Prüfbericht-Nr.: *Test report no.:*	CN212BVU (P15E-WiFi) 001	**Auftrags-Nr.:** *Order no.:*	238494114	
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2020-11-12	
Auftraggeber: *Client:*	AURES TECHNOLOGIES S.A. 24 bis rue Léonard de Vinci 91090 Lisses FRANCE			
Prüfgegenstand: *Test item:*	7" Integrated Handy POS			
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	TMC7200			
Auftrags-Inhalt: *Order content:*	FCC Part 15E Test report (WiFi 5GHz)			
Prüfgrundlage: *Test specification:*	FCC 47CFR Part 15: Subpart E Section 15.407			
Wareneingangsdatum: *Date of sample receipt:*	2021-08-04			
Prüfmuster-Nr.: *Test sample no:*	A003104126-001			
Prüfzeitraum: *Testing period:*	2021-08-23 - 2021-08-30			
Ort der Prüfung: *Place of testing:*	EMC/RF Taipei Testing Site			
Prüflaboratorium: *Testing laboratory:*	Taipei Testing Laboratories			
Prüfergebnis*: *Test result*:*	Pass			

überprüft von: *compiled by:*		**genehmigt von:** authorized by:	
Datum: *Date:* 2021-09-08		**Ausstellungsdatum:** *Issue date:* 2021-09-08	
Stellung / *Position:*	Ryan Chen Senior Project Manager	**Stellung** / *Position:*	Brenda Chen Senior Project Manager

Sonstiges / *Other:* This report only evaluated Output Power, RSE and Mains Conducted Emissions tests. The other test results are referred to the module report no.: CN210UH4 (P15E-WiFi) 001.

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.
V05

TEST SUMMARY

Report Section	FCC Clause	Test Item	Result
5.1.1	15.407(a) & 15.203	Antenna Requirement	Pass
5.1.2	15.407(a)	Maximum Conducted Output Power	Pass
-	15.407(a)	26 dB Bandwidth	N/A (Note 1)
-	2.1049	99% Occupied Bandwidth	N/A (Note 1)
-	15.407(e)	6 dB Bandwidth (U-NII-3 Band only)	N/A (Note 1)
-	15.407(g)	Frequency Stability	N/A (Note 1)
-	15.407(a)	Power Spectral Density	N/A (Note 1)
5.1.3	15.407(b) & 15.205 & 15.209	Radiated Spurious Emissions and Band Edges	Pass
-	15.407(h) & KDB 905462 D02	Dynamic Frequency Selection	N/A (Note 1)
5.2.1	15.207	Mains Conducted Emission	Pass

Note:

1. Refer to module report no.: CN210UH4 (P15E-WiFi) 001 for the details.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN212BVU (P15E-WiFi) 001	Original Release	2021-09-08

1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:
Appendix A - Test Result of Radiated Emissions & Mains Conducted Emission
Appendix SP - Photographs of Test Setup
Appendix EP - Photographs of EUT

Applied Standard and Test Levels

Radio
FCC 47CFR Part 15: Subpart E Section 15.407
FCC 47CFR Part 2: Subpart J Section 2.1049
ANSI C63.10:2013
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
ISED Registration No.: 25563

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basics using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of k=2 to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.32 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.31 dB
Radiated Emission (1 GHz ~ 18 GHz)	± 1.53 dB
Radiated Emission (18 GHz ~ 40 GHz)	± 2.50 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a 7" Integrated Handy POS. It contains a WLAN compatible module enabling the user to communicate data through a Wireless interface.
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	7" Integrated Handy POS
Type Identification	TMC7200
FCC ID	2AMRAP-WFBT-AP6356

Technical Specification of EUT

Item	EUT information
Operating Frequency	Band 1: 5180 MHz ~ 5240 MHz Band 2: 5260 MHz ~ 5320 MHz Band 3: 5500 MHz ~ 5700 MHz Band 4: 5745 MHz ~ 5825 MHz
Channel Number	Band 1: 4 for 802.11a, 802.11n HT20 / 802.11ac VHT20 2 for 802.11n HT40 / 802.11ac VHT40 1 for 802.11ac VHT80 Band 2: 4 for 802.11a, 802.11n HT20 / 802.11ac VHT20 2 for 802.11n HT40 / 802.11ac VHT40 1 for 802.11ac VHT80 Band 3: 11 for 802.11a, 802.11n HT20 / 802.11ac VHT20 5 for 802.11n HT40 / 802.11ac VHT40 2 for 802.11ac VHT80 Band 4: 5 for 802.11a, 802.11n HT20 / 802.11ac VHT20 2 802.11n HT40 / 802.11ac VHT40 1 for 802.11ac VHT80
Data Rate	802.11a: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7 802.11ac: up to MCS9
Operation Voltage	3.85 Vdc
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Maximum Output Power (mW)	5180 ~ 5240 MHz: 51.52 5260 ~ 5320 MHz: 50.03 5500 ~ 5720 MHz: 91.00 5745 ~ 5825 MHz: 45.67
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.4

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The test modes were adapted accordingly in reference to the instructions for use.
During testing, Channel and 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 expected by the customer and is going to be fixed on the firmware of the final end product.

Table for Parameters of Test Software Setting

802.11a		802.11n HT20 / 802.11ac VHT20		802.11n HT40 / 802.11ac VHT40		802.11ac VHT80	
Channel	Power Setting	Channel	Power Setting	Channel	Power Setting	Channel	Power Setting
36	50	36	55	38	37	42	14
40	50	40	55	46	55	58	36
48	50	48	55	54	55	106	30
52	51	52	58	62	47	122	48
60	46	60	56	102	37	155	61
64	45	64	59	110	55		
100	59	100	59	134	55		
116	59	116	48	151	61		
140	59	140	61	159	61		
149	61	149	61				
157	61	157	61				
165	61	165	55				

4.2 Carrier Frequency and Channel

Band	Channel	Frequency (MHz)	802.11a 802.11n HT20	802.11n HT40	802.11ac VHT80
U-NII-1 (Band 1)	36	5180	V		
	38	5190		V	
	40	5200	V		
	42	5210			V
	44	5220	V		
	46	5230		V	
	48	5240	V		
U-NII-2A (Band 2)	52	5260	V		
	54	5270		V	
	56	5280	V		
	58	5290			V
	60	5300	V		
	62	5310		V	
	64	5320	V		
U-NII-2C (Band 3)	100	5500	V		
	102	5510		V	
	104	5520	V		
	106	5530			V
	108	5540	V		
	110	5550		V	
	112	5560	V		
	116	5580	V		
	118	5590		V	
	120	5600	V		
	122	5610			V
	124	5620	V		
	126	5630		V	
	128	5640	V		
	132	5660	V		
	134	5670		V	
	136	5680	V		
	140	5700	V		
U-NII-3 (Band 4)	149	5745	V		
	151	5755		V	
	153	5765	V		
	155	5775			V
	157	5785	V		
	159	5795		V	
	161	5805	V		
	165	5825	V		

4.3 Test Operation and Test Software

Setup for testing: Test samples is a windows systems which makes it possible to control them through a test software installed on it.
It was used to enable the operation modes listed as below.

Test Software	wl.exe

The samples were used as follows:
A003104126-001

Full test was applied on all test modes, but only worst case was shown.

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers.

Modulation Mode	Tx Function
802.11a	2TX (MIMO)
802.11n HT20	2TX (MIMO)
802.11n HT40	2TX (MIMO)
802.11ac VHT20	2TX (MIMO)
802.11ac VHT40	2TX (MIMO)
802.11ac VHT80	2TX (MIMO)

* The modulation and bandwidth are similar for 802.11n mode HT20/HT40 and 802.11ac mode VHT20/VHT40, therefore investigated worse case as representative mode in test report.

EUT Configure Mode	Applicable To				Description
	Output Power	Radiated Spurious Emissions above 1 GHz	Radiated Spurious Emissions below 1 GHz	Mains Conducted Emission	
-	√	√	√	√	-

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on **X-plane**.
2. "-" means no effect.
3. The NFC is enable.

Output Power

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	6.0
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5700	100 to 140	100, 116, 140	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT20	5180-5240	36 to 48	36, 40, 48	6.5
-		5260-5320	52 to 64	52, 60, 64	
-		5500-5700	100 to 140	100, 116, 140	
-		5745-5825	149 to 165	149, 157, 165	
-	802.11n HT40	5180-5240	38 to 46	38, 46	MCS0
-		5260-5320	54 to 62	54, 62	
-		5500-5700	102 to 134	102, 110, 134	
-		5745-5825	151 to 159	151, 159	
-	802.11ac VHT80	5180-5240	42	42	MCS0
-		5260-5320	58	58	
-		5500-5700	106 to 122	106, 122	
-		5745-5825	155	155	

Radiated Spurious Emissions (Above 1 GHz)

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT40	5180-5240	38 to 46	46	MCS 0
-	802.11n HT20	5260-5320	52 to 64	60	6.5
-	802.11n HT20	5500-5700	100 to 140	100	6.5
-	802.11n HT20	5745-5825	149 to 165	149	6.5

Radiated Spurious Emissions (Below 1 GHz)

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT40	5180-5240	38 to 46	46	MCS 0
-	802.11n HT20	5260-5320	52 to 64	60	6.5
-	802.11n HT20	5500-5700	100 to 140	100	6.5
-	802.11n HT20	5745-5825	149 to 165	149	6.5

Mains Conducted Emission Test

☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Frequency (MHz)	Available Channel	Tested Channel	Date Rate (Mbps)
-	802.11n HT20	5745-5825	149 to 165	149	6.5

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Conducted Measurement	24.2 °C	51 %	Stanislas Charles
Radiated Spurious Emissions above 1 GHz	20.5-23.3 °C	59.3-63.1 %	Simon Tsai
Radiated Spurious Emissions below 1 GHz	20.5-23.3 °C	59.3-63.1 %	Simon Tsai
Mains Conducted Emission	21.9 °C	59 %	Simon Tsai

4.4 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Accessory of EUT

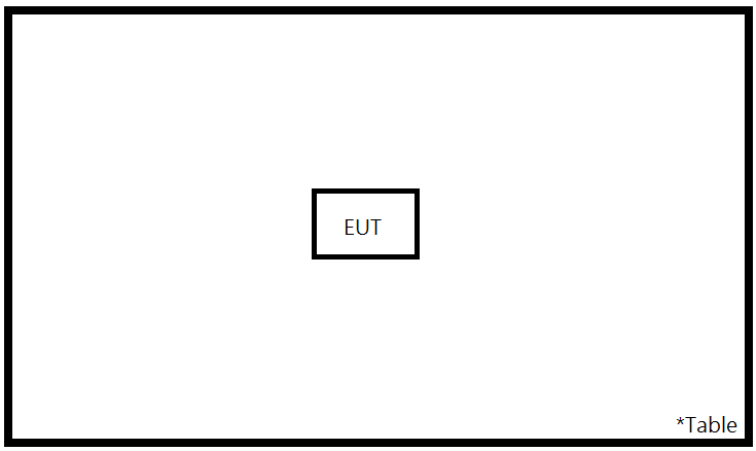
No.	Product	Brand	Model	Description
A	Adapter	TUE	GQ-24-120200-AX	I/P: 100-240 Vac, 1000 mA O/P: 12 Vdc, 2000 A 150cm non-shielded cable w/o core
B	Charger	AURES	TMC7000-Charger	--
-	Battery	APACK TECHNOLOGY CO., LTD.	APP00272	3.85 Vdc, 7400 mAh

Support Unit

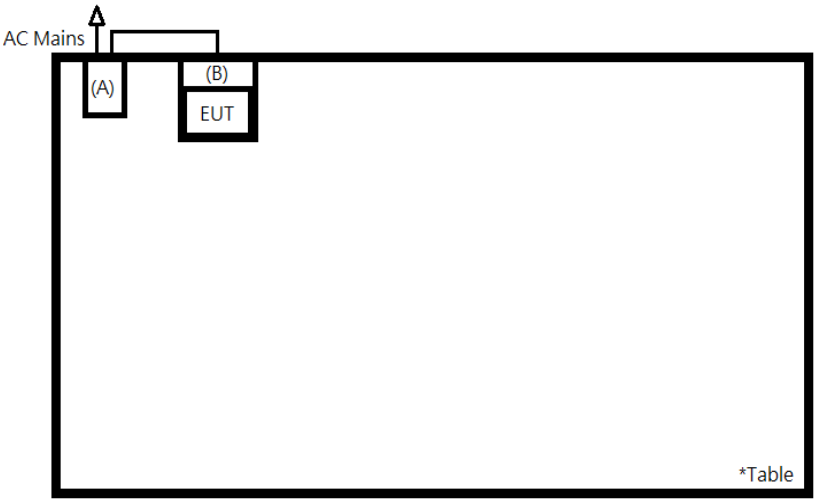
None

4.5 Test Setup Diagram

<Radiated Spurious Emissions mode>



<Mains Conducted Emission mode>



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

Requirement Use of approved antennas only

According to the manufacturer declaration, the antenna information is as listed below. The antenna is with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

ANT	Brand	Product No.	Product Name	Antenna Gain (dBi)	Antenna Type	Antenna Position	Remark
ANT1	Radiation Technology, Inc.	C0486-ANG0016	MT-5750 2.4G/5G Antenna	2.5	PIFA	Main Antenna	Tested antenna
ANT2	Joymax Electronics Co., Ltd.	TBF-RT03MPB-W70	MT-5751 WiFi/BT Antenna B	2.24	PIFA	Aux. Antenna	-

Refer to EUT photo for details.

5.1.2 Maximum Conducted Output Power

Limit

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	---	250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-3	---	1 Watt (30 dBm)

Note: B* is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

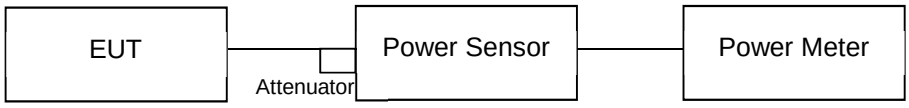
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20 MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Power Meter	Anritsu	ML2495A	1901008	2021/3/24	2022/3/23	2021/8/25	2021/8/25
Power Sensor	Anritsu	MA2411B	1725269	2021/3/24	2022/3/23	2021/8/25	2021/8/25

Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to AVERAGE. Duty factor is not added to measured value.

Test Result

<802.11a>

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
36	5180	12.52	11.88	15.22	33.28	24.00
40	5200	12.36	11.81	15.10	32.39	24.00
48	5240	12.60	12.07	15.35	34.30	24.00
52	5260	12.45	12.04	15.26	33.57	24.00
60	5300	11.31	11.18	14.26	26.64	24.00
64	5320	10.99	11.02	14.02	25.21	24.00
100	5500	13.60	13.82	16.72	47.01	24.00
116	5580	13.68	13.80	16.75	47.32	24.00
140	5700	13.45	13.21	16.34	43.07	24.00
149	5745	12.81	13.58	16.22	41.90	30.00
157	5785	13.15	13.26	16.22	41.84	30.00
165	5825	12.12	12.82	15.49	35.44	30.00

<802.11n HT20>

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
36	5180	13.12	12.53	15.85	38.42	24.00
40	5200	13.62	12.95	16.31	42.74	24.00
48	5240	13.68	13.07	16.40	43.61	24.00
52	5260	13.29	13.12	16.22	41.84	24.00
60	5300	14.11	13.85	16.99	50.03	24.00
64	5320	13.58	13.43	16.52	44.83	24.00
100	5500	13.74	13.70	16.73	47.10	24.00
116	5580	13.67	13.47	16.58	45.51	24.00
140	5700	10.52	10.06	13.31	21.41	24.00
149	5745	11.69	13.78	15.87	38.64	30.00
157	5785	11.90	13.17	15.59	36.24	30.00
165	5825	11.62	13.10	15.43	34.94	30.00

<802.11n HT40>

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
38	5190	10.31	9.83	13.09	20.36	24.00
46	5230	14.30	13.91	17.12	51.52	24.00
54	5270	13.83	13.71	16.78	47.65	24.00
62	5310	12.15	11.42	14.81	30.27	24.00
102	5510	8.66	8.71	19.59	91.00	24.00
110	5550	13.17	13.08	16.14	41.07	24.00
134	5670	12.90	12.71	15.82	38.16	24.00
151	5755	13.51	13.66	16.60	45.67	30.00
159	5795	13.28	13.41	16.36	43.21	30.00

<802.11ac VHT80>

Channel	Channel Frequency (MHz)	Average Output Power (dBm)		Total Power		Limit (dBm)
		Ant 1	Ant 2	(dBm)	(mW)	
42	5210	4.13	9.32	10.47	11.14	24.00
58	5290	8.56	8.81	11.70	14.78	24.00
106	5530	6.92	7.03	9.99	9.97	24.00
122	5610	11.22	10.97	14.11	25.75	24.00
155	5775	11.65	13.37	15.60	36.35	30.00

5.1.3 Radiated Spurious Emissions

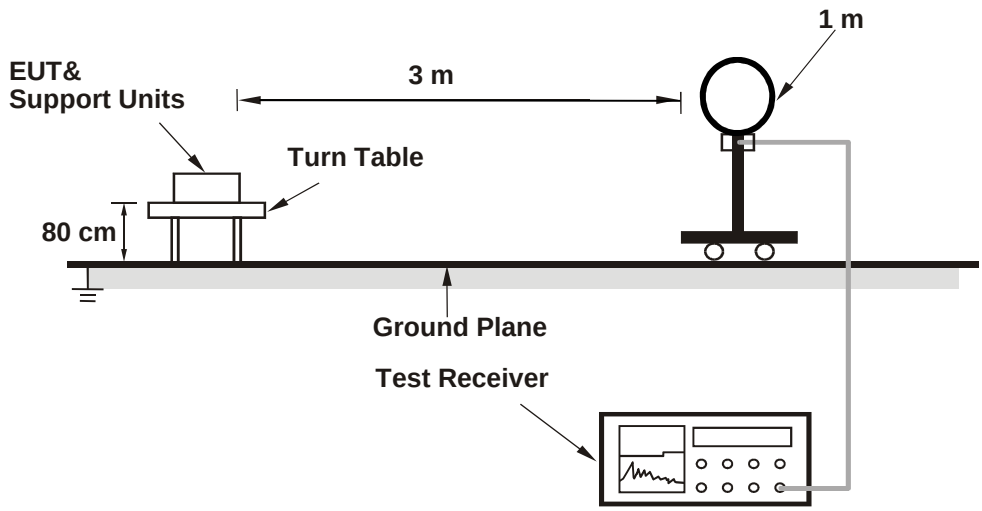
Limit

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must comply with the radiated emission limits specified in §15.209(a).
Emissions radiated outside the restricted and authorized frequency bands must either comply with the radiated emission limits specified for the restricted bands or in §15.407(b).

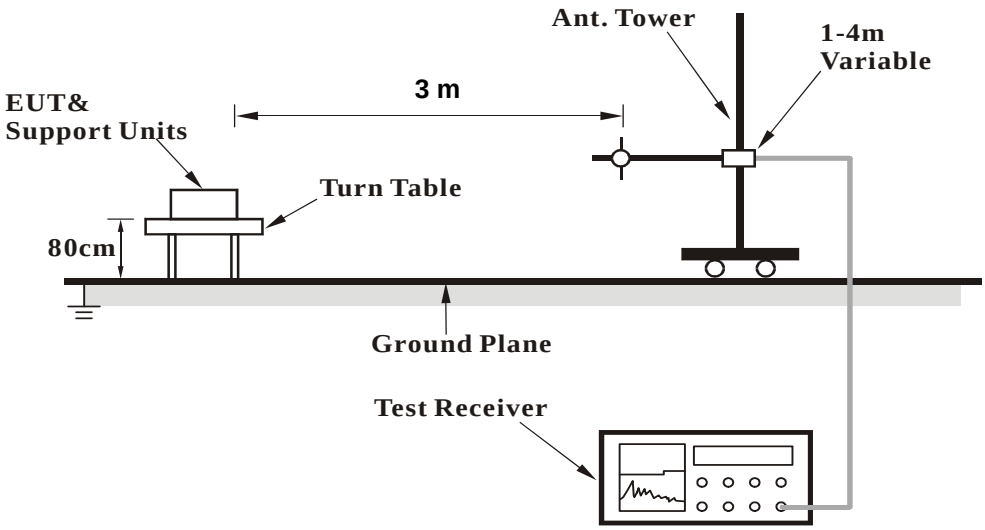
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

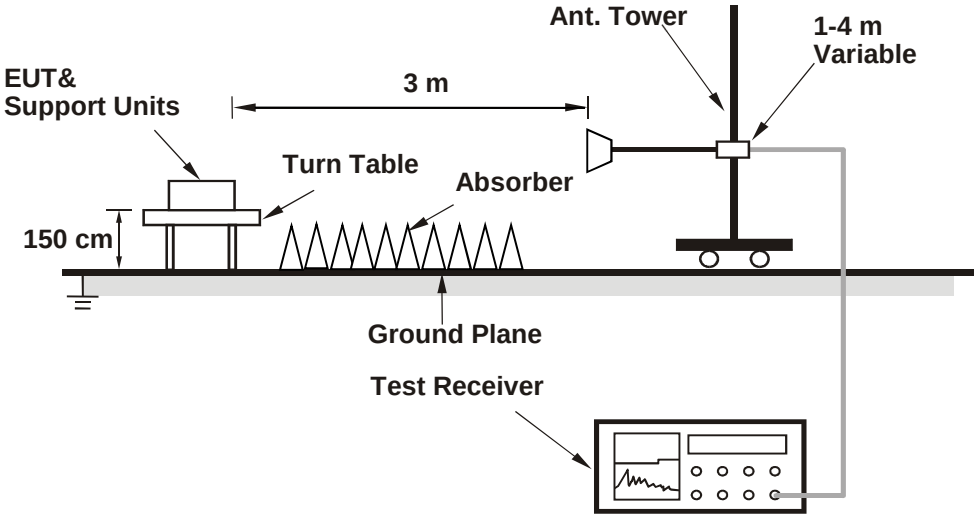
<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



<Radiated Emissions above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101509	2021/3/24	2022/3/23
Receiver	R&S	ESR7	102108	2021/3/17	2022/3/16
Bilog Antenna	SCHWARZBECK	VULB-9168	00950	2021/1/25	2022/1/24
Horn Antenna	ETS-Lindgren	3117	00218929	2020/11/6	2021/11/5
LF-AMP	Agilent	8447D	2727A05146	2021/2/1	2022/1/31
HF-AMP + AC source	EMCI	EMC051845SE	980635	2021/2/1	2022/1/31
HF-AMP + AC source	EMCI	EMC184045SE	980656	2021/2/9	2022/2/8
Horn Antenna	SCHWARZBECK	BBHA 9170	00890	2021/4/14	2022/4/13
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104EA	800057/4EA	2021/4/14	2022/4/13
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	802244/4	2021/4/14	2022/4/13
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	MY37203/4	2021/4/14	2022/4/13
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800897/2EA	2021/3/11	2022/3/10
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800902/2EA	2021/3/11	2022/3/10
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	801026/2EA	2021/3/11	2022/3/10
Loop Antenna	Chance Most	EMCILPA600 +calibration	287	2021/1/18	2022/1/17

Test Procedures

For Radiated Emissions below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna 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.
d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.

Test Results

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Please refer to Appendix A.

5.2 Mains Emission

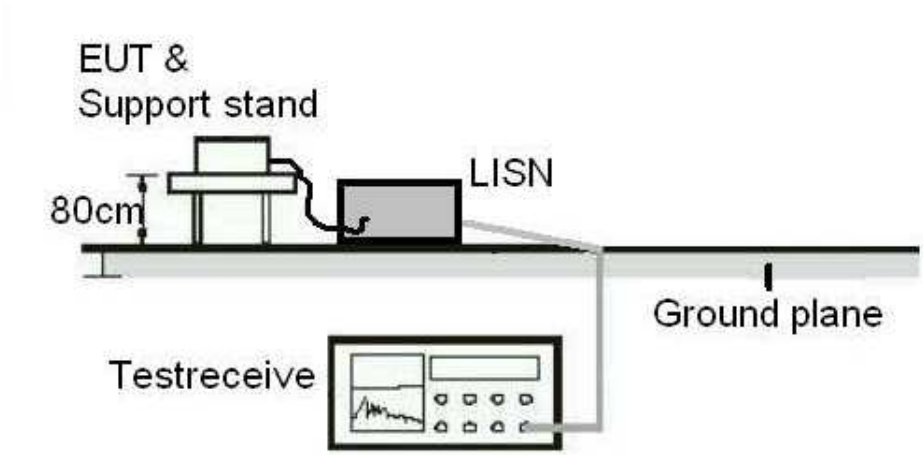
5.2.1 Mains Conducted Emission

Limit

Mains Conducted emissions as defined in §15.207 must comply with the mains conducted emission limits.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
TWO-LINE V-NETWORK	R&S	ENV216	1816064	2020/9/10	2021/9/9
EMI Test Receiver	R&S	ESCI	1816063	2020/11/17	2021/11/16
RF Cable	N/A	N/A	EMC-003	2020/11/15	2021/11/14

Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

Test Results

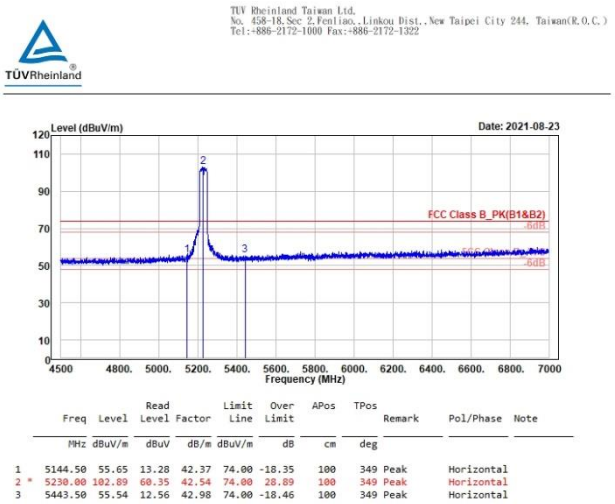
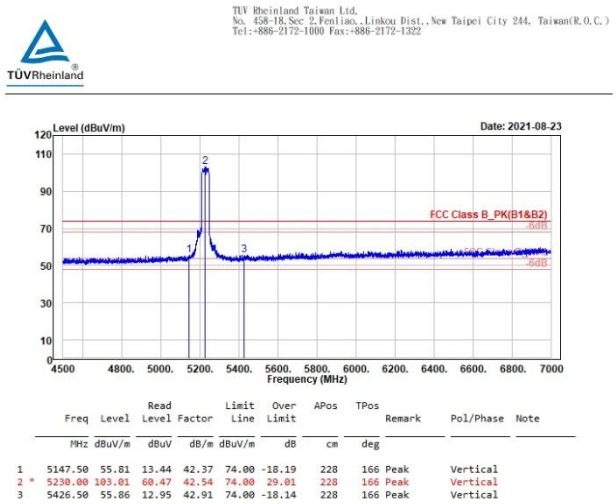
Please refer to Appendix A.

Appendix B: Test Results of Radiation Emissions & Mains

Conducted Emission

Band Edges, 4.5GHz ~ 5.15GHz

U-NII-1

802.11n HT40	
CH 46 (Horizontal) Peak	CH 46 (Vertical) Peak
	

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5144.50	55.65	13.28	42.37	74.00	-18.35	100	349	Peak	Horizontal	
2 *	5230.00	102.89	60.35	42.54	74.00	28.89	100	349	Peak	Horizontal	
3	5443.50	55.54	12.56	42.98	74.00	-18.46	100	349	Peak	Horizontal	

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5147.50	55.81	13.44	42.37	74.00	-18.19	228	166	Peak	Vertical	
2 *	5230.00	103.01	60.47	42.54	74.00	29.01	228	166	Peak	Vertical	
3	5426.50	55.86	12.95	42.91	74.00	-18.14	228	166	Peak	Vertical	

802.11n HT40

CH 46 (Horizontal) Average

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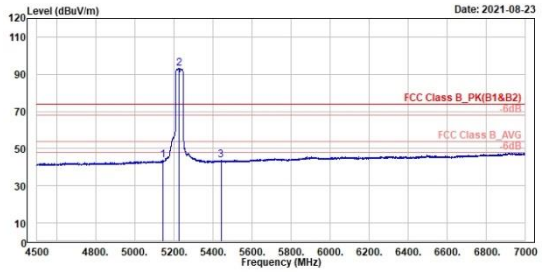

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5144.50	43.64	1.27	42.37	54.00	-10.36	100	349	Average	Horizontal	
2 *	5230.00	93.01	50.47	42.54	54.00	39.01	100	349	Average	Horizontal	
3	5443.50	43.58	0.60	42.98	54.00	-10.42	100	349	Average	Horizontal	

CH 46 (Vertical) Average

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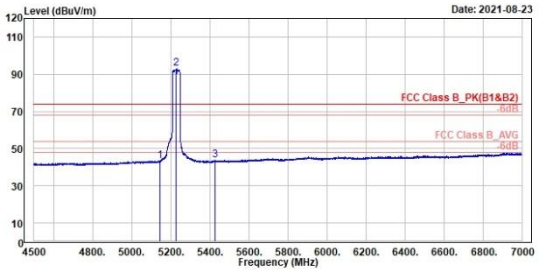


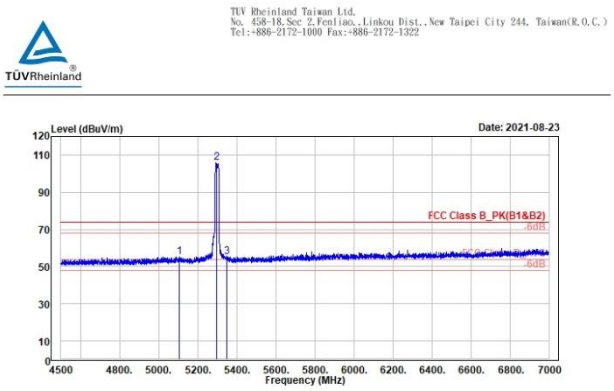
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5147.50	43.42	1.05	42.37	54.00	-10.58	228	166	Average	Vertical	
2 *	5230.00	92.92	50.38	42.54	54.00	38.92	228	166	Average	Vertical	
3	5426.50	43.62	0.71	42.91	54.00	-10.38	228	166	Average	Vertical	

Band Edges, 5.35GHz

U-NII-2A

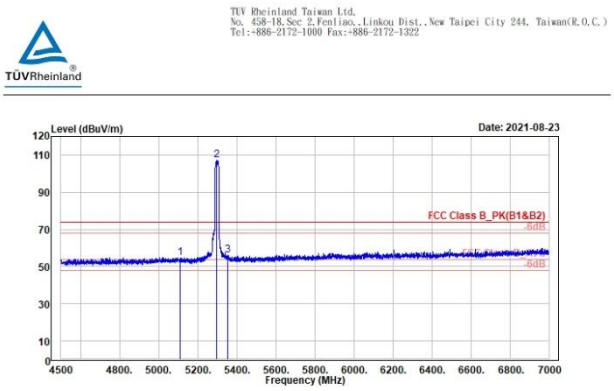
802.11n HT20

CH 60 (Horizontal) Peak



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5108.00	55.34	13.00	42.34	74.00	-18.66	232	98	Peak	Horizontal	
2 *	5300.00	105.67	62.98	42.69	74.00	31.67	232	98	Peak	Horizontal	
3	5351.50	55.43	12.70	42.73	74.00	-18.57	232	98	Peak	Horizontal	

CH 60 (Vertical) Peak



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5109.00	54.96	12.62	42.34	74.00	-19.04	112	176	Peak	Vertical	
2 *	5300.00	107.11	64.42	42.69	74.00	33.11	112	176	Peak	Vertical	
3	5354.00	56.06	13.32	42.74	74.00	-17.94	112	176	Peak	Vertical	

802.11n HT20

CH 60 (Horizontal) Average

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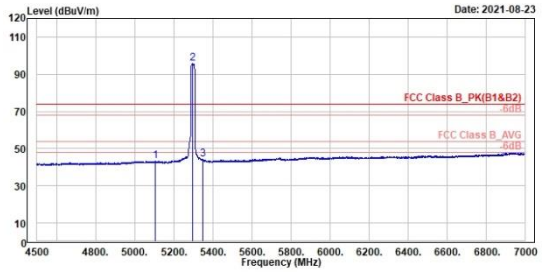

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5108.00	43.44	1.10	42.34	54.00	-10.56	232	98	Average	Horizontal	
2 *	5300.00	95.81	53.12	42.69	54.00	41.81	232	98	Average	Horizontal	
3	5351.50	44.34	1.61	42.73	54.00	-9.66	232	98	Average	Horizontal	

CH 60 (Vertical) Average

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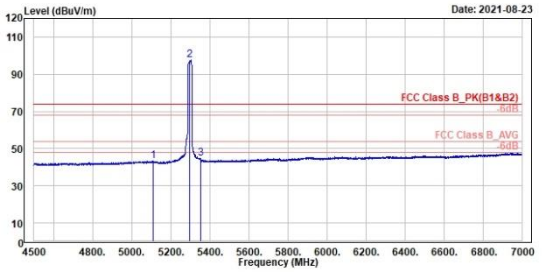
Tel:+886-2172-1000 Fax:+886-2172-1322



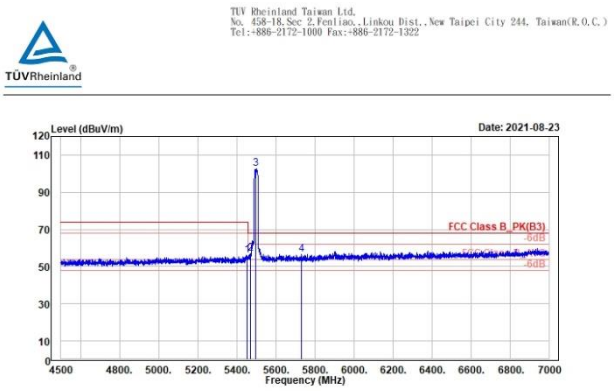
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5109.00	43.25	0.91	42.34	54.00	-10.75	112	176	Average	Vertical	
2 *	5300.00	97.45	54.76	42.69	54.00	43.45	112	176	Average	Vertical	
3	5354.00	44.73	1.99	42.74	54.00	-9.27	112	176	Average	Vertical	

Band Edges, 5.3GHz ~ 5.47GHz, 5.725GHz

U-NII-2C

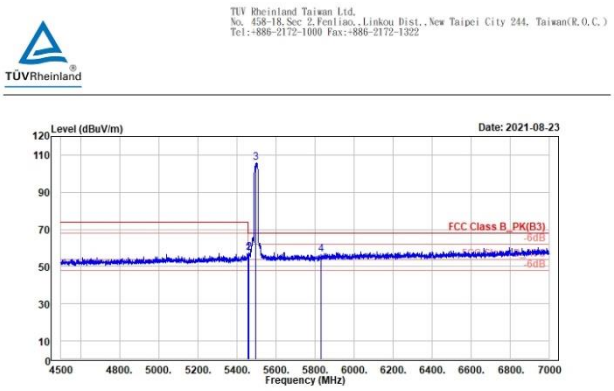
802.11n HT20

CH 100 (Horizontal) Peak



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5456.50	56.00	12.98	43.02	74.00	-18.00	100	98	Peak	Horizontal	
2	5470.00	56.82	13.79	43.03	68.20	-11.38	100	98	Peak	Horizontal	
3 *	5500.00	102.79	59.74	43.05	68.20	34.59	100	98	Peak	Horizontal	
4	5732.00	56.79	13.42	43.37	68.20	-11.41	100	98	Peak	Horizontal	

CH 100 (Vertical) Peak



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5460.00	56.96	13.94	43.02	68.20	-11.24	131	161	Peak	Vertical	
2	5463.00	57.66	14.63	43.03	68.20	-10.54	131	161	Peak	Vertical	
3 *	5500.00	105.68	62.63	43.05	68.20	37.48	131	161	Peak	Vertical	
4	5833.00	56.69	13.00	43.69	68.20	-11.51	131	161	Peak	Vertical	

802.11n HT20

CH 100 (Horizontal) Average

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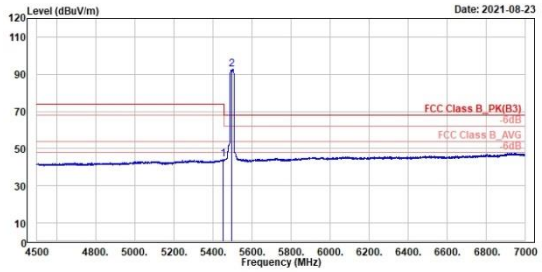

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5456.50	44.10	1.08	43.02	54.00	-9.90	100	98	Average	Horizontal	
2 *	5500.00	92.73	49.68	43.05	54.00	38.73	100	98	Average	Horizontal	

CH 100 (Vertical) Average

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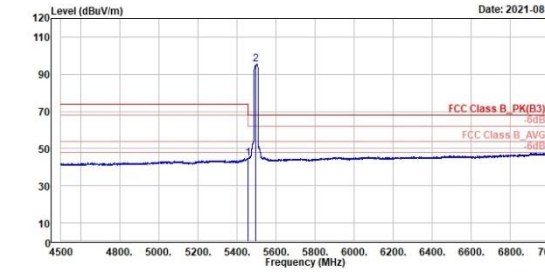

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5460.00	44.84	1.82	43.02	54.00	-9.16	131	161	Average	Vertical	
2 *	5500.00	95.50	52.45	43.05	54.00	41.50	131	161	Average	Vertical	

Mask, 5.725GHz ~ 5.85GHz

U-NII-3

802.11n HT20

CH 149 (Horizontal) Peak

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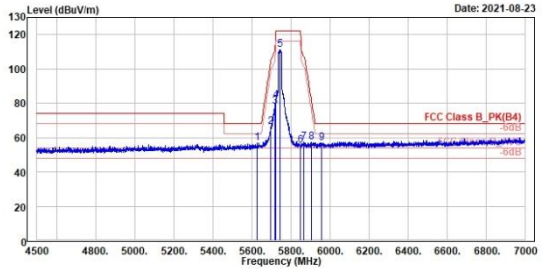

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5627.00	57.02	13.86	43.16	68.20	-11.18	239	335	Peak	Horizontal	
2	5699.50	66.46	23.24	43.22	104.83	-38.37	239	335	Peak	Horizontal	
3	5720.00	77.91	34.60	43.31	110.80	-32.89	239	335	Peak	Horizontal	
4	5723.50	81.67	38.34	43.33	118.78	-37.11	239	335	Peak	Horizontal	
5	5745.00	111.42	67.99	43.43	122.20	-10.78	239	335	Peak	Horizontal	
6	5850.50	55.59	11.85	43.74	121.06	-65.47	239	335	Peak	Horizontal	
7	5868.50	57.10	13.31	43.79	107.02	-49.92	239	335	Peak	Horizontal	
8	5906.00	57.18	13.31	43.87	82.22	-25.04	239	335	Peak	Horizontal	
9	5957.50	57.02	13.18	43.84	68.20	-11.18	239	335	Peak	Horizontal	

CH 149 (Vertical) Peak

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No. 458-18,Sec 2,Fenliao.,Linkou Dist.,New Taipei City 244, Taiwan(R.O.C.)
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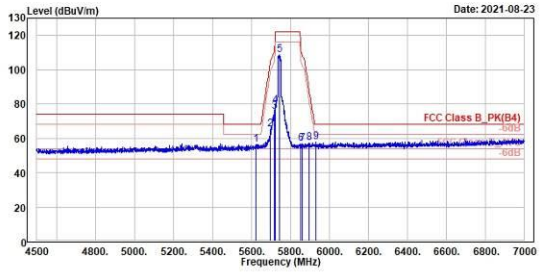
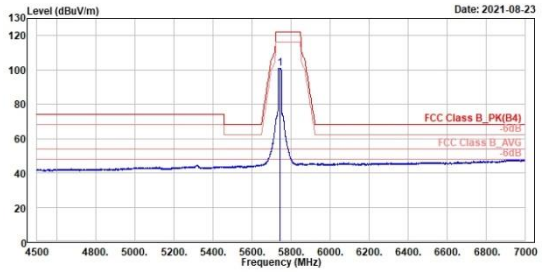


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	5625.00	56.32	13.16	43.16	68.20	-11.88	118	158	Peak	Vertical	
2	5697.50	65.09	21.88	43.21	103.36	-38.27	118	158	Peak	Vertical	
3	5719.50	75.42	32.11	43.31	110.66	-35.24	118	158	Peak	Vertical	
4	5724.00	79.22	35.88	43.34	119.92	-40.70	118	158	Peak	Vertical	
5	5745.00	108.58	65.15	43.43	122.20	-13.62	118	158	Peak	Vertical	
6	5853.00	56.74	12.99	43.75	115.36	-58.62	118	158	Peak	Vertical	
7	5863.00	56.84	13.06	43.78	108.56	-51.72	118	158	Peak	Vertical	
8	5896.00	57.30	13.43	43.87	89.62	-32.32	118	158	Peak	Vertical	
9	5933.50	57.71	13.87	43.84	68.20	-10.49	118	158	Peak	Vertical	

802.11n HT20

CH 149 (Horizontal) Average

TUV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1 *	5745.00	101.02	57.59	43.43	54.00	47.02	239	335	Average	Horizontal	

CH 149 (Vertical) Average

TUV Rheinland Taiwan Ltd.
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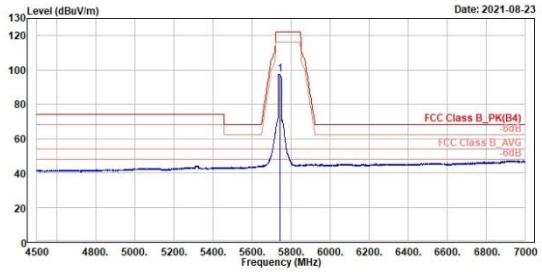
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1 *	5745.00	97.62	54.19	43.43	54.00	43.62	118	158	Average	Vertical	

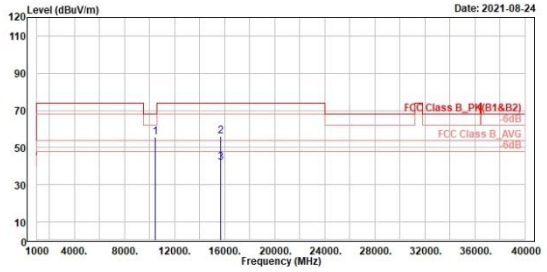
Spurious Emissions, Tx Mode, 1GHz ~ 40GHz

U-NII-1

802.11n HT40

CH 46 (Horizontal)

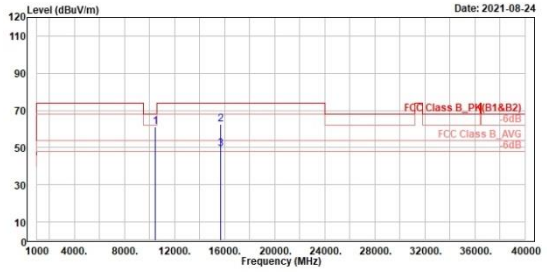
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	10460.00	55.77	58.21	-2.44	68.20	-12.43	100	337	Peak	Horizontal	
2	15690.00	55.94	50.30	5.64	74.00	-18.06	117	348	Peak	Horizontal	
3	15690.00	42.09	36.45	5.64	54.00	-11.91	117	348	Average	Horizontal	

CH 46 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



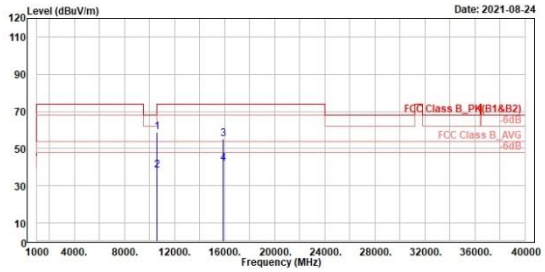
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	10460.00	61.02	63.46	-2.44	68.20	-7.18	100	85	Peak	Vertical	
2	15690.00	62.53	56.89	5.64	74.00	-11.47	100	92	Peak	Vertical	
3 !	15690.00	49.22	43.58	5.64	54.00	-4.78	100	92	Average	Vertical	

U-NII-2A

802.11n HT20

CH 60 (Horizontal)

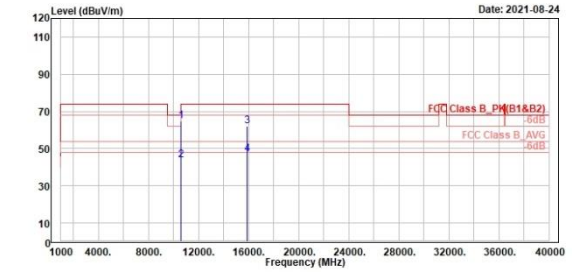
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	10600.00	58.69	60.85	-2.16	68.20	-9.51	300	99	Peak	Horizontal	
2	10600.00	38.45	40.61	-2.16	54.00	-15.55	300	99	Average	Horizontal	
3	15900.00	55.33	48.96	6.37	74.00	-18.67	335	43	Peak	Horizontal	
4	15900.00	42.16	35.79	6.37	54.00	-11.84	335	43	Average	Horizontal	

CH 60 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1 !	10600.00	64.68	66.84	-2.16	68.20	-3.52	368	30	Peak	Vertical	
2	10600.00	43.81	45.97	-2.16	54.00	-10.19	368	30	Average	Vertical	
3	15900.00	62.17	55.80	6.37	74.00	-11.83	182	345	Peak	Vertical	
4	15900.00	46.86	40.49	6.37	54.00	-7.14	182	345	Average	Vertical	

U-NII-2C

802.11n HT20

CH 100 (Horizontal)

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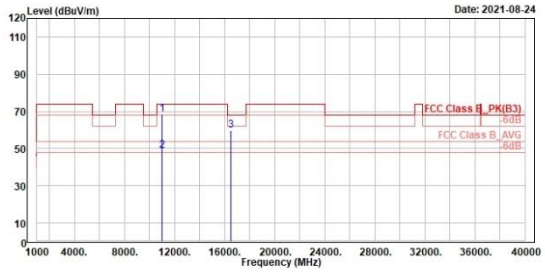
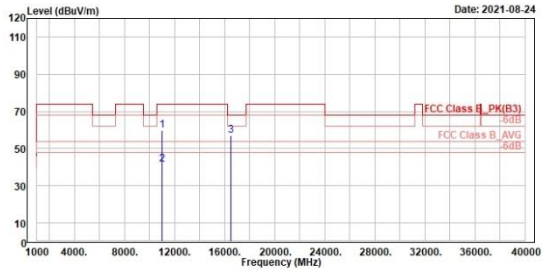


		Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	!	11000.00	68.39	69.93	-1.54	74.00	-5.61	285	1	Peak	Vertical	
2	!	11000.00	48.98	50.52	-1.54	54.00	-5.02	285	1	Average	Vertical	
3		16500.00	59.83	52.36	7.47	68.20	-8.37	385	52	Peak	Vertical	

CH 100 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



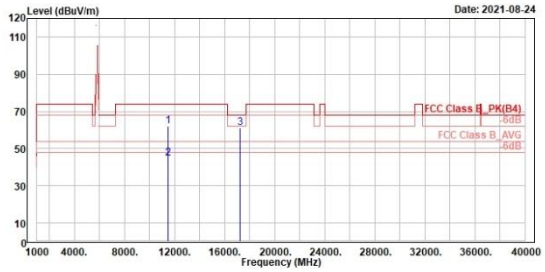
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	11000.00	59.71	61.25	-1.54	74.00	-14.29	390	290	Peak	Horizontal	
2	11000.00	41.41	42.95	-1.54	54.00	-12.59	390	290	Average	Horizontal	
3	16500.00	57.23	49.76	7.47	68.20	-10.97	388	277	Peak	Horizontal	

U-NII-3

802.11n HT20

CH 149 (Horizontal)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	11490.00	61.94	62.60	-0.66	74.00	-12.06	100	325	Peak	Horizontal	
2	11490.00	44.70	45.36	-0.66	54.00	-9.30	100	325	Average	Horizontal	
3	17235.00	60.94	52.91	8.03	68.20	-7.26	100	115	Peak	Horizontal	

CH 149 (Vertical)

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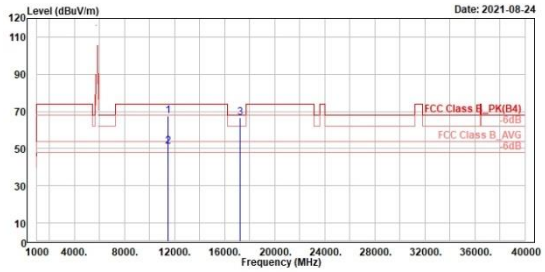
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	11490.00	67.55	68.21	-0.66	74.00	-6.45	100	85	Peak	Vertical	
2 !	11490.00	51.30	51.96	-0.66	54.00	-2.70	100	85	Average	Vertical	
3 !	17235.00	66.49	58.46	8.03	68.20	-1.71	100	99	Peak	Vertical	

Spurious Emissions, Tx Mode, 30MHz ~ 1GHz

U-NII-1

802.11n HT40

CH 46 (Horizontal)

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No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
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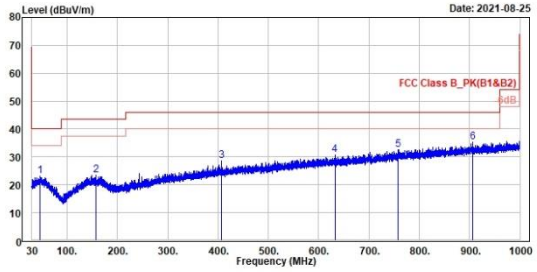
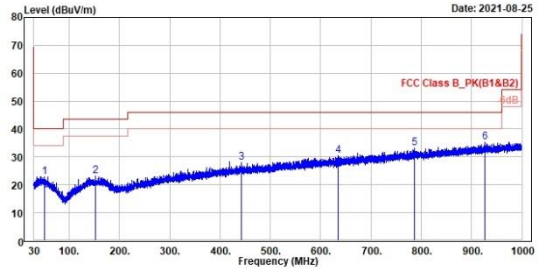


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	46.49	23.24	28.99	-5.75	40.00	-16.76	100	345	QP	Horizontal	
2	157.46	23.52	29.27	-5.75	43.50	-19.98	400	89	QP	Horizontal	
3	406.85	28.59	31.36	-2.77	46.00	-17.41	100	267	QP	Horizontal	
4	632.27	30.68	29.95	0.73	46.00	-15.32	200	24	QP	Horizontal	
5	758.66	32.56	29.67	2.89	46.00	-13.44	100	252	QP	Horizontal	
6	906.78	35.35	30.33	5.02	46.00	-10.65	300	272	QP	Horizontal	

CH 46 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



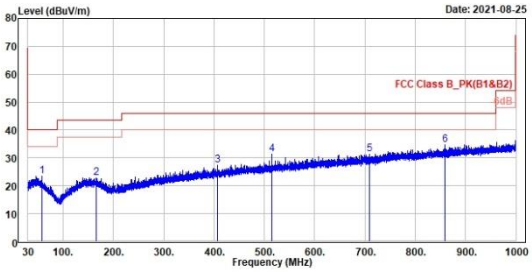
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	50.86	22.82	28.72	-5.90	40.00	-17.18	300	360	QP	Vertical	
2	151.64	23.13	28.91	-5.78	43.50	-20.37	100	80	QP	Vertical	
3	442.93	28.13	30.16	-2.03	46.00	-17.87	100	241	QP	Vertical	
4	634.02	30.42	29.72	0.70	46.00	-15.58	100	360	QP	Vertical	
5	786.70	33.17	30.07	3.10	46.00	-12.83	100	3	QP	Vertical	
6	927.35	35.17	29.94	5.23	46.00	-10.83	100	172	QP	Vertical	

U-NII-2A

802.11n HT20

CH 60 (Horizontal)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	57.55	23.39	30.04	-6.65	40.00	-16.61	400	48	QP	Horizontal	
2	165.90	22.92	28.64	-5.72	43.50	-20.58	200	360	QP	Horizontal	
3	406.85	27.45	30.22	-2.77	46.00	-18.55	100	230	QP	Horizontal	
4	515.29	31.20	32.39	-1.19	46.00	-14.80	200	263	QP	Horizontal	
5	708.61	31.40	29.59	1.81	46.00	-14.60	100	192	QP	Horizontal	
6	859.45	34.55	30.30	4.25	46.00	-11.45	400	338	QP	Horizontal	

CH 60 (Vertical)

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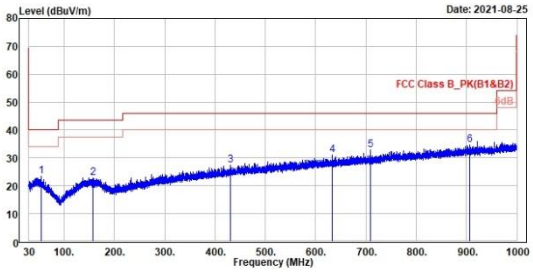
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



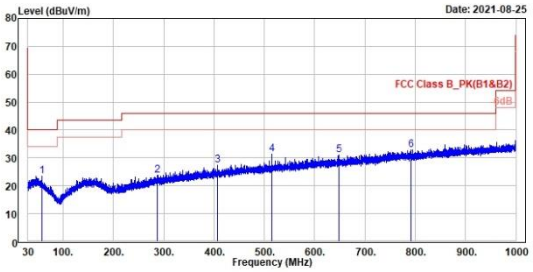
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	53.77	23.38	29.62	-6.24	40.00	-16.62	200	273	QP	Vertical	
2	157.46	22.75	28.50	-5.75	43.50	-20.75	200	140	QP	Vertical	
3	430.61	27.44	29.70	-2.26	46.00	-18.56	300	242	QP	Vertical	
4	632.66	30.90	30.17	0.73	46.00	-15.10	400	86	QP	Vertical	
5	708.90	32.76	30.95	1.81	46.00	-13.24	200	170	QP	Vertical	
6	906.30	34.71	29.69	5.02	46.00	-11.29	400	129	QP	Vertical	

U-NII-2C

802.11n HT20

CH 100 (Horizontal)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	57.55	23.39	30.04	-6.65	40.00	-16.61	400	48	QP	Horizontal	
2	287.44	23.75	28.63	-4.88	46.00	-22.25	300	113	QP	Horizontal	
3	406.85	27.45	30.22	-2.77	46.00	-18.55	100	230	QP	Horizontal	
4	515.29	31.20	32.39	-1.19	46.00	-14.80	200	263	QP	Horizontal	
5	647.50	31.04	30.19	0.85	46.00	-14.96	300	256	QP	Horizontal	
6	792.42	32.81	29.64	3.17	46.00	-13.19	400	160	QP	Horizontal	

CH 100 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
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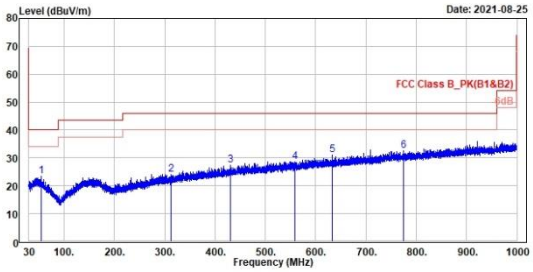


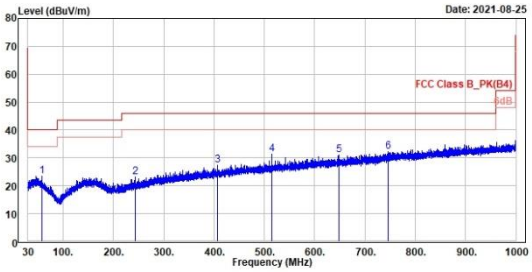
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	53.77	23.38	29.62	-6.24	40.00	-16.62	200	273	QP	Vertical	
2	311.98	24.05	28.45	-4.40	46.00	-21.95	300	116	QP	Vertical	
3	430.61	27.44	29.70	-2.26	46.00	-18.56	300	242	QP	Vertical	
4	558.75	28.65	29.11	-0.46	46.00	-17.35	200	150	QP	Vertical	
5	632.66	30.90	30.17	0.73	46.00	-15.10	400	86	QP	Vertical	
6	774.86	32.59	29.54	3.05	46.00	-13.41	300	183	QP	Vertical	

U-NII-3

802.11n HT20

CH 149 (Horizontal)

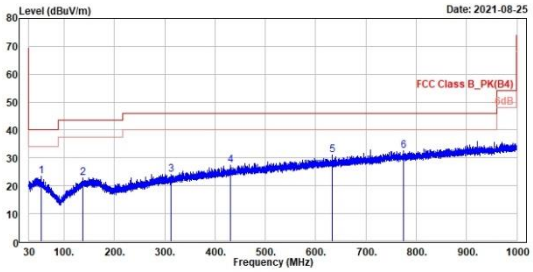
TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	57.55	23.39	30.04	-6.65	40.00	-16.61	400	48	QP	Horizontal	
2	244.08	23.23	29.79	-6.56	46.00	-22.77	100	221	QP	Horizontal	
3	406.85	27.45	30.22	-2.77	46.00	-18.55	100	230	QP	Horizontal	
4	515.29	31.20	32.39	-1.19	46.00	-14.80	200	263	QP	Horizontal	
5	647.50	31.04	30.19	0.85	46.00	-14.96	300	256	QP	Horizontal	
6	746.54	32.39	29.77	2.62	46.00	-13.61	100	262	QP	Horizontal	

CH 149 (Vertical)

TÜV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, , Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	53.77	23.38	29.62	-6.24	40.00	-16.62	200	273	QP	Vertical	
2	137.86	22.68	28.83	-6.15	43.50	-20.82	100	128	QP	Vertical	
3	311.98	24.05	28.45	-4.40	46.00	-21.95	300	116	QP	Vertical	
4	430.61	27.44	29.70	-2.26	46.00	-18.56	300	242	QP	Vertical	
5	632.66	30.90	30.17	0.73	46.00	-15.10	400	86	QP	Vertical	
6	774.86	32.59	29.54	3.05	46.00	-13.41	300	183	QP	Vertical	

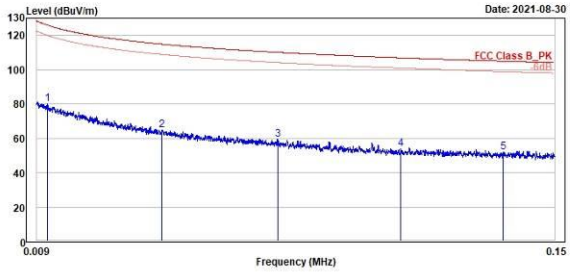
Spurious Emissions, Tx Mode, 9kHz ~ 30MHz

U-NII-1

802.11n HT40

CH 46 (Open) 9kHz ~ 150kHz

TUV Rheinland Taiwan Ltd.
No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.01	80.00	4.07	75.93	125.99	-45.99	100	19	QP	Open	
2	0.04	64.86	-0.66	65.52	114.89	-50.03	100	228	QP	Open	
3	0.07	59.18	-1.41	60.59	110.13	-50.95	100	312	QP	Open	
4	0.11	53.97	-2.94	56.91	106.92	-52.95	100	221	QP	Open	
5	0.14	52.03	-3.68	55.71	104.92	-52.89	100	168	QP	Open	

CH 46 (Open) 150kHz ~ 30MHz

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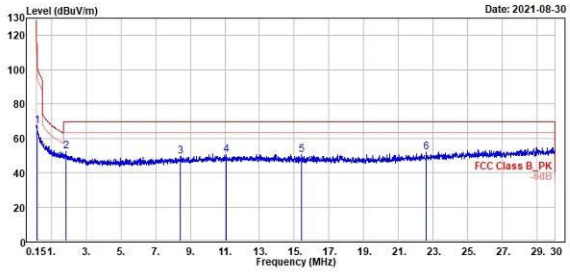

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.19	67.06	13.74	53.32	101.94	-34.88	100	206	QP	Open	
2	1.84	52.19	12.83	39.36	69.50	-17.31	100	47	QP	Open	
3	8.45	49.62	12.01	37.61	69.50	-19.88	100	255	QP	Open	
4	11.07	50.64	12.54	38.10	69.50	-18.86	100	280	QP	Open	
5	15.43	50.46	12.67	37.79	69.50	-19.04	100	18	QP	Open	
6	22.59	51.95	13.29	38.66	69.50	-17.55	100	270	QP	Open	

802.11n HT40

CH 46 (Close) 9kHz ~ 150kHz

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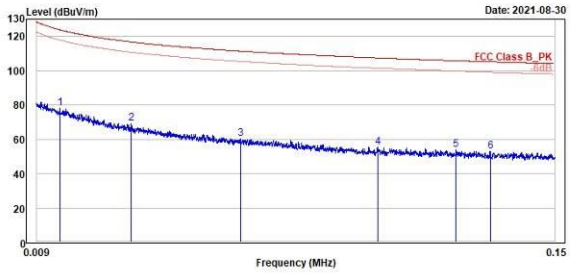

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.02	78.31	3.72	74.59	123.85	-45.54	100	327	QP	Close	
2	0.03	69.03	1.46	67.57	116.76	-47.73	100	165	QP	Close	
3	0.06	60.44	-1.50	61.94	111.41	-50.97	100	241	QP	Close	
4	0.10	55.45	-1.73	57.18	107.44	-51.99	100	241	QP	Close	
5	0.12	53.71	-2.56	56.27	105.79	-52.08	100	251	QP	Close	
6	0.13	52.87	-3.00	55.87	105.16	-52.29	100	8	QP	Close	

CH 46 (Close) 150kHz ~ 30MHz

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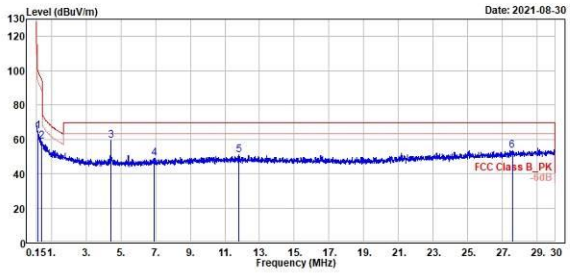

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.22	64.56	12.26	52.30	100.92	-36.36	100	238	QP	Close	
2	0.45	58.84	12.90	45.94	94.57	-35.73	100	327	QP	Close	
3	4.44	59.36	22.85	36.51	69.50	-10.14	100	199	QP	Close	
4	6.94	49.18	12.12	37.06	69.50	-20.32	100	56	QP	Close	
5	11.79	50.92	12.87	38.05	69.50	-18.58	100	168	QP	Close	
6	27.55	53.26	12.28	40.98	69.50	-16.24	100	313	QP	Close	

U-NII-2A

802.11n HT20

CH 60 (Open) 9kHz ~ 150kHz

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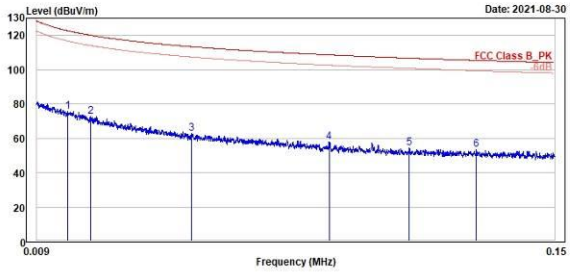

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.02	75.62	1.88	73.74	122.73	-47.11	100	102	QP	Open	
2	0.02	72.51	1.21	71.30	120.13	-47.62	100	185	QP	Open	
3	0.05	62.71	-0.99	63.70	113.42	-50.71	100	302	QP	Open	
4	0.09	57.62	-1.14	58.76	108.65	-51.03	100	226	QP	Open	
5	0.11	54.16	-2.65	56.81	106.73	-52.57	100	295	QP	Open	
6	0.13	53.16	-2.87	56.03	105.41	-52.25	100	237	QP	Open	

CH 60 (Open) 150kHz ~ 30MHz

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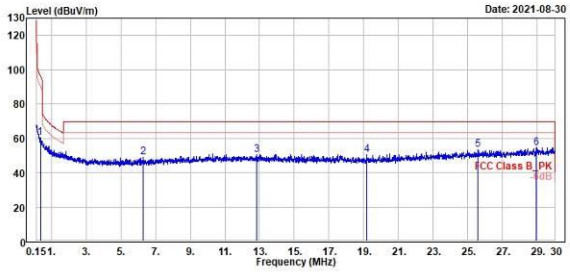

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.36	60.28	12.69	47.59	96.50	-36.22	100	192	QP	Open	
2	6.29	48.91	12.09	36.82	69.50	-20.59	100	280	QP	Open	
3	12.84	50.60	12.63	37.97	69.50	-18.90	100	80	QP	Open	
4	19.17	50.39	12.87	37.52	69.50	-19.11	100	83	QP	Open	
5	25.56	53.25	13.20	40.05	69.50	-16.25	100	131	QP	Open	
6	28.93	54.53	12.90	41.63	69.50	-14.97	100	108	QP	Open	

802.11n HT20

CH 60 (Close) 9kHz ~ 150kHz

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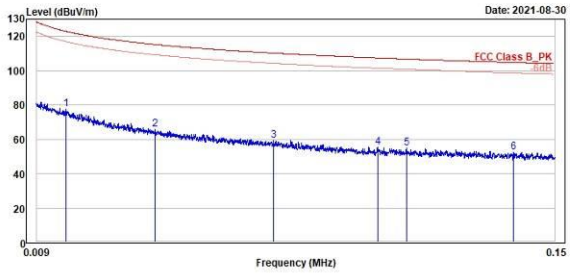

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.02	77.74	3.84	73.90	122.93	-45.19	100	47	QP	Close	
2	0.04	65.96	-0.04	66.00	115.29	-49.33	100	101	QP	Close	
3	0.07	59.47	-1.28	60.75	110.27	-50.80	100	236	QP	Close	
4	0.10	55.45	-1.73	57.18	107.44	-51.99	100	241	QP	Close	
5	0.11	54.72	-2.13	56.85	106.80	-52.08	100	267	QP	Close	
6	0.14	52.33	-3.26	55.59	104.75	-52.42	100	157	QP	Close	

CH 60 (Close) 150kHz ~ 30MHz

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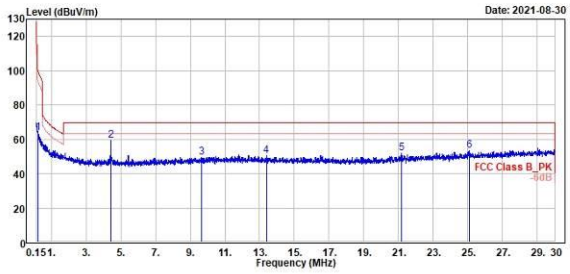

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.23	63.66	12.13	51.53	100.23	-36.57	100	177	QP	Close	
2	4.44	59.36	22.85	36.51	69.50	-10.14	100	199	QP	Close	
3	9.68	49.49	11.43	38.06	69.50	-20.01	100	18	QP	Close	
4	13.39	50.33	12.40	37.93	69.50	-19.17	100	160	QP	Close	
5	21.16	52.10	14.10	38.00	69.50	-17.40	100	192	QP	Close	
6	25.06	53.30	13.48	39.82	69.50	-16.20	100	113	QP	Close	

U-NII-2C

802.11n HT20

CH 100 (Open) 9kHz ~ 150kHz

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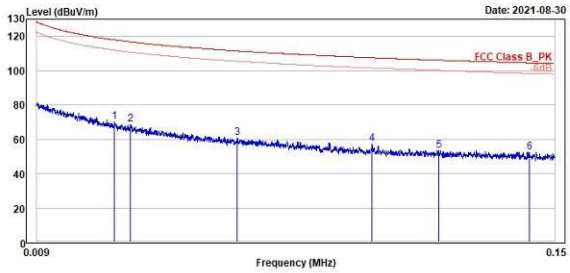

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.03	70.19	1.48	68.71	118.00	-47.81	100	192	QP	Open	
2	0.03	68.85	1.23	67.62	116.81	-47.96	100	318	QP	Open	
3	0.06	60.85	-1.20	62.05	111.52	-50.67	100	236	QP	Open	
4	0.10	57.30	0.05	57.25	107.57	-50.27	100	143	QP	Open	
5	0.12	53.44	-3.03	56.47	106.13	-52.69	100	278	QP	Open	
6	0.14	52.27	-3.14	55.41	104.49	-52.22	100	200	QP	Open	

CH 100 (Open) 150kHz ~ 30MHz

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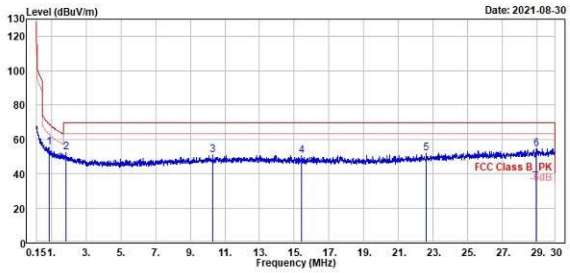

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.86	55.59	13.40	42.19	68.91	-13.32	100	334	QP	Open	
2	1.84	52.19	12.83	39.36	69.50	-17.31	100	47	QP	Open	
3	10.29	50.68	12.52	38.16	69.50	-18.82	100	264	QP	Open	
4	15.43	50.46	12.67	37.79	69.50	-19.04	100	18	QP	Open	
5	22.59	51.95	13.29	38.66	69.50	-17.55	100	270	QP	Open	
6	28.93	54.53	12.90	41.63	69.50	-14.97	100	108	QP	Open	

802.11n HT20

CH 100 (Close) 9kHz ~ 150kHz

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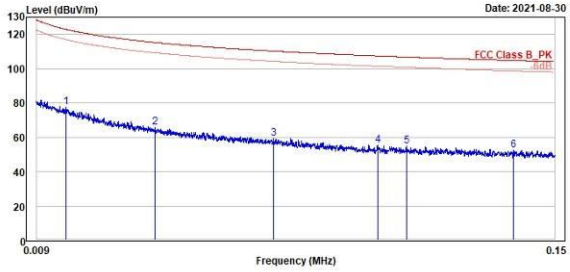

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.02	77.74	3.84	73.90	122.93	-45.19	100	47	QP	Close	
2	0.04	65.96	-0.04	66.00	115.29	-49.33	100	101	QP	Close	
3	0.07	59.47	-1.28	60.75	110.27	-50.80	100	236	QP	Close	
4	0.10	55.45	-1.73	57.18	107.44	-51.99	100	241	QP	Close	
5	0.11	54.72	-2.13	56.85	106.80	-52.08	100	267	QP	Close	
6	0.14	52.33	-3.26	55.59	104.75	-52.42	100	157	QP	Close	

CH 100 (Close) 150kHz ~ 30MHz

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No. 458-18,Sec 2,Fenliao.,Linkou Dist.,New Taipei City 244, Taiwan(R.O.C.)
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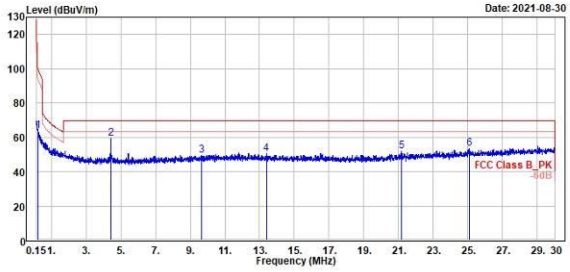
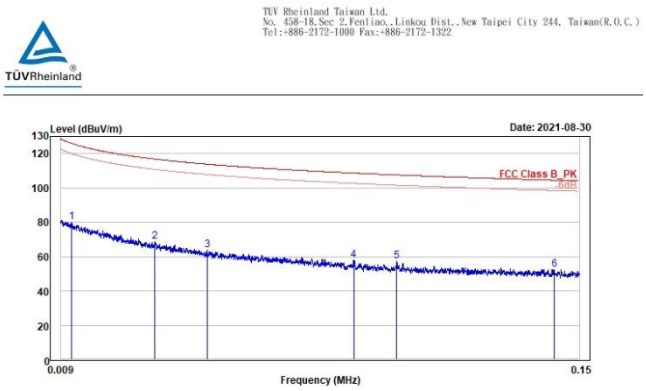


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.23	63.66	12.13	51.53	100.23	-36.57	100	177	QP	Close	
2	4.44	59.36	22.85	36.51	69.50	-10.14	100	199	QP	Close	
3	9.68	49.49	11.43	38.06	69.50	-20.01	100	18	QP	Close	
4	13.39	50.33	12.40	37.93	69.50	-19.17	100	160	QP	Close	
5	21.16	52.10	14.10	38.00	69.50	-17.40	100	192	QP	Close	
6	25.06	53.30	13.48	39.82	69.50	-16.20	100	113	QP	Close	

U-NII-3

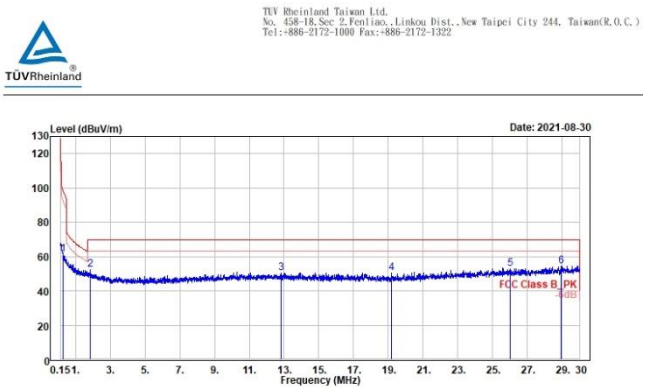
802.11n HT20

CH 149 (Open) 9kHz ~ 150kHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.01	80.00	4.07	75.93	125.99	-45.99	100	19	QP	Open	
2	0.03	68.85	1.23	67.62	116.81	-47.96	100	318	QP	Open	
3	0.05	63.80	-0.33	64.13	113.82	-50.02	100	295	QP	Open	
4	0.09	57.62	-1.14	58.76	108.65	-51.03	100	226	QP	Open	
5	0.10	57.30	0.05	57.25	107.57	-50.27	100	143	QP	Open	
6	0.14	52.27	-3.14	55.41	104.49	-52.22	100	200	QP	Open	

CH 149 (Open) 150kHz ~ 30MHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.28	61.18	11.45	49.73	98.80	-37.62	100	64	QP	Open	
2	1.84	52.19	12.83	39.36	69.50	-17.31	100	47	QP	Open	
3	12.84	50.60	12.63	37.97	69.50	-18.90	100	80	QP	Open	
4	19.17	50.39	12.87	37.52	69.50	-19.11	100	83	QP	Open	
5	26.01	53.02	12.76	40.26	69.50	-16.48	100	190	QP	Open	
6	28.93	54.53	12.90	41.63	69.50	-14.97	100	108	QP	Open	

802.11n HT20

CH 149 (Close) 9kHz ~ 150kHz

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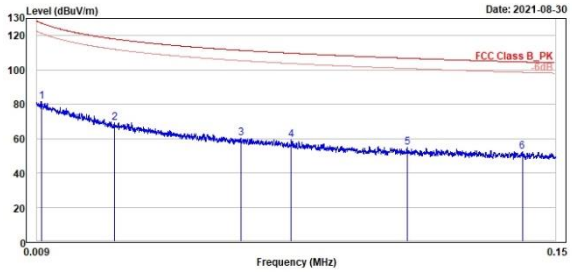

	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.01	81.79	5.16	76.63	127.35	-45.56	100	288	QP	Close	
2	0.03	69.43	0.72	68.71	118.00	-48.57	100	301	QP	Close	
3	0.06	60.44	-1.50	61.94	111.41	-50.97	100	241	QP	Close	
4	0.08	59.12	-1.02	60.14	109.73	-50.61	100	109	QP	Close	
5	0.11	54.72	-2.13	56.85	106.80	-52.08	100	267	QP	Close	
6	0.14	52.30	-3.20	55.50	104.62	-52.32	100	51	QP	Close	

CH 149 (Close) 150kHz ~ 30MHz

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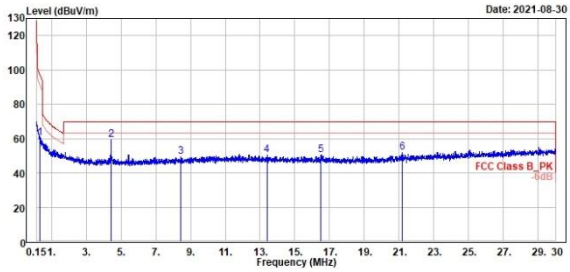
No. 458-18, Sec 2, Fenliao., Linkou Dist., New Taipei City 244, Taiwan(R.O.C.)
Tel:+886-2172-1000 Fax:+886-2172-1322



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase	Note
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			
1	0.35	60.38	12.57	47.81	96.80	-36.42	100	38	QP	Close	
2	4.44	59.36	22.85	36.51	69.50	-10.14	100	199	QP	Close	
3	8.44	49.39	11.78	37.61	69.50	-20.11	100	56	QP	Close	
4	13.39	50.33	12.40	37.93	69.50	-19.17	100	160	QP	Close	
5	16.51	50.25	12.54	37.71	69.50	-19.25	100	27	QP	Close	
6	21.16	52.10	14.10	38.00	69.50	-17.40	100	192	QP	Close	

Mains Conducted Emission, (150kHz ~ 30MHz)

Worst Band

(Line)

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No. 458-18 & 458-19, Sec. 2, Fenliao Rd., Linkou Dist., New Taipei City 244
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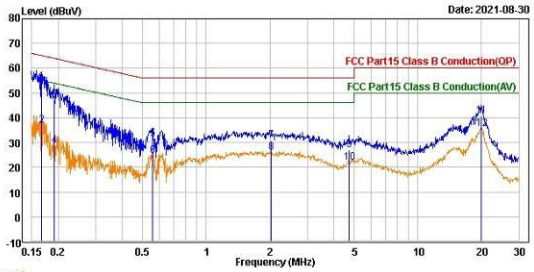

Trace: 1

	Freq	Read Level	Factor	Limit Line	Over Limit	Remark	Pol/Phase	Note
	MHz	dBuV	dB	dBuV	dB			
1	0.167	44.55	9.66	65.13	-10.92	QP	line1	
2	0.167	27.22	9.66	55.13	-18.25	Average	line1	
3	0.191	37.63	9.65	63.97	-16.69	QP	line1	
4	0.191	18.92	9.65	53.97	-25.40	Average	line1	
5	0.556	21.86	9.65	56.00	-24.49	QP	line1	
6	0.556	15.08	9.65	46.00	-21.27	Average	line1	
7	2.033	20.92	9.68	56.00	-25.40	QP	line1	
8	2.033	16.19	9.68	46.00	-20.13	Average	line1	
9	4.721	17.15	9.72	56.00	-29.13	QP	line1	
10	4.721	12.00	9.72	46.00	-24.28	Average	line1	
11	19.836	30.94	9.73	60.00	-19.33	QP	line1	
12	19.836	25.71	9.73	50.00	-14.56	Average	line1	

(Neutral)

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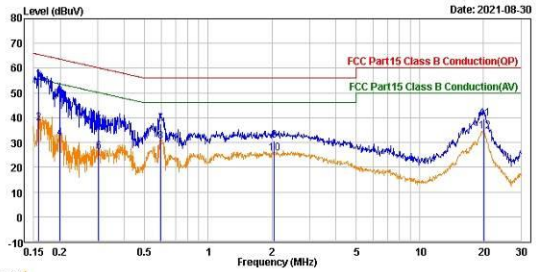

Trace: 1

	Freq	Read Level	Factor	Limit Line	Over Limit	Remark	Pol/Phase	Note
	MHz	dBuV	dB	dBuV	dB			
1	0.158	45.74	9.68	65.54	-10.12	QP	neutral	
2	0.158	28.23	9.68	55.54	-17.63	Average	neutral	
3	0.198	38.77	9.67	63.68	-15.24	QP	neutral	
4	0.198	22.07	9.67	53.68	-21.94	Average	neutral	
5	0.304	27.31	9.66	60.12	-23.15	QP	neutral	
6	0.304	16.63	9.66	50.12	-23.83	Average	neutral	
7	0.594	27.76	9.66	56.00	-18.58	QP	neutral	
8	0.594	20.87	9.66	46.00	-15.47	Average	neutral	
9	2.054	20.88	9.70	56.00	-25.42	QP	neutral	
10	2.054	15.85	9.70	46.00	-20.45	Average	neutral	
11	20.135	29.77	9.82	60.00	-20.41	QP	neutral	
12	20.135	24.69	9.82	50.00	-15.49	Average	neutral	