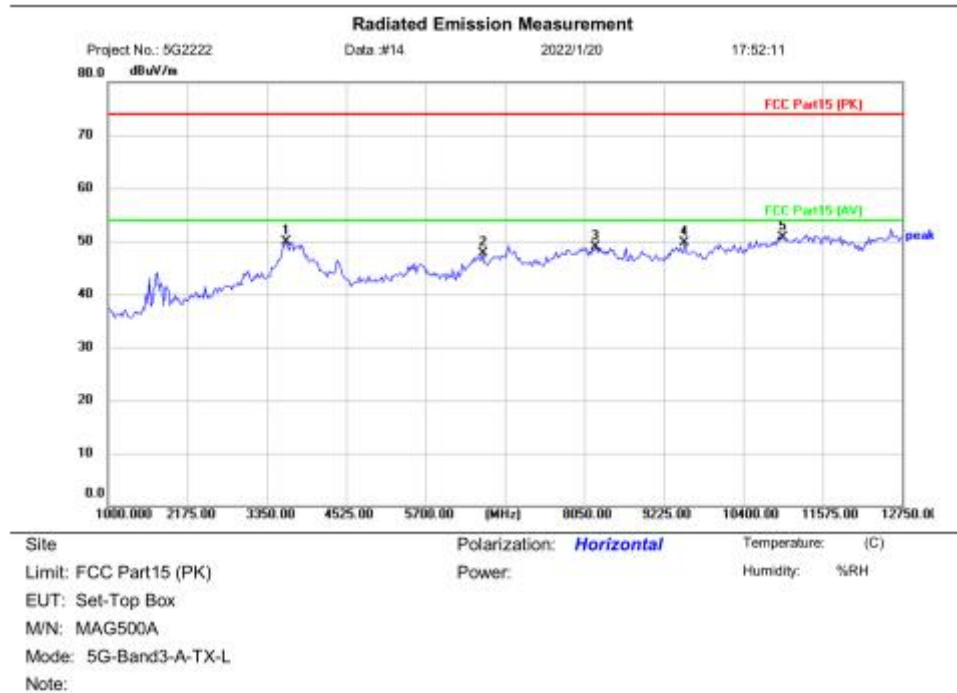
(Reference Only)

Highest channel

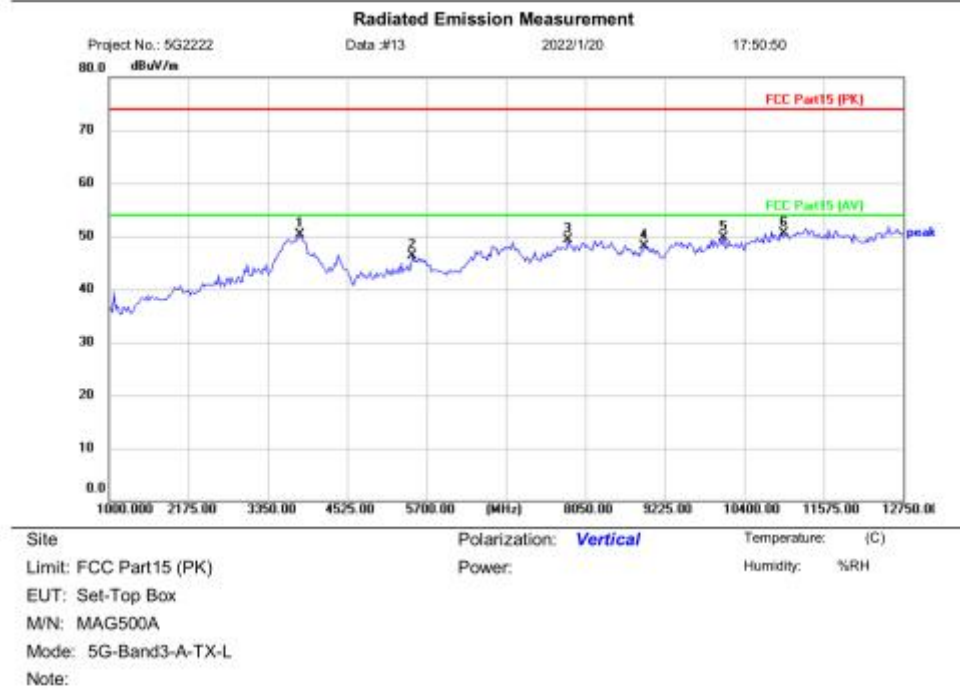




No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	*	3702.500	42.84	7.29	50.13	74.00	-23.87	peak	
2		5465.000	42.15	3.25	45.40	74.00	-28.60	peak	
3		6945.500	40.68	7.93	48.61	74.00	-25.39	peak	
4		7815.000	41.22	7.72	48.94	74.00	-25.06	peak	
5		9436.500	41.18	8.91	50.09	74.00	-23.91	peak	
6		10640.000	38.09	11.26	49.35	74.00	-24.65	peak	

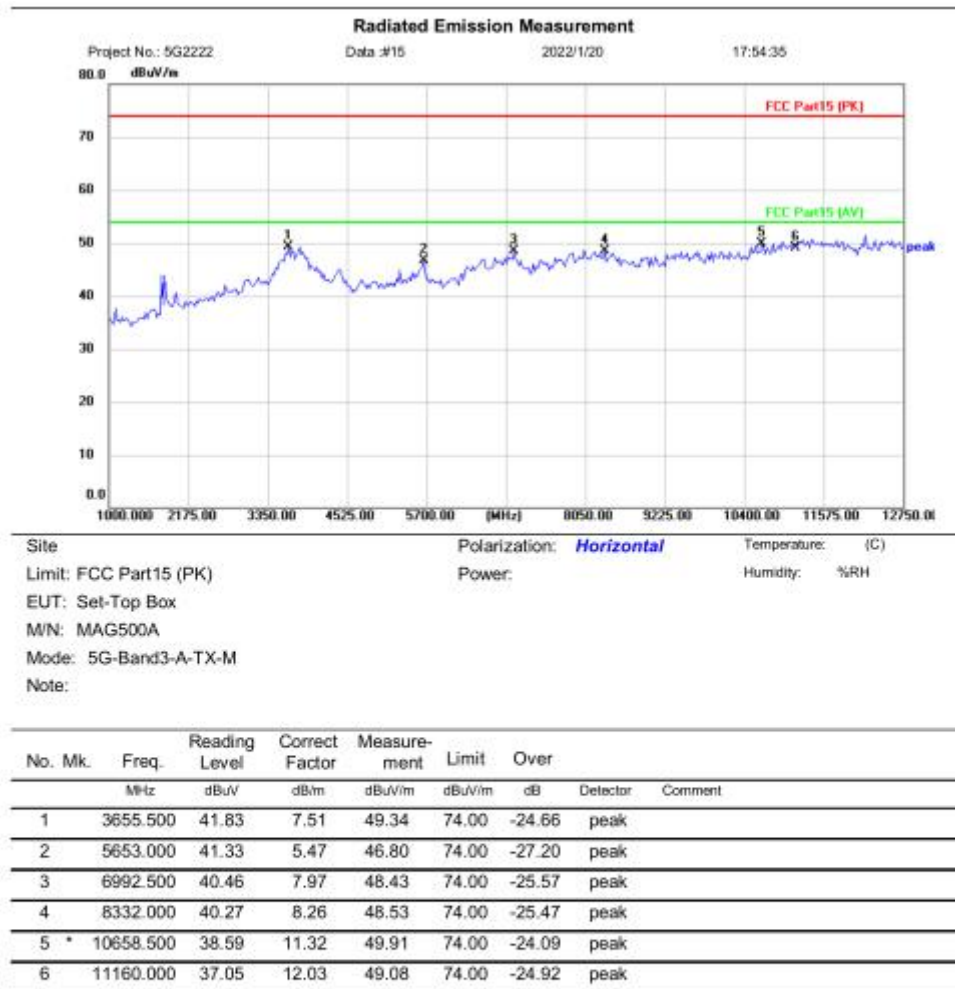
Band 3:802.11a mode (worst case)
Lowest channel


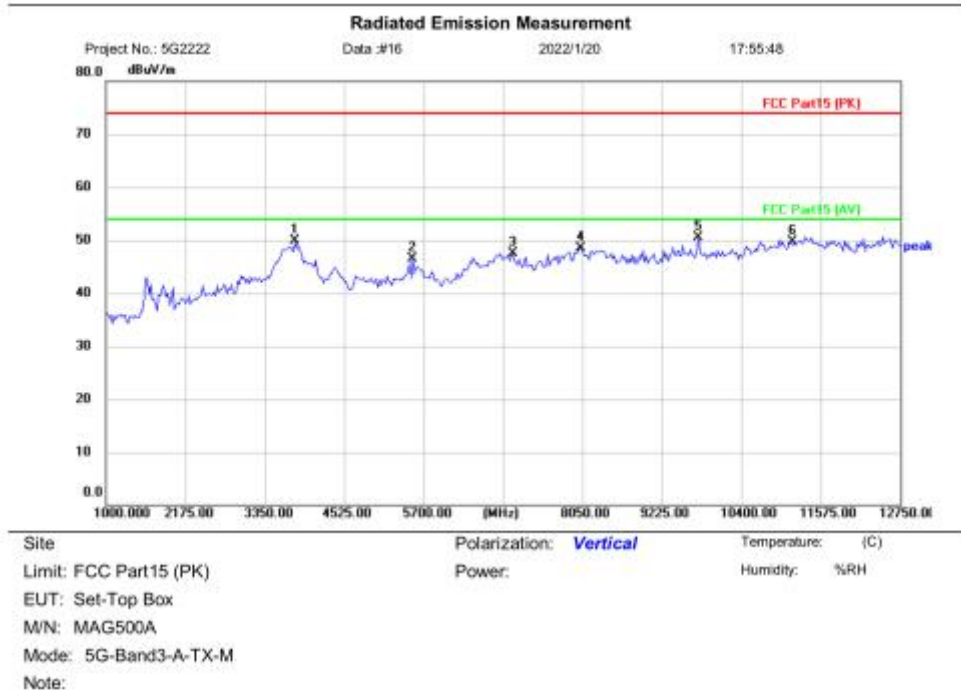
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		3632.000	42.56	7.43	49.99	74.00	-24.01	peak	
2		6546.000	40.75	6.88	47.63	74.00	-26.37	peak	
3		8214.500	40.62	8.21	48.83	74.00	-25.17	peak	
4		9530.500	40.60	9.12	49.72	74.00	-24.28	peak	
5	*	11000.000	38.71	11.99	50.70	74.00	-23.30	peak	



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		3820.000	43.09	7.28	50.37	74.00	-23.63	peak	
2		5488.500	40.36	5.87	46.23	74.00	-27.77	peak	
3		7791.500	41.59	7.68	49.27	74.00	-24.73	peak	
4		8919.500	40.18	7.95	48.13	74.00	-25.87	peak	
5		10094.500	39.27	10.51	49.78	74.00	-24.22	peak	
6	*	11000.000	38.50	11.99	50.49	74.00	-23.51	peak	

Middle channel

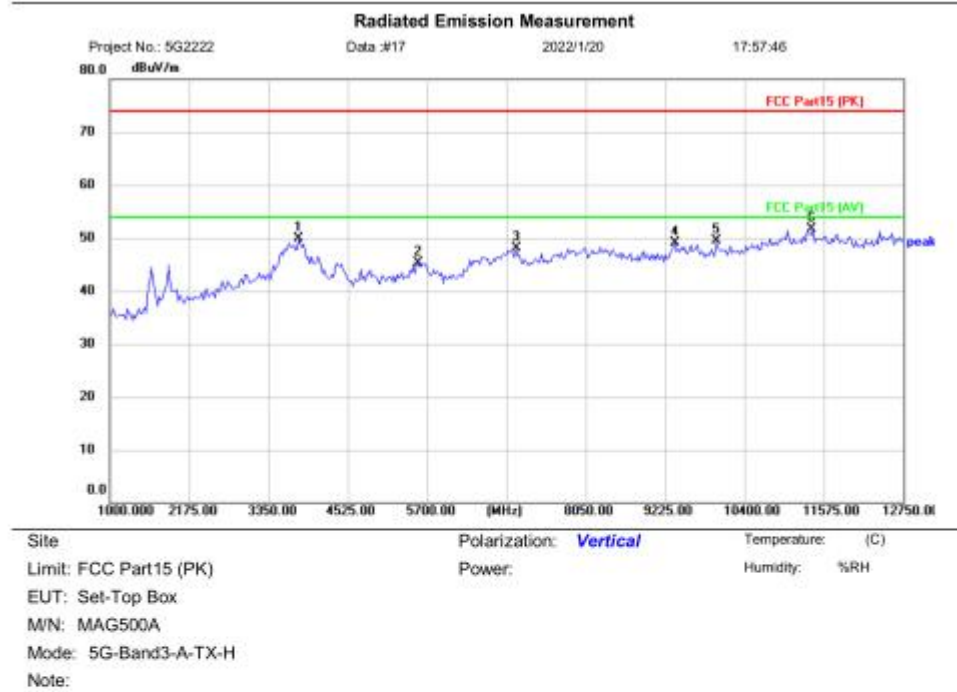




No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBm	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		3796.500	42.34	7.56	49.90	74.00	-24.10	peak	
2		5535.500	40.70	5.76	46.46	74.00	-27.54	peak	
3		7016.000	42.30	5.22	47.52	74.00	-26.48	peak	
4		8026.500	40.62	7.98	48.60	74.00	-25.40	peak	
5	*	9765.500	40.79	9.63	50.42	74.00	-23.58	peak	
6		11160.000	37.65	12.03	49.68	74.00	-24.32	peak	

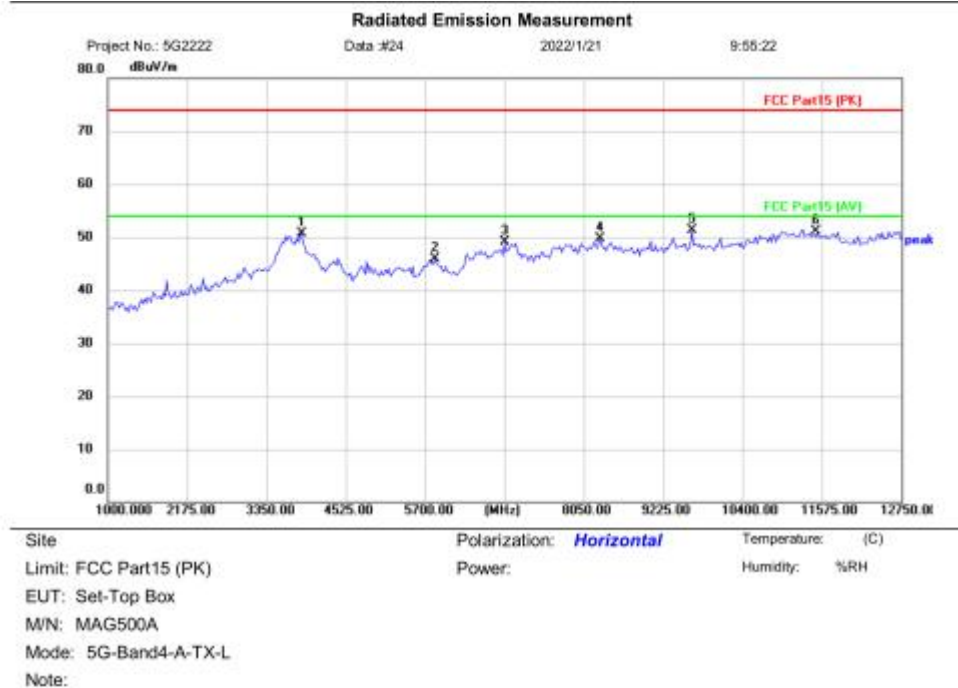
Highest channel



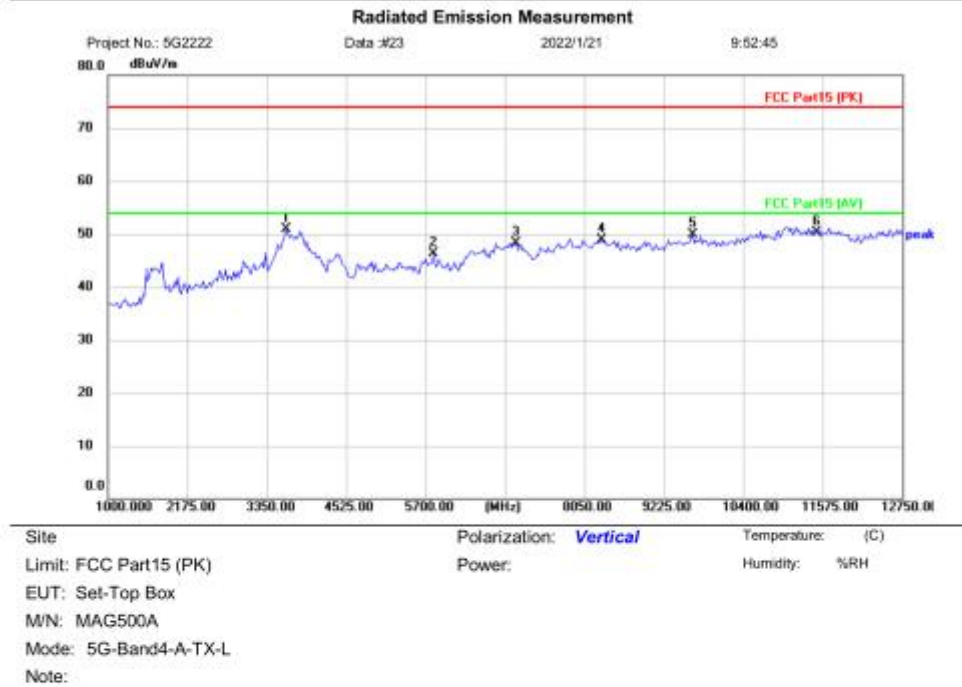


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dBm	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		3796.500	42.42	7.56	49.98	74.00	-24.02	peak	
2		5559.000	39.50	5.71	45.21	74.00	-28.79	peak	
3		7016.000	42.81	5.22	48.03	74.00	-25.97	peak	
4		9366.000	40.33	8.78	49.11	74.00	-24.89	peak	
5		9977.000	39.14	10.37	49.51	74.00	-24.49	peak	
6	*	11400.000	39.87	11.76	51.63	74.00	-22.37	peak	

BlueAsia

Band 4:802.11a mode (worst case)
Lowest channel


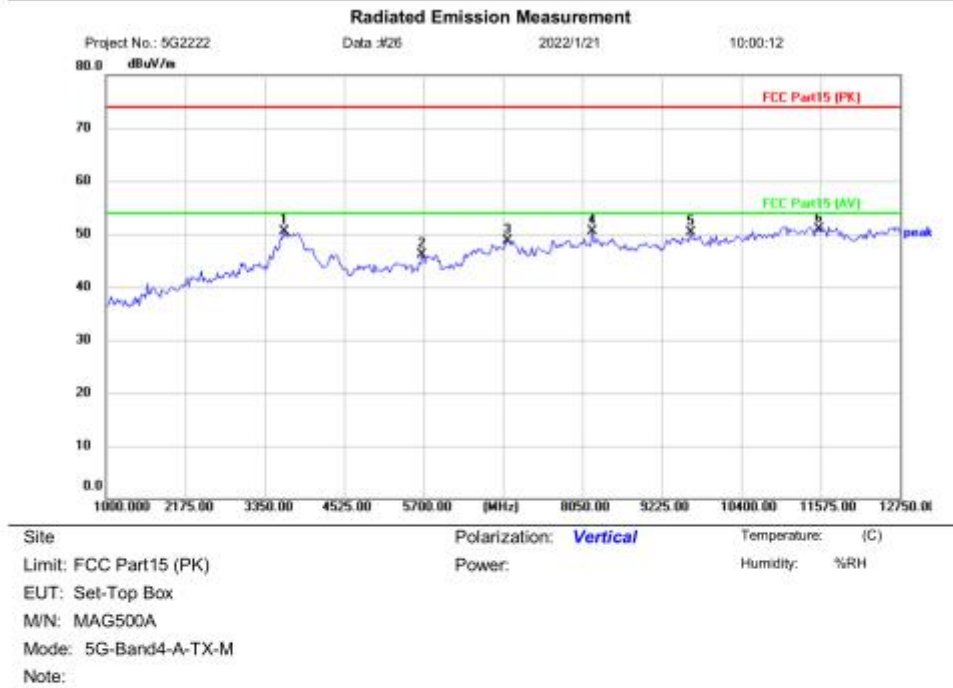
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		3867.000	44.28	6.39	50.67	74.00	-23.33	peak	
2		5841.000	41.09	4.77	45.86	74.00	-28.14	peak	
3		6875.000	41.15	7.91	49.06	74.00	-24.94	peak	
4		8285.000	41.53	8.24	49.77	74.00	-24.23	peak	
5	*	9648.000	41.87	9.37	51.24	74.00	-22.76	peak	
6		11490.000	39.17	11.89	51.06	74.00	-22.94	peak	



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	3632.000	43.48	7.46	50.94	74.00	-23.06	peak	
2		5817.500	41.16	5.06	46.22	74.00	-27.78	peak	
3		7039.500	43.02	5.32	48.34	74.00	-25.66	peak	
4		8308.500	40.72	8.25	48.97	74.00	-25.03	peak	
5		9648.000	40.47	9.37	49.84	74.00	-24.16	peak	
6		11490.000	38.36	11.89	50.25	74.00	-23.75	peak	

Middle channel

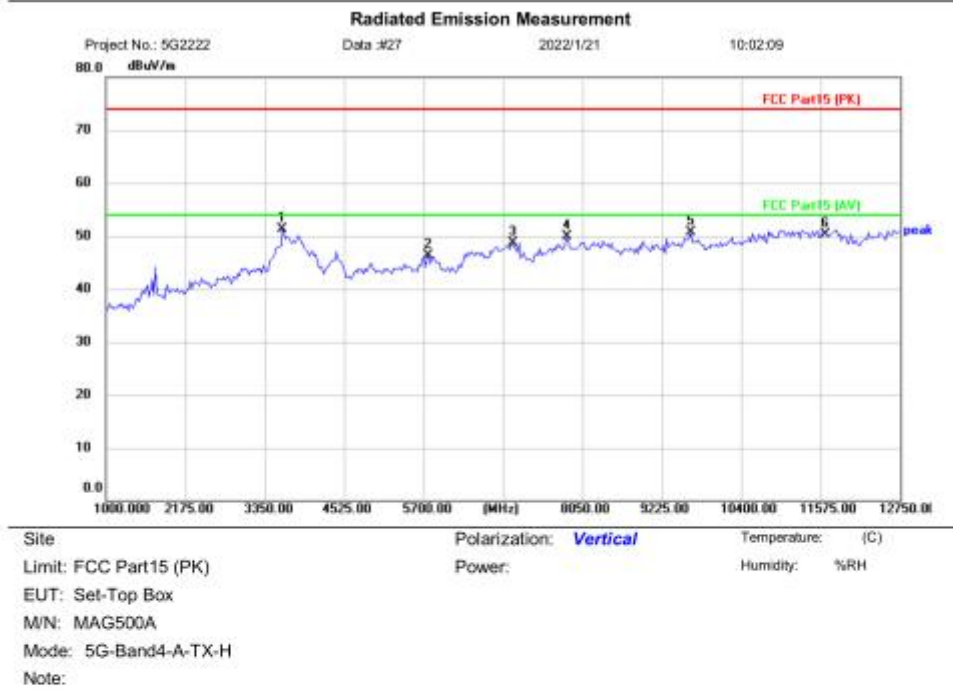




No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		3632.000	42.97	7.46	50.43	74.00	-23.57	peak	
2		5676.500	42.18	3.83	46.01	74.00	-27.99	peak	
3		6945.500	40.75	8.02	48.77	74.00	-25.23	peak	
4		8191.000	42.37	8.20	50.57	74.00	-23.43	peak	
5		9648.000	40.84	9.37	50.21	74.00	-23.79	peak	
6	*	11570.000	38.94	12.01	50.95	74.00	-23.05	peak	

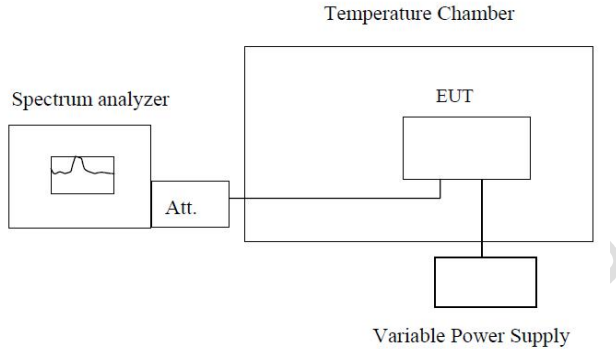
Highest channel





No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	3608.500	43.68	7.53	51.21	74.00	-22.79	peak	
2		5770.500	40.68	5.66	46.34	74.00	-27.66	peak	
3		7016.000	43.50	5.22	48.72	74.00	-25.28	peak	
4		7815.000	42.13	7.72	49.85	74.00	-24.15	peak	
5		9648.000	41.34	9.37	50.71	74.00	-23.29	peak	
6		11650.000	38.32	11.93	50.25	74.00	-23.75	peak	

8.2 Frequency stability

Test Requirement:	FCC Part15 E Section 15.407 (g)
Limit:	Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The EUT is installed in an environment test chamber with external power source. 2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT. 3. A sufficient stabilization period at each temperature is used prior to each frequency measurement. 4. When temperature is stabled, measure the frequency stability. 5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.
Test results:	Passed

Measurement Data

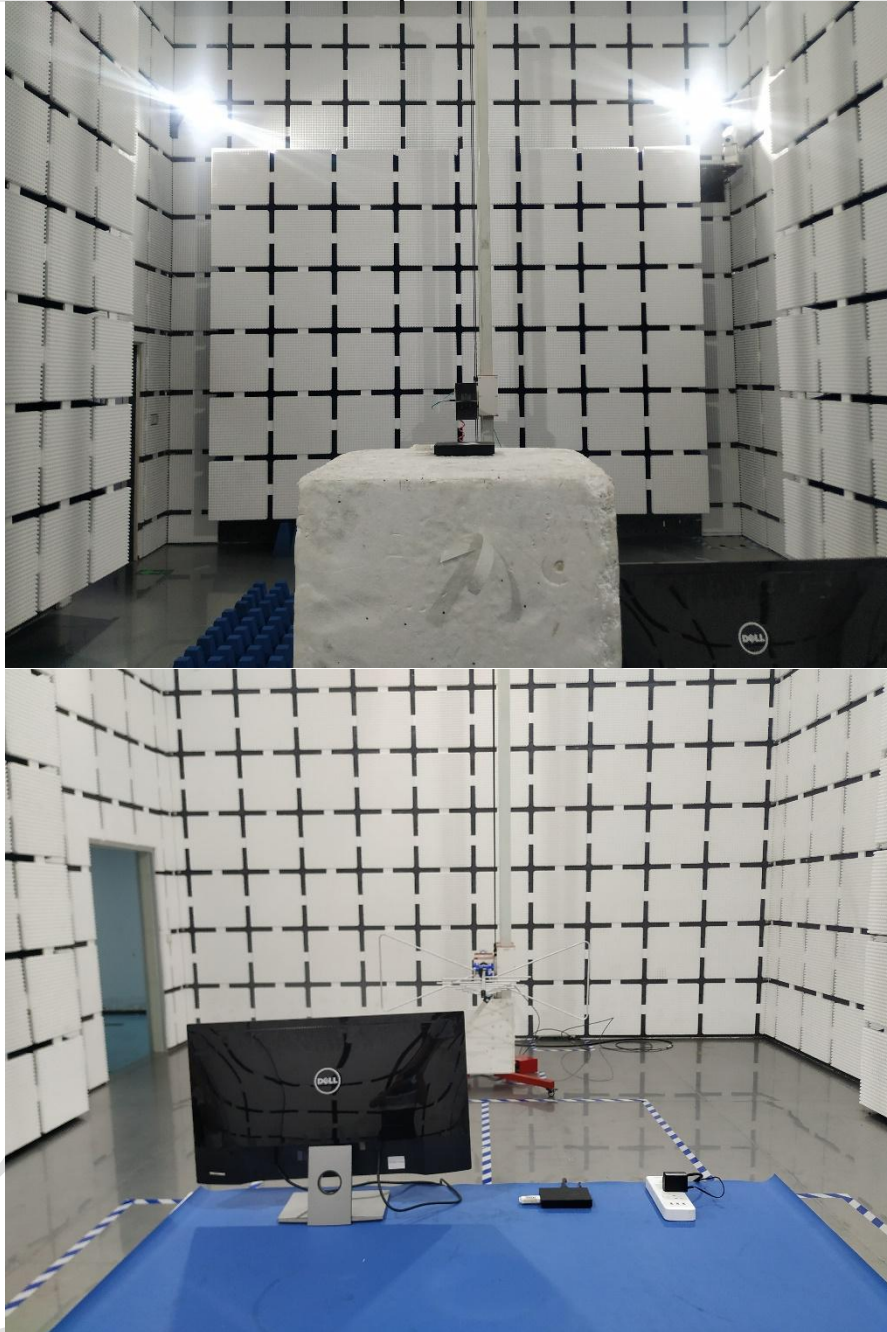
Please Refer To Appendix: Appendix3

9 Test Setup Photo

Conducted Emissions at AC Power Line (150kHz-30MHz)



Radiated Spurious Emissions



10 EUT Constructional Details

Reference to the test report No. BLA-EMC-202105-A0701

-----End of report-----

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full.

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