RF TEST REPORT

Applicant	ecom instruments GmbH
FCC ID	XAM500080GR01
Product	Featurephone
Brand	ecom
Model	Ex-Handy 10
Report No.	R1901H0001-R3
Issue Date	July 5, 2019

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 15E (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Peng Tao

Performed by: Peng Tao

Kai Xu

Approved by: Kai Xu

TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000

TABLE OF CONTENT

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Summary of measurement results

Number	Test Case	Clause in FCC rules	Verdict
1	Average conducted output power	15.407(a)	PASS
2	Occupied bandwidth	15.407(e)	PASS
3	Frequency stability	15.407(g)	PASS
4	Power spectral density	15.407(a)	PASS
5	Unwanted Emissions	15.407(b)	PASS
6	Conducted Emissions	15.207	PASS
Date of Testing: May 21, 2019 ~June 14, 2019			

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

1. Test Laboratory

1.1. Notes of the test report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

1.3. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	No.145, Jintang Rd, Tangzhen Industry Park, Pudong
City:	Shanghai
Post code:	201201
Country:	P. R. China
Contact:	Xu Kai
Telephone:	+86-021-50791141/2/3
Fax:	+86-021-50791141/2/3-8000
Website:	http://www.ta-shanghai.com
E-mail:	xukai@ta-shanghai.com

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

2. General Description of Equipment under Test

Client Information

Applicant	ecom instruments GmbH
Applicant address	Industriestrasse 2, 97959 Assamstadt, Germany
Manufacturer	Pepperl+Fuchs GmbH
Manufacturer address	Lilienthalstrasse 200, 68307 Mannheim, Germany

General information

EUT Description	
Model	Ex-Handy 10
IMEI	004403100004516
Hardware Version	HW3
Software Version	SAIPH_ROW_M_018_260219
Power Supply	Battery/AC adapter
Antenna Type	Internal Antenna
Antenna Gain	0.0 dBi
additional beamforming gain	NA
Test Mode(s)	U-NII-1(5150MHz-5250MHz) U-NII-2A(5250MHz-5350MHz) U-NII-2C(5470MHz-5725MHz without 5600MHz -5650MHz) U-NII-3(5725MHz-5850MHz)
Modulation Type	802.11a/n (HT20/HT40) : OFDM
Max. Conducted Power	15.06dBm
Operating Frequency Range(s)	U-NII-1: 5150-5250MHz U-NII-2A:5250-5350MHz U-NII-2C:5470-5725MHz (without 5600MHz -5650MHz) U-NII-3: 5725-5850MHz
Operating temperature range:	-10 ° C to 45° C
Operating voltage range:	3.5 V to 4.2 V
State DC voltage:	3.7V
EUT Accessory	
Adapter	Manufacturer: TEN PAO INTERNATIONAL LTD. Model: S008ACM0500200

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Battery	Manufacturer: ecom instruments GmbH Model: EX-BP H10C
USB Cable	Manufacturer: Dongguan YongGu Electronics Prouduction Co., Ltd. 120cm Cable, Shielded
Note: The information of the EUT is declared by the manufacturer.	

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

3. Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR47 Part 15E (2018) Unlicensed National Information Infrastructure Devices

ANSI C63.10 (2013)

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

4. Test Configuration

Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

In order to find the worst case condition, Pre-tests are needed at the presence of different data rate. Preliminary tests have been done on all the configuration for confirming worst case. Data rate below means worst-case rate of each test item.

Worst-case data rates are shown as following table.

Band	**Data Rate**
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Wireless Technology and Frequency Range

Wireless Technology		Bandwidth	Channel	Frequency
Wi-Fi	U-NII-1	20 MHz	36	5180MHz
			40	5200MHz
			44	5220MHz
			48	5240MHz
		40 MHz	38	5190MHz
			46	5230MHz
	U-NII-2A	20 MHz	52	5260MHz
			56	5280MHz
			60	5300MHz
			64	5320MHz
		40 MHz	54	5270MHz
			62	5310MHz
	U-NII-2C	20 MHz	100	5500MHz
			104	5520MHz
			108	5540MHz
			112	5560MHz
			116	5580MHz
			132	5660MHz
			136	5680MHz
			140	5700MHz
		40 MHz	102	5510MHz
			110	5550MHz
			118	5590MHz
			134	5670MHz
			142	5710MHz
	U-NII-3	20 MHz	149	5745MHz
			153	5765MHz
			157	5785MHz
			161	5805MHz
			165	5825MHz
		40 MHz	151	5755MHz
			159	5795MHz
Does this device support TPC Function? ☒Yes ☐No				
Does this device support TDWR Band? ☐Yes ☒No				

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5. Test Case Results

5.1. Occupied Bandwidth

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

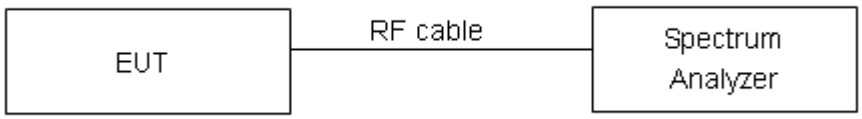
For U-NII-1/U-NII-2A/U-NII-2C, set RBW ≈1% OCB kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

For U-NII-3, Set RBW = 100 kHz, VBW ≥ 3 × RBW, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

Use the 99 % power bandwidth function of the instrument

Test Setup



Limits

Rule FCC Part §15.407(e)

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936 Hz.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results:

U-NII-1

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5180	16.800	21.67	PASS
	5200	16.780	21.92	PASS
	5240	16.802	22.14	PASS
802.11n HT20	5180	17.901	22.19	PASS
	5200	17.888	22.23	PASS
	5240	17.860	23.28	PASS
802.11n HT40	5190	36.202	42.90	PASS
	5230	36.179	43.61	PASS

U-NII-2A

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5260	17.007	22.79	PASS
	5300	16.738	22.15	PASS
	5320	16.757	21.49	PASS
802.11n HT20	5260	17.836	21.67	PASS
	5300	17.849	21.93	PASS
	5320	17.820	21.44	PASS
802.11n HT40	5270	36.191	42.64	PASS
	5310	36.123	43.16	PASS

U-NII-2C

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 26 dB bandwidth (MHz)	Conclusion
802.11a	5500	16.667	21.55	PASS
	5580	16.722	21.54	PASS
	5700	16.682	21.36	PASS
802.11n HT20	5500	17.812	21.42	PASS
	5580	17.826	22.27	PASS
	5700	17.848	21.67	PASS
802.11n HT40	5510	36.135	42.93	PASS
	5550	36.160	43.06	PASS
	5670	36.155	43.25	PASS

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-3

Network Standards	Carrier frequency (MHz)	99% bandwidth (MHz)	Minimum 6 dB bandwidth (MHz)	Limit (kHz)	Conclusion
802.11a	5745	16.806	16.44	500	PASS
	5785	16.751	16.48	500	PASS
	5825	16.742	16.37	500	PASS
802.11n HT20	5745	17.868	17.61	500	PASS
	5785	17.884	17.59	500	PASS
	5825	17.816	17.62	500	PASS
802.11n HT40	5755	35.979	34.26	500	PASS
	5795	35.967	35.17	500	PASS

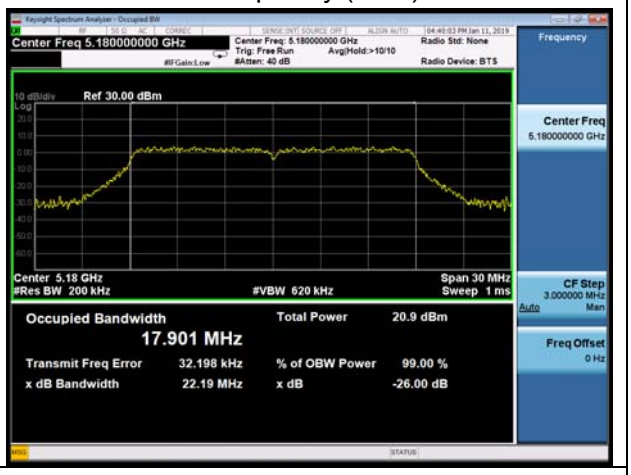
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-1, 802.11a

Carrier frequency (MHz): 5180

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5180



U-NII-1, 802.11a

Carrier frequency (MHz): 5200

U-NII-1, 802.11n HT20

Carrier frequency (MHz): 5200

U-NII-1, 802.11a

Carrier frequency (MHz):5240

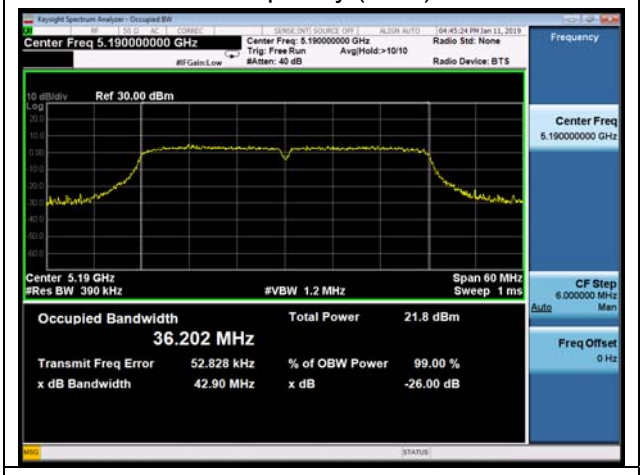
U-NII-1, 802.11n HT20

Carrier frequency (MHz):5240

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

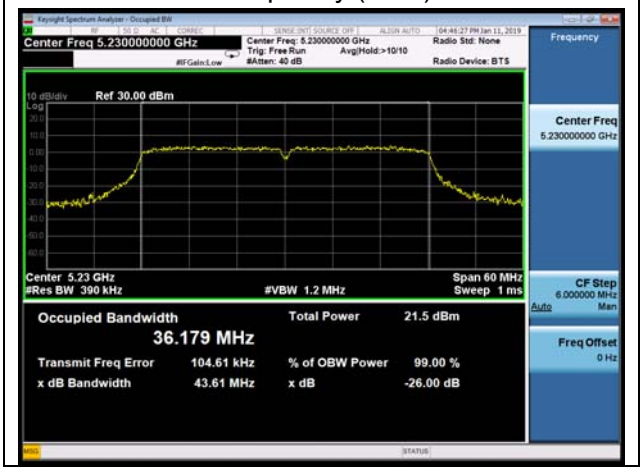
U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5190



U-NII-1, 802.11n HT40

Carrier frequency (MHz): 5230



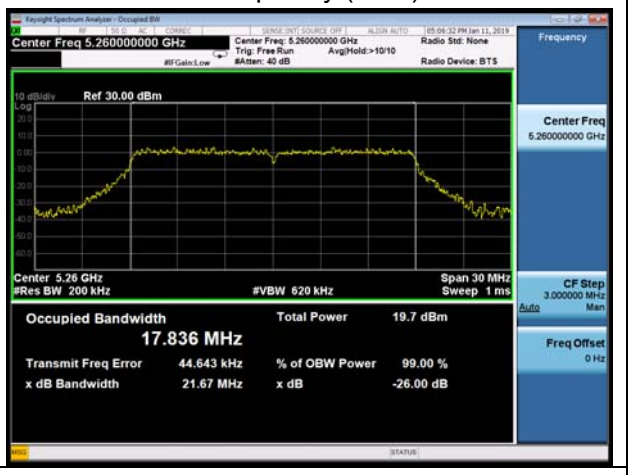
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2A, 802.11a

Carrier frequency (MHz): 5260

U-NII-2A, 802.11n HT20

Carrier frequency (MHz): 5260



U-NII-2A, 802.11a

Carrier frequency (MHz): 5300

U-NII-2A, 802.11n HT20

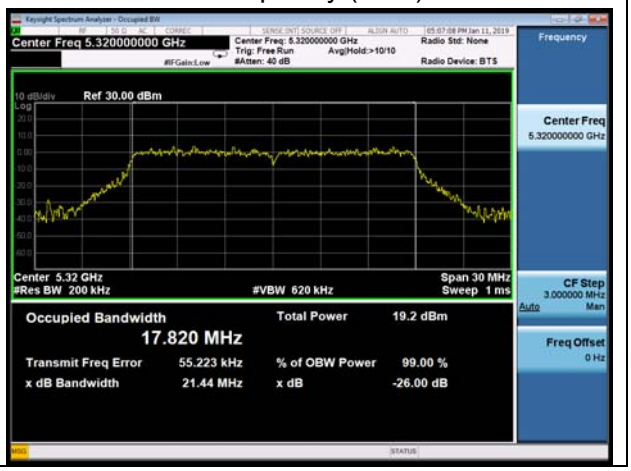
Carrier frequency (MHz): 5300

U-NII-2A, 802.11a

Carrier frequency (MHz):5320

U-NII-2A, 802.11n HT20

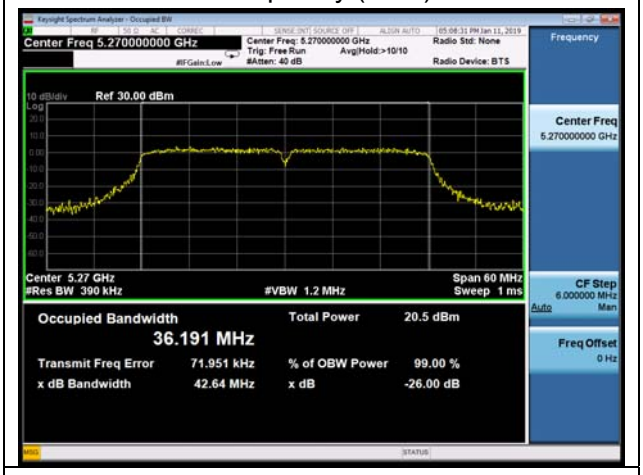
Carrier frequency (MHz):5320



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

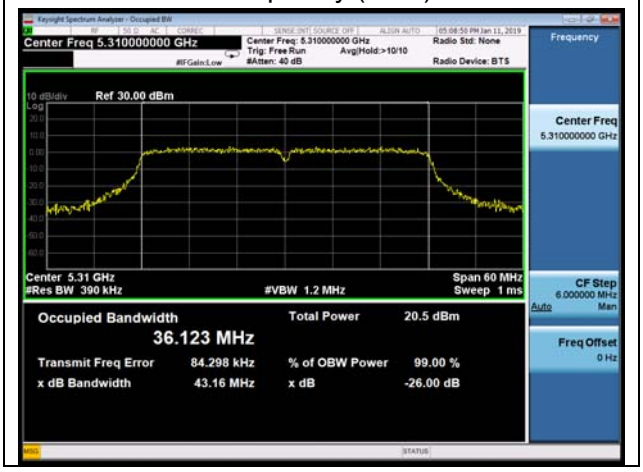
U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5270



U-NII-2A, 802.11n HT40

Carrier frequency (MHz): 5310



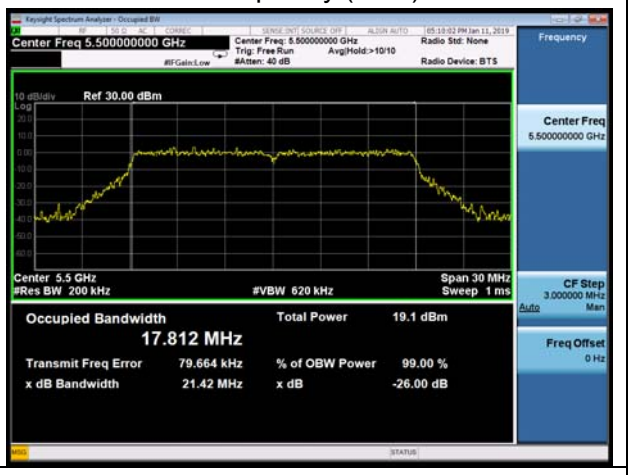
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C, 802.11a

Carrier frequency (MHz): 5500

U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5500



U-NII-2C, 802.11a

Carrier frequency (MHz): 5580

U-NII-2C, 802.11n HT20

Carrier frequency (MHz): 5580

U-NII-2C, 802.11a

Carrier frequency (MHz):5700

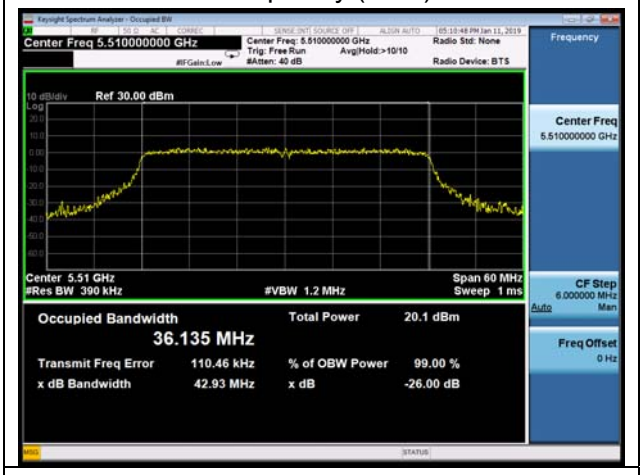
U-NII-2C, 802.11n HT20

Carrier frequency (MHz):5700

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5510



U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5550

U-NII-2C, 802.11n HT40

Carrier frequency (MHz): 5670

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

99% bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

U-NII-3, 802.11a

Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

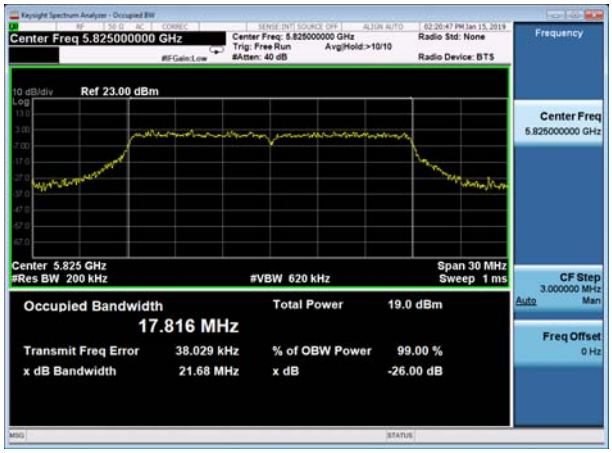
Carrier frequency (MHz): 5785

U-NII-3, 802.11a

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

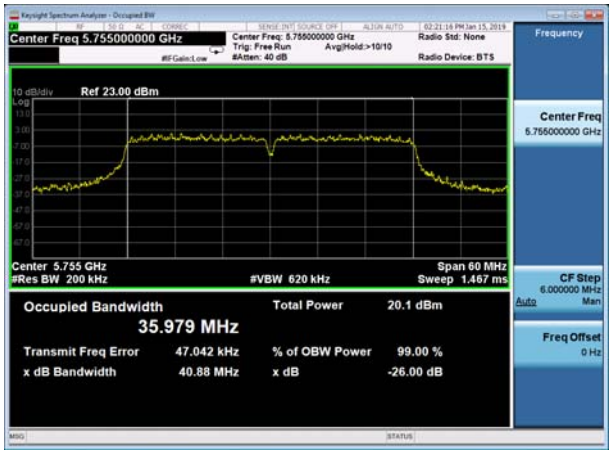
Carrier frequency (MHz): 5825



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755



U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

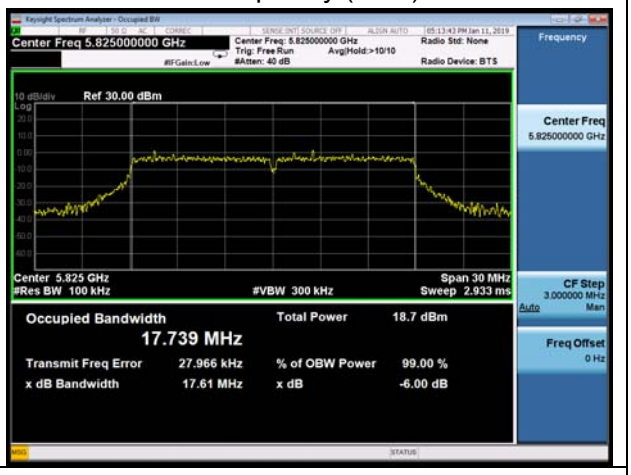
Minimum 6 dB bandwidth

U-NII-3, 802.11a

Carrier frequency (MHz): 5745

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5745

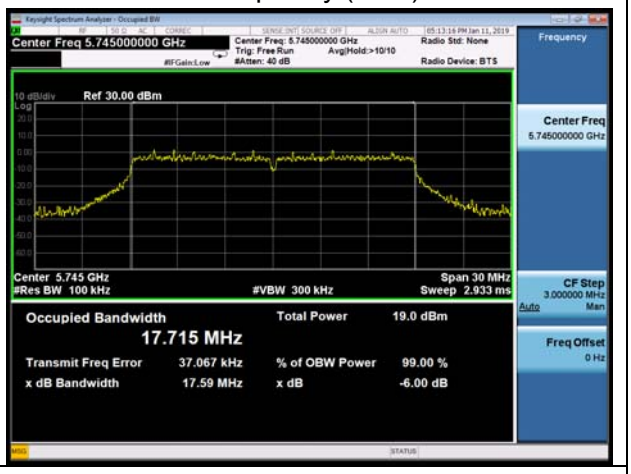


U-NII-3, 802.11a

Carrier frequency (MHz): 5785

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5785

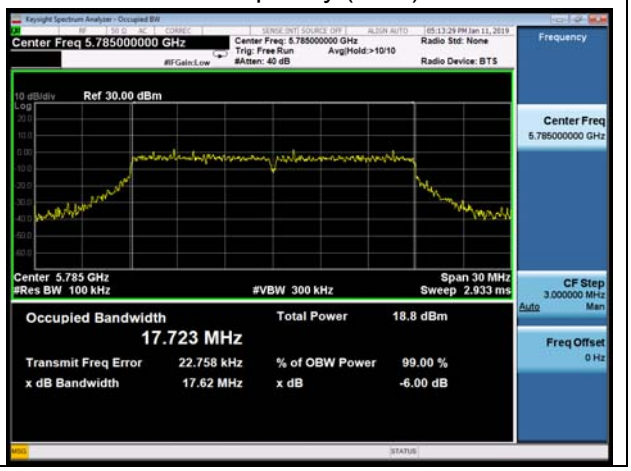


U-NII-3, 802.11a

Carrier frequency (MHz): 5825

U-NII-3, 802.11n HT20

Carrier frequency (MHz): 5825



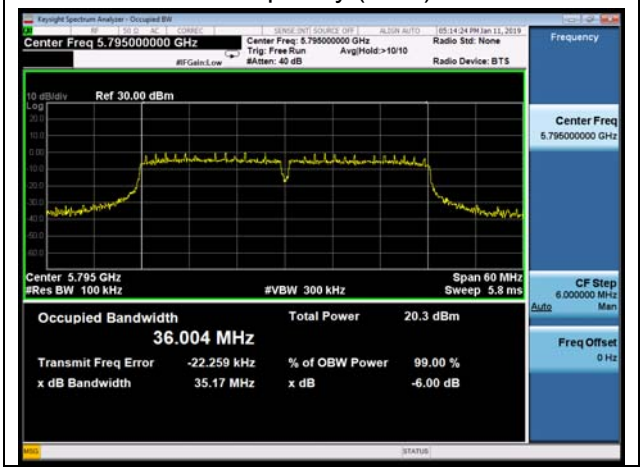
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5755

U-NII-3, 802.11n HT40

Carrier frequency (MHz): 5795



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5.2. Average Power Output –Conducted

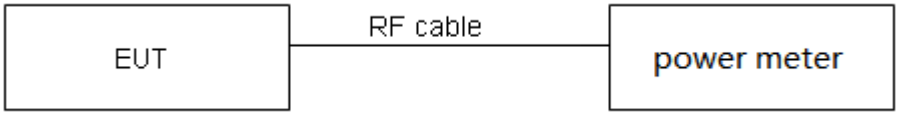
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

During the process of the testing, The EUT was connected to the average power meter through an external attenuator and a known loss cable. The EUT is max power transmission with proper modulation. We use Maximum average Conducted Output Power Level Method in KDB789033 for this test

Test Setup



Limits

Rule FCC Part 15.407(a)(1)(2)(3)
(1) For the band 5.15-5.25 GHz.
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3)For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.44 dB.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results

Band	T_{on} (ms)	$T_{(on+off)}$ (ms)	Duty cycle	Duty cycle correction Factor(dB)
802.11a	1.37	1.57	0.87	0.59
802.11n HT20	1.28	1.48	0.87	0.63
802.11n HT40	0.64	0.84	0.76	1.19
Note: when Duty cycle>0.98, Duty cycle correction Factor not required.				

Single Antenna Power Index												
Packet Type	**CH36**	**CH40**	**CH48**	**CH52**	**CH60**	**CH64**	**CH 100**	**CH 120**	**CH 140**	**CH 149**	**CH 157**	**CH 165**
802.11a	14.5	14.5	14.5	14	14	14	15	15	15	15	15	15
802.11n HT20	14.5	14.5	14.5	14	14	14	15	15	15	15	15	15
Packet Type	**CH38**	**CH46**	**CH54**	**CH62**	**CH 102**	**CH 118**	**CH 134**	**CH 151**	**CH 159**	**/**	/	/
802.11n HT40	14.5	14.5	14	14	15	15	15	15	15	/	/	/

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Network Standards		Channel/Frequency (MHz)	B=26 dB bandwidth (MHz)	Limit 11 dBm + 10 log B (dBm)	Final Limit(dBm)
U-NII-2A	802.11a	52/5260	22.79	24.58>24	24.00
		60/5300	22.15	24.45>24	24.00
		64/5320	21.49	24.32>24	24.00
	802.11n HT20	52/5260	21.67	24.36>24	24.00
		60/5300	21.93	24.41>24	24.00
		64/5320	21.44	24.31>24	24.00
	802.11n HT40	54/5270	41.64	27.20>24	24.00
		62/5310	43.16	27.35>24	24.00
U-NII-2C	802.11a	100/5500	21.55	24.33>24	24.00
		120/5600	21.54	24.33>24	24.00
		140/5700	21.36	24.30>24	24.00
	802.11n HT20	100/5500	21.42	24.31>24	24.00
		120/5600	22.27	24.48>24	24.00
		140/5700	21.67	24.36>24	24.00
	802.11n HT40	102/5510	42.93	27.33>24	24.00
		118/5590	43.06	27.34>24	24.00
		134/5670	43.25	27.36 >24	24.00
Note: 250mW=24dBm					

Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-1

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	36/5180	13.72	14.31	24	PASS
	40/5200	13.74	14.33	24	PASS
	48/5240	13.77	14.36	24	PASS
802.11n HT20	36/5180	13.75	14.38	24	PASS
	40/5200	13.67	14.30	24	PASS
	48/5240	13.76	14.39	24	PASS
802.11n HT40	38/5190	13.87	15.06	24	PASS
	46/5230	13.79	14.98	24	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-2A

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	52/5260	13.46	14.05	24.00	PASS
	60/5300	13.37	13.96	24.00	PASS
	64/5320	13.22	13.81	24.00	PASS
802.11n HT20	52/5260	13.35	13.98	24.00	PASS
	60/5300	13.28	13.91	24.00	PASS
	64/5320	13.26	13.89	24.00	PASS
802.11n HT40	54/5270	13.31	14.50	24.00	PASS
	62/5310	13.18	14.37	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	100/5500	12.65	13.24	24.00	PASS
	120/5600	12.93	13.52	24.00	PASS
	140/5700	12.79	13.38	24.00	PASS
802.11n HT20	100/5500	12.72	13.35	24.00	PASS
	120/5600	12.88	13.51	24.00	PASS
	140/5700	12.71	13.34	24.00	PASS
802.11n HT40	102/5510	12.84	14.03	24.00	PASS
	118/5590	12.94	14.13	24.00	PASS
	134/5670	12.96	14.15	24.00	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

U-NII-3

Network Standards	Channel/ Frequency (MHz)	Average Power Measured (dBm)	Average Power with duty factor (dBm)	Limit (dBm)	Conclusion
802.11a	149/5745	13.35	13.94	30	PASS
	157/5785	13.01	13.60	30	PASS
	165/5825	13.06	13.65	30	PASS
802.11n HT20	149/5745	13.32	13.95	30	PASS
	157/5785	13.03	13.66	30	PASS
	165/5825	13.06	13.69	30	PASS
802.11n HT40	151/5755	13.25	14.44	30	PASS
	159/5795	13.05	14.24	30	PASS
Note: Average Power with duty factor = Average Power Measured +Duty cycle correction factor					

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5.3. Frequency Stability

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more that 10°C, and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

2. Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15°C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
c) Measure the frequency at each of the frequencies specified in 5.6.
d) Repeat the above procedure at 85% and 115% of the nominal supply voltage.

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 users manual.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 936Hz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results

Voltage (V)	Temperature (°C)	U-NII-1 Test Results			
		5200MHz			
		1min	2min	5min	10min
3.7	-20	5199.997058	5199.989900	5199.983379	5199.980343
3.7	-10	5200.002420	5199.988511	5199.977864	5199.977045
3.7	0	5199.996609	5199.986307	5199.976469	5199.974650
3.7	10	5199.991273	5199.982602	5199.967253	5199.969074
3.7	20	5199.988388	5199.979266	5199.962254	5199.963764
3.7	30	5199.985042	5199.971595	5199.961737	5199.963547
3.7	40	5199.983736	5199.964782	5199.961360	5199.955012
3.7	50	5199.978469	5199.956298	5199.960088	5199.950290
3.5	20	5199.970220	5199.950402	5199.950485	5199.946682
4.2	20	5199.963887	5199.947304	5199.944586	5199.943442
MHz		-0.036113	-0.052696	-0.055414	-0.056558
PPM		-6.944897	-10.133936	-10.656492	-10.876485

Voltage (V)	Temperature (°C)	U-NII-2A Test Results			
		5300MHz			
		1min	2min	5min	10min
3.7	-20	5299.997328	5299.988965	5299.986608	5299.977229
3.7	-10	5299.995047	5299.987428	5299.979366	5299.976718
3.7	0	5299.988709	5299.981201	5299.971726	5299.970962
3.7	10	5299.983180	5299.974714	5299.963996	5299.962893
3.7	20	5299.979573	5299.967857	5299.956857	5299.958717
3.7	30	5299.975202	5299.960243	5299.952337	5299.957065
3.7	40	5299.974575	5299.958402	5299.946827	5299.954925
3.7	50	5299.973533	5299.957179	5299.939479	5299.947279
3.5	20	5299.973008	5299.954299	5299.930429	5299.946809
4.2	20	5299.964378	5299.945587	5299.927890	5299.944657
MHz		-0.035622	-0.054413	-0.072110	-0.055343
PPM		-6.721122	-10.266645	-13.605590	-10.442003

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Voltage (V)	Temperature (°C)	U-NII-2C Test Results			
		5580MHz			
		1min	2min	5min	10min
3.7	-20	5580.000888	5579.996886	5579.995908	5579.986955
3.7	-10	5579.998263	5579.990847	5579.989145	5579.986280
3.7	0	5579.992282	5579.984458	5579.986468	5579.980165
3.7	10	5579.991648	5579.979775	5579.978845	5579.972812
3.7	20	5579.983344	5579.977015	5579.971953	5579.966400
3.7	30	5579.981397	5579.975999	5579.970448	5579.962101
3.7	40	5579.980699	5579.971812	5579.969366	5579.958113
3.7	50	5579.979257	5579.970072	5579.965564	5579.952296
3.5	20	5579.977347	5579.960239	5579.964562	5579.947088
4.2	20	5579.976616	5579.951655	5579.964312	5579.946794
MHz		-0.023384	-0.048345	-0.035688	-0.053206
PPM		-4.190690	-8.663907	-6.395725	-9.535116

Voltage (V)	Temperature (°C)	U-NII-3 Test Results			
		5785MHz			
		1min	2min	5min	10min
3.7	-20	5784.991183	5784.985760	5784.978782	5784.972877
3.7	-10	5784.990243	5784.977231	5784.975862	5784.967824
3.7	0	5784.984731	5784.973029	5784.974035	5784.961897
3.7	10	5784.977998	5784.967769	5784.970597	5784.955853
3.7	20	5784.968725	5784.962461	5784.963347	5784.949565
3.7	30	5784.965700	5784.955983	5784.956834	5784.946109
3.7	40	5784.962882	5784.947548	5784.953049	5784.943888
3.7	50	5784.957319	5784.938651	5784.945380	5784.934621
3.5	20	5784.950863	5784.935506	5784.943939	5784.925938
4.2	20	5784.949345	5784.926742	5784.939808	5784.918166
MHz		-0.050655	-0.073258	-0.060192	-0.081834
PPM		-8.756343	-12.663511	-10.404857	-14.145817

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5.4. Power Spectral Density

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

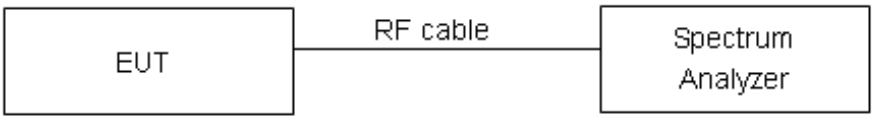
The EUT was connected to the spectrum analyzer through an external attenuator (20dB) and a known loss cable.

Set RBW = 500 kHz, VBW =1.5MHz for the band 5.725-5.85 GHz

Set RBW = 1 MHz, VBW =3MHz for the band 5.150-5.250 GHz

The conducted PSD is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically.

Test setup



Limits

Rule FCC Part 15.407(a)(1)/ Part 15.407(a)(2) / Part 15.407(a)(3)
For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmittingantennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Frequency Bands/MHz	Limits
5150-5250	17/11dBm/MHz
5.25-5.35 GHz and 5.47-5.725 GHz	11dBm/MHz
5725-5850	30dBm/500kHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 0.75dB.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results:

Note: Power Spectral Density =Read Value+Duty cycle correction factor

U-NII-1

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	36	1.47	2.06	10	PASS
	40	1.70	2.28	10	PASS
	48	1.64	2.23	10	PASS
802.11n HT20	36	1.46	2.08	10	PASS
	40	1.20	1.82	10	PASS
	48	1.79	2.41	10	PASS
802.11n HT40	38	-1.23	-0.04	10	PASS
	46	-1.88	-0.70	10	PASS

U-NII-2A

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	52	1.53	2.11	11	PASS
	60	1.30	1.89	11	PASS
	64	1.56	2.15	11	PASS
802.11n HT20	52	1.07	1.70	11	PASS
	60	1.78	2.40	11	PASS
	64	1.75	2.38	11	PASS
802.11n HT40	54	-1.41	-0.23	11	PASS
	62	-1.42	-0.23	11	PASS

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C

Network Standards	Channel Number	Read Value (dBm /MHz)	Power Spectral Density (dBm /MHz)	Limit (dBm /MHz)	Conclusion
802.11a	100	1.387	1.97	11	PASS
	120	1.907	2.49	11	PASS
	140	1.416	2.00	11	PASS
802.11n HT20	100	1.378	2.00	11	PASS
	120	1.776	2.40	11	PASS
	140	1.735	2.36	11	PASS
802.11n HT40	102	-1.544	-0.36	11	PASS
	118	-0.805	0.38	11	PASS
	134	-0.932	0.26	11	PASS

U-NII-3

Network Standards	Channel Number	Read Value (dBm/500kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Conclusion
802.11a	149	-1.69	-1.11	30	PASS
	157	-1.74	-1.15	30	PASS
	165	-2.22	-1.63	30	PASS
802.11n HT20	149	-1.73	-1.10	30	PASS
	157	-1.49	-0.87	30	PASS
	165	-1.88	-1.26	30	PASS
802.11n HT40	151	-4.97	-3.78	30	PASS
	159	-4.25	-3.06	30	PASS

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-1, 802.11a, Channel No.: 36

U-NII-1, 802.11n HT20, Channel No.: 36

U-NII-1, 802.11a, Channel No.: 40

U-NII-1, 802.11n HT20, Channel No.: 40

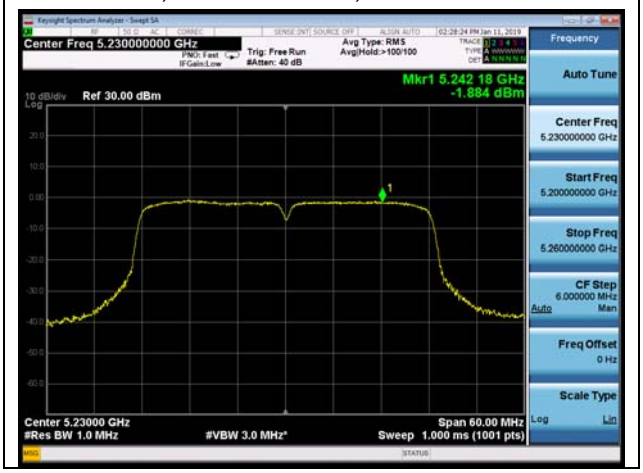
U-NII-1, 802.11a, Channel No.: 48

U-NII-1, 802.11n HT20, Channel No.: 48

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-1, 802.11n HT40, Channel No.: 38

U-NII-1, 802.11n HT40, Channel No.: 46

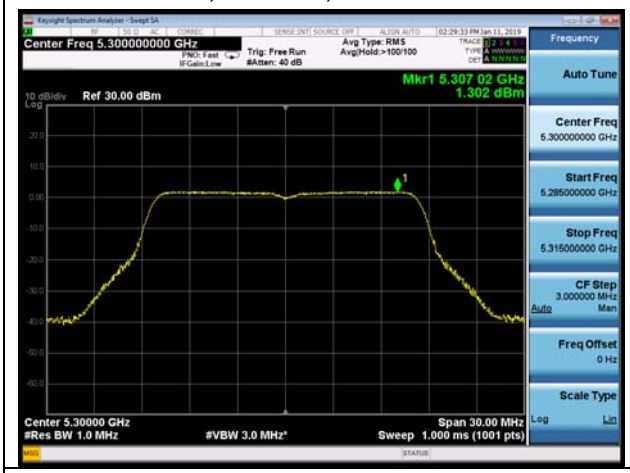


This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2A, 802.11a, Channel No.: 52

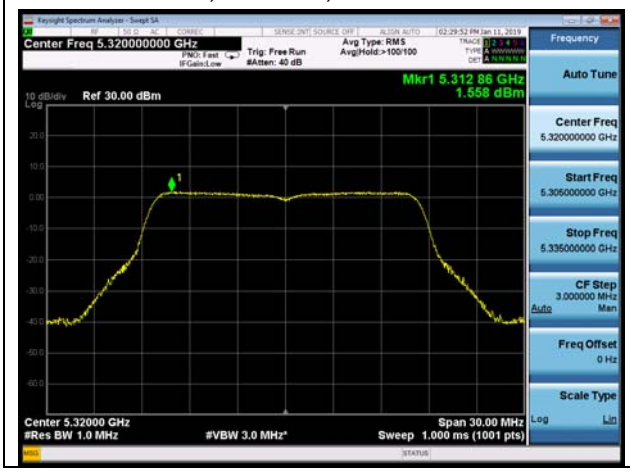
U-NII-2A, 802.11n HT20, Channel No.: 52

U-NII-2A, 802.11a, Channel No.: 60



U-NII-2A, 802.11n HT20, Channel No.: 60

U-NII-2A, 802.11a, Channel No.: 64

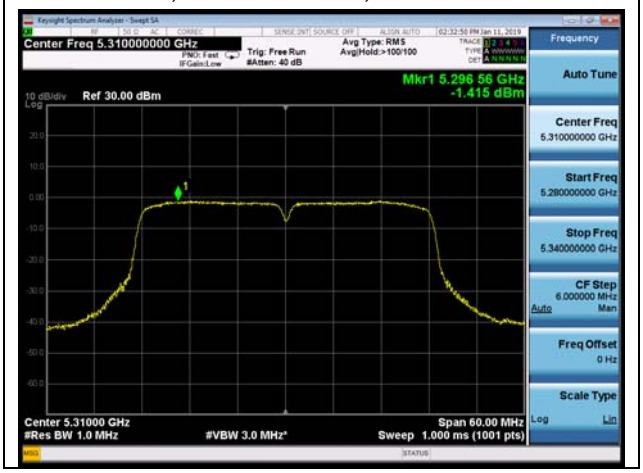


U-NII-2A, 802.11n HT20, Channel No.: 64

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2A, 802.11n HT40, Channel No.: 54

U-NII-2A, 802.11n HT40, Channel No.: 62



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

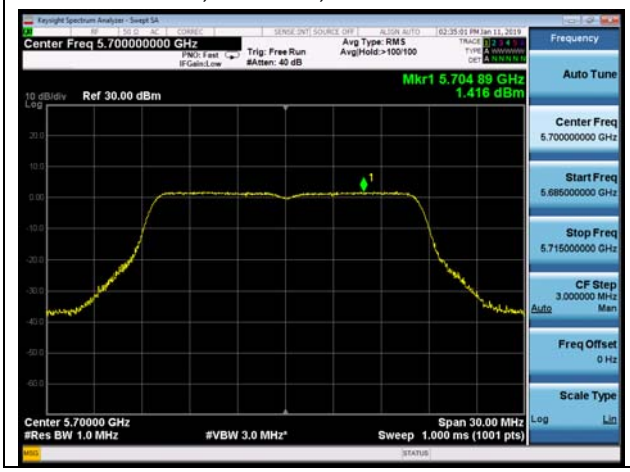
U-NII-2C, 802.11a, Channel No.: 100

U-NII-2C, 802.11n HT20, Channel No.: 100

U-NII-2C, 802.11a, Channel No.: 120

U-NII-2C, 802.11n HT20, Channel No.: 120

U-NII-2C, 802.11a, Channel No.: 140

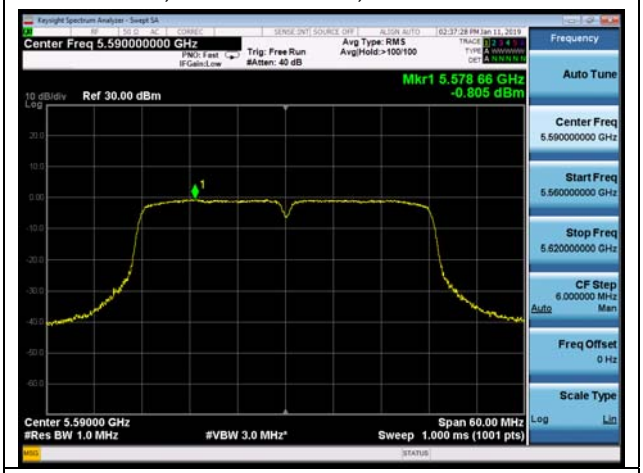


U-NII-2C, 802.11n HT20, Channel No.: 140

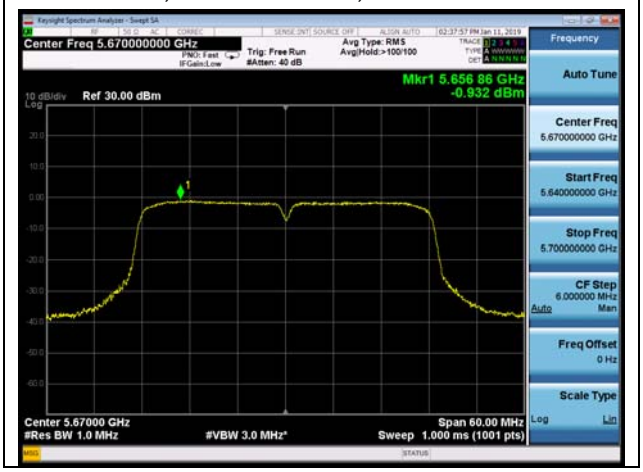
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C, 802.11n HT40, Channel No.: 102

U-NII-2C, 802.11n HT40, Channel No.: 118



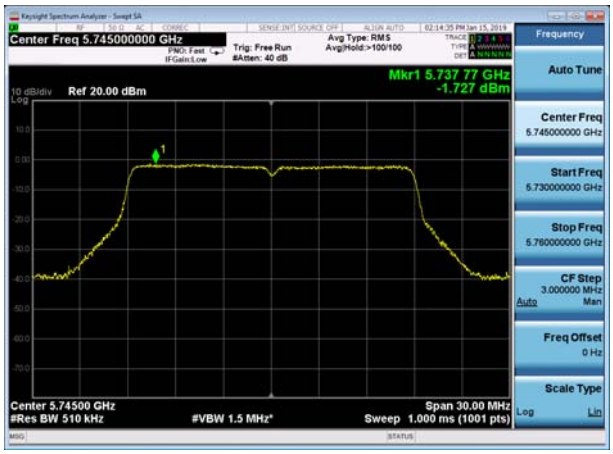
U-NII-2C, 802.11n HT40, Channel No.: 134



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

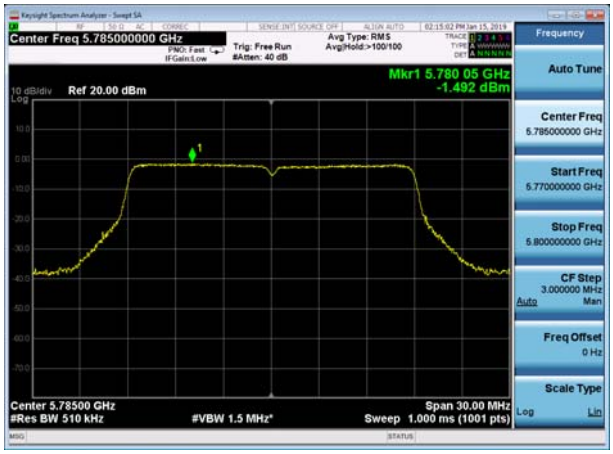
U-NII-3, 802.11a, Channel No.: 149

U-NII-3, 802.11n HT20, Channel No.: 149

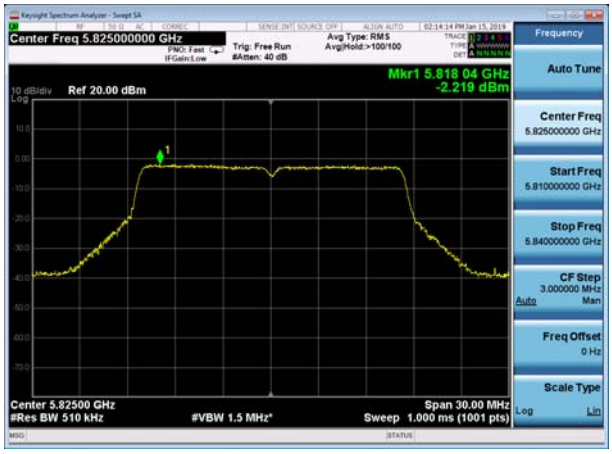


U-NII-3, 802.11a, Channel No.: 157

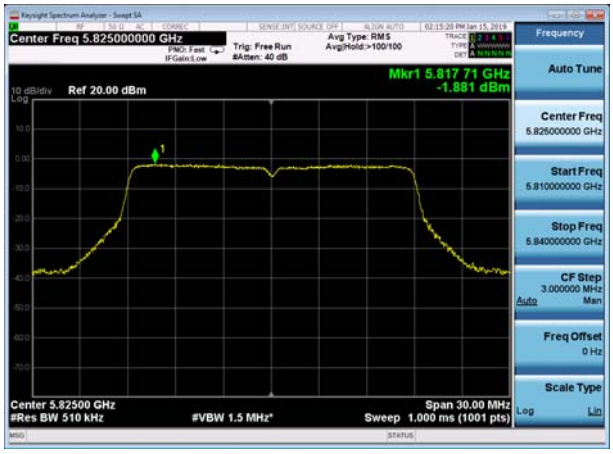
U-NII-3, 802.11n HT20, Channel No.: 157



U-NII-3, 802.11a, Channel No.: 165

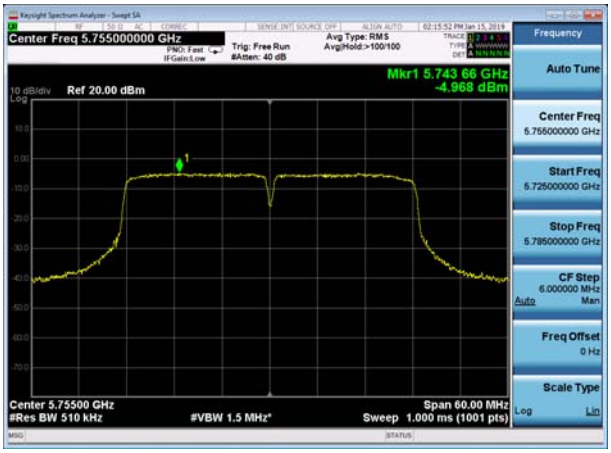


U-NII-3, 802.11n HT20, Channel No.: 165



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-3, 802.11n HT40, Channel No.: 151



U-NII-3, 802.11n HT40, Channel No.: 159

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5.5. Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The test set-up was made in accordance to the general provisions of ANSI C63.10-2013. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band range from 9kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
Below 1GHz (detector: Peak and Quasi-Peak)
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz (detector: Peak):
I) Peak emission levels are measured by setting the instrument as follows:
1) RBW = 1 MHz.
2) VBW ≥ [3 × RBW]
3) Detector = peak.
4) Sweep time = auto.
5) Trace mode = max hold.
6) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, then the time required for the trace to stabilize will increase by a factor of approximately 1 / D, where D is the duty cycle.

II) Average emission levels are measured by setting the instrument as follows:
a) RBW = 1 MHz.
b) VBW ≥ [3 × RBW].
c) Detector = RMS (power averaging), if [span / (# of points in sweep)] ≤ RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

e) Sweep time = auto.

f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)

g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is [10 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is [20 log (1 / D)], where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

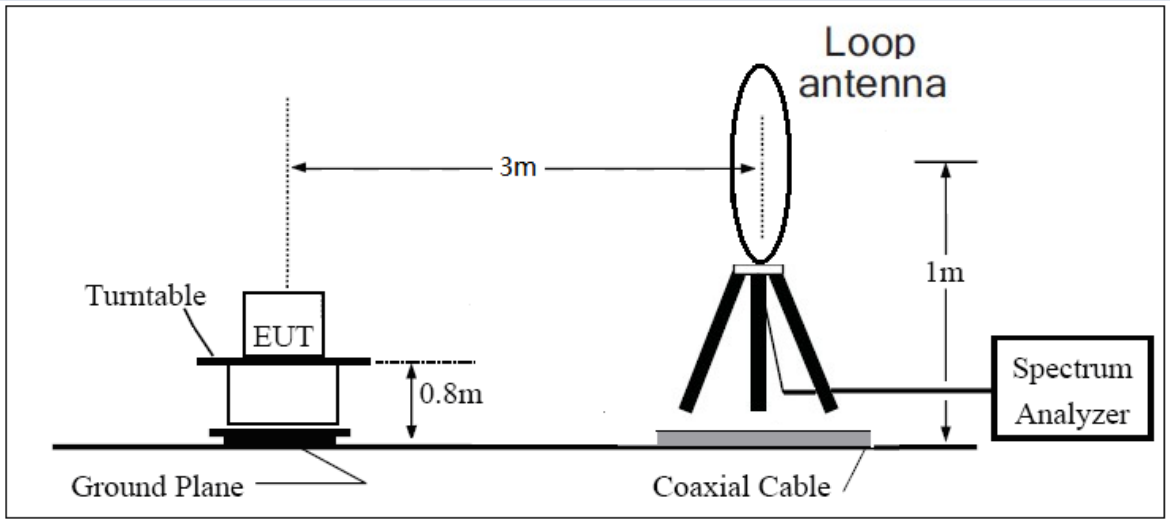
Reduce the video bandwidth until no significant variations in the displayed signal are observed in subsequent traces, provided the video bandwidth is no less than 1 Hz. For regulatory requirements that specify averaging only over the transmit duration (e.g., digital transmission system [DTS] and Unlicensed National Information Infrastructure [U-NII]), the video bandwidth shall be greater than [1 / (minimum transmitter on time)] and no less than 1 Hz.

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the loop antenna is vertical, others antenna are vertical and horizontal.

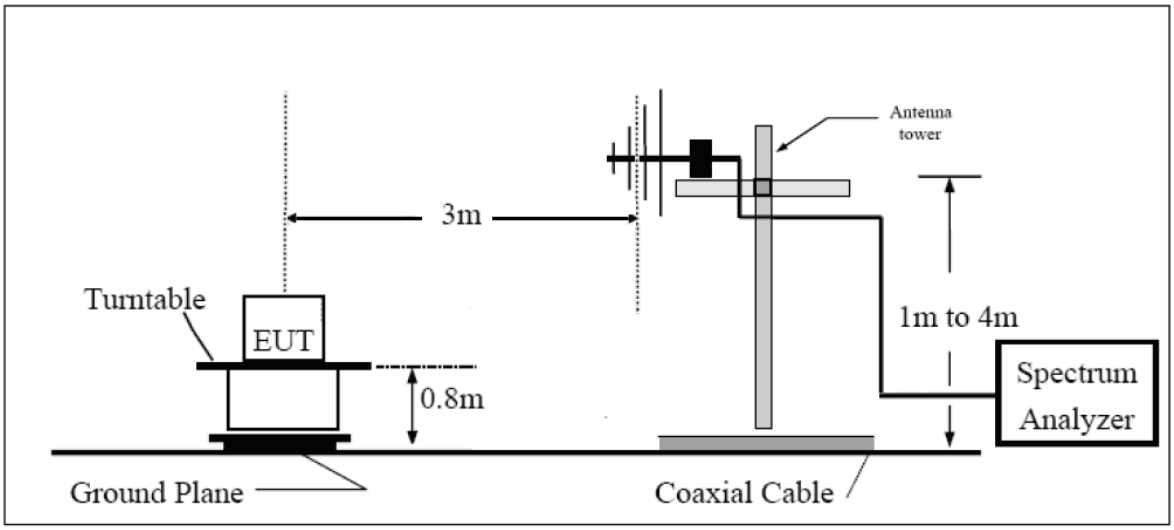
The test is in transmitting mode.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

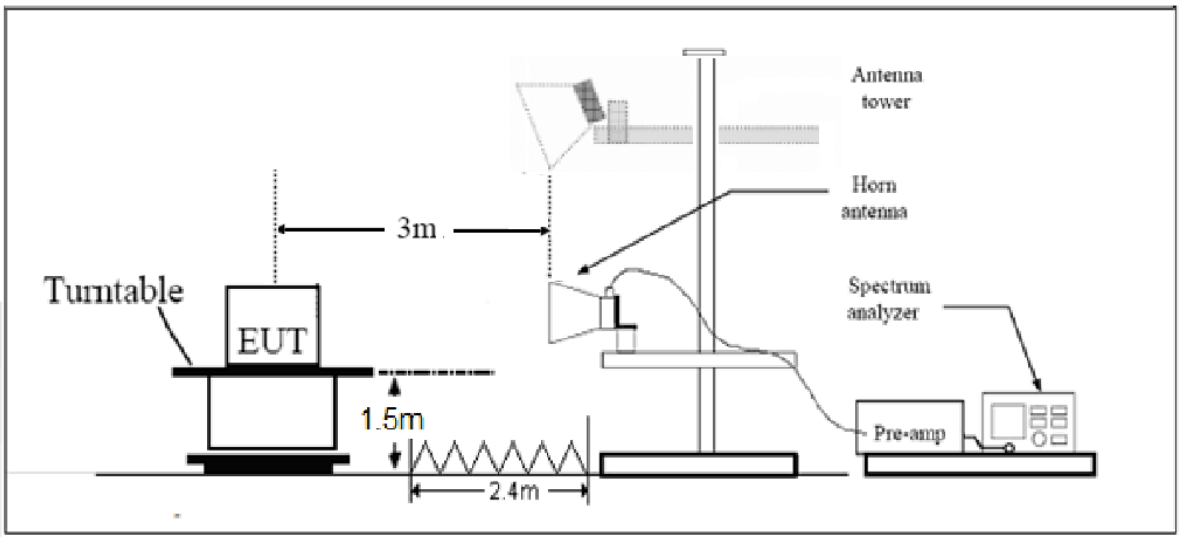
9KHz~~~30MHz



30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Limits

(1) For transmitters operating in the 5725-5850 MHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

(3) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

(4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz(68.2dBμV/m).

Note: the following formula is used to convert the EIRP to field strength

§1、E[dBμV/m] = EIRP[dBm] - 20 log(d[meters]) + 104.77, where E = field strength and

d = distance at which field strength limit is specified in the rules;

§2、E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters

(5) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table.

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
9KHz-30MHz	3.55 dB
30MHz-200MHz	4.02 dB
200MHz-1GHz	3.28 dB
1GHz-18G	3.70 dB
18GHz-26.5GHz	5.78 dB
26.5G-40GHz	5.82 dB

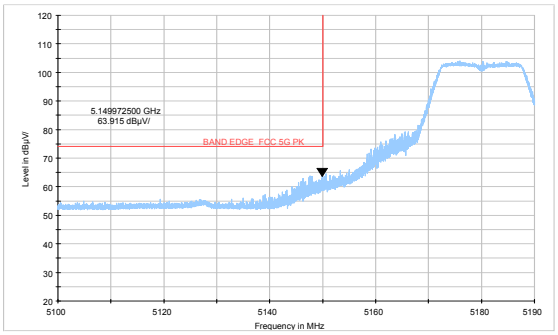
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results:

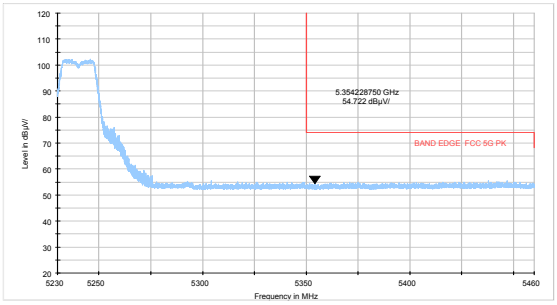
The signal beyond the limit is carrier.

U-NII-1

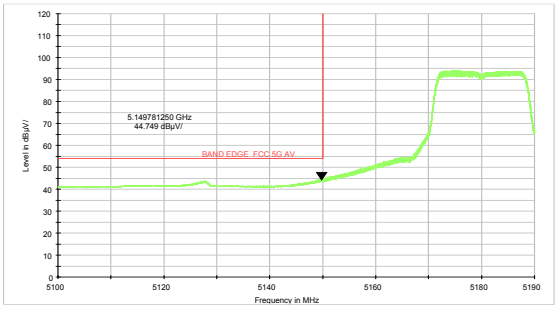
802.11a-Channel 36: Peak



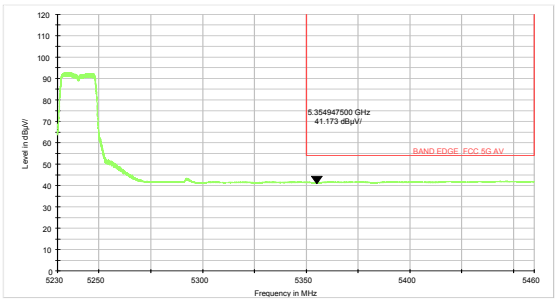
802.11a-Channel 48: Peak



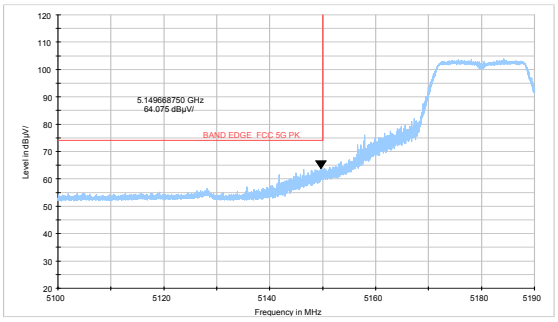
802.11a-Channel 36: Average



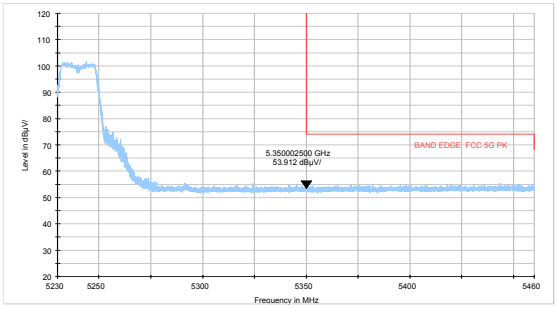
802.11a-Channel 48: Average



802.11n HT20-Channel 36: Peak

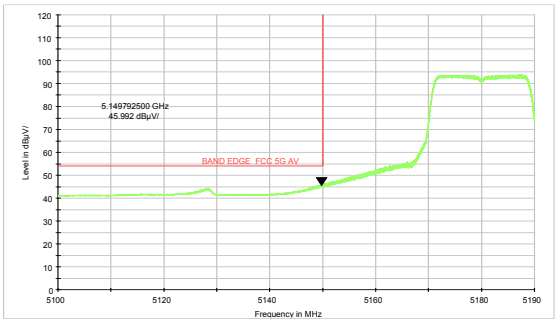


802.11n HT20-Channel 48: Peak

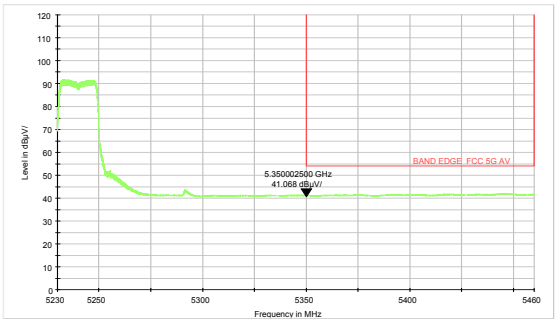


This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

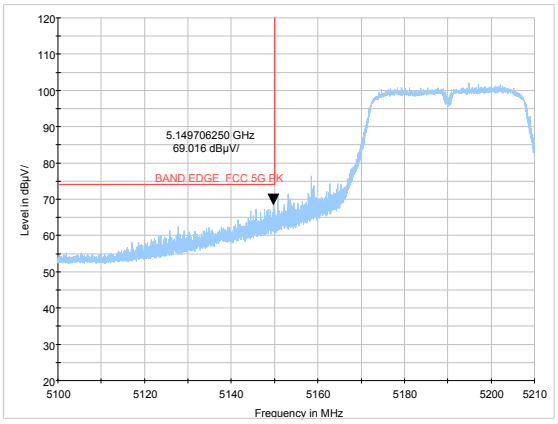
802.11n HT20-Channel 36: Average



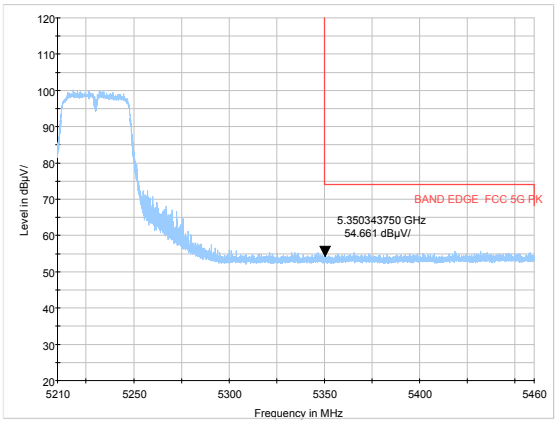
802.11n HT20-Channel 48: Average



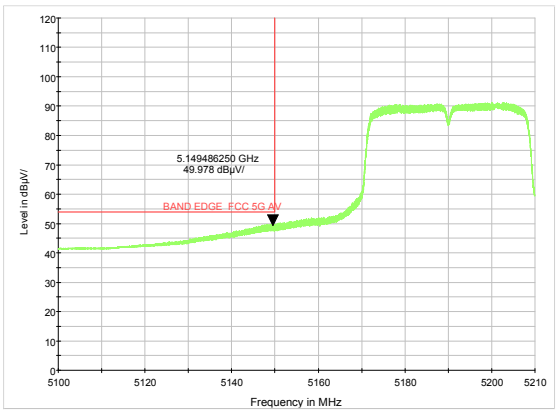
802.11n HT40-Channel 38: Peak



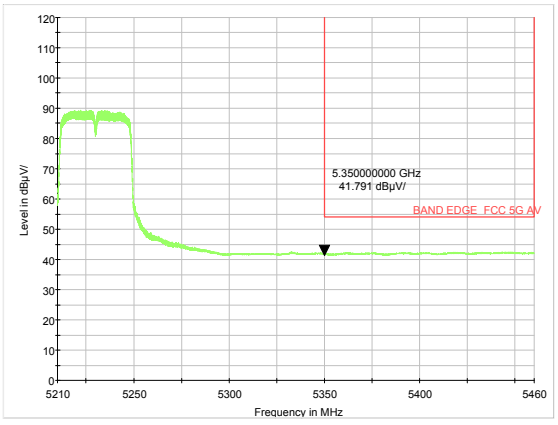
802.11n HT40-Channel 46: Peak



802.11n HT40-Channel 38: Average



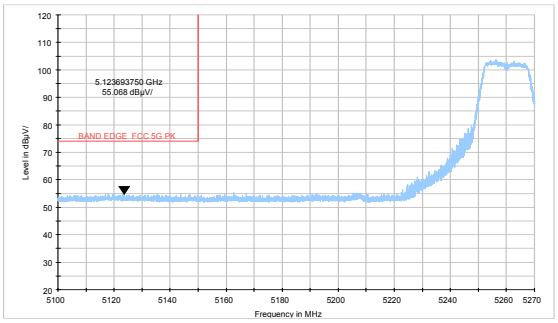
802.11n HT40-Channel 46: Average



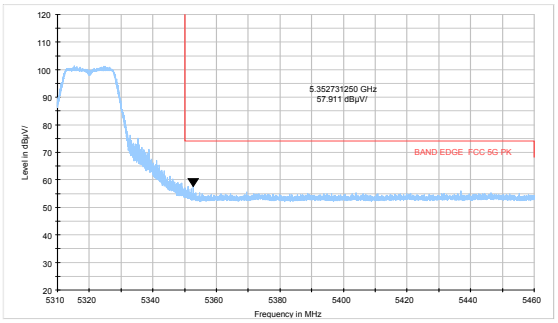
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2A

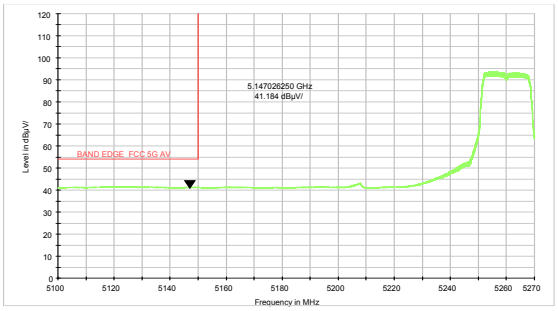
802.11a-Channel 52: Peak



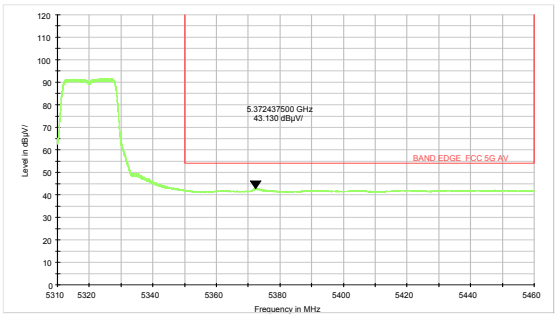
802.11a-Channel 64: Peak



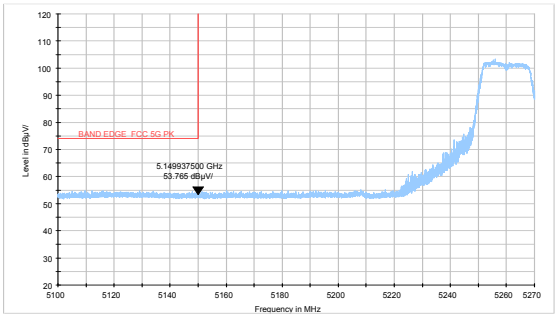
802.11a-Channel 52: Average



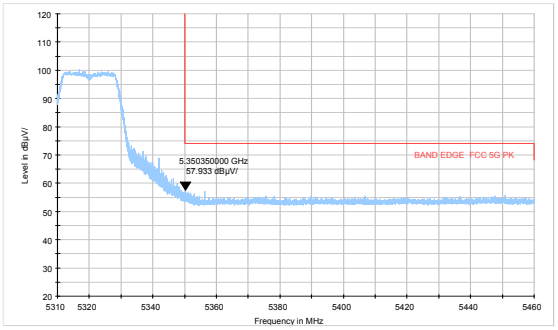
802.11a-Channel 64: Average



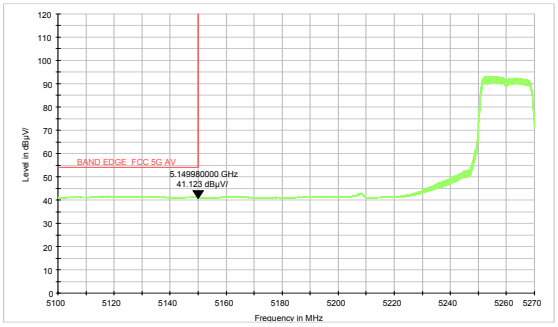
802.11n HT20-Channel 52: Peak



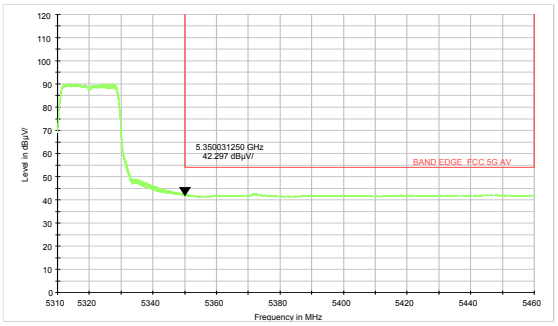
802.11n HT20-Channel 64: Peak



802.11n HT20-Channel 52: Average

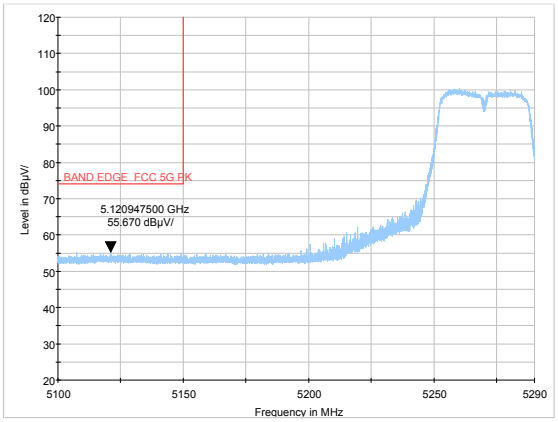


802.11n HT20-Channel 64: Average

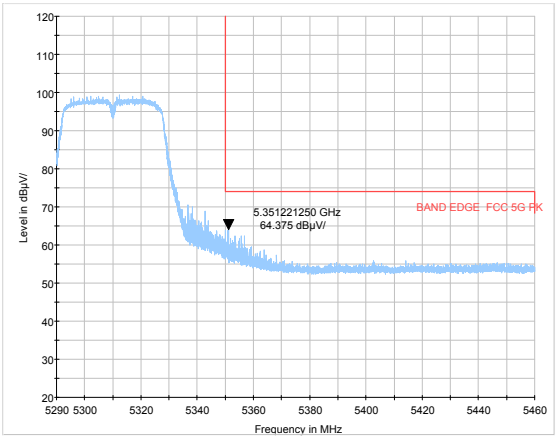


This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

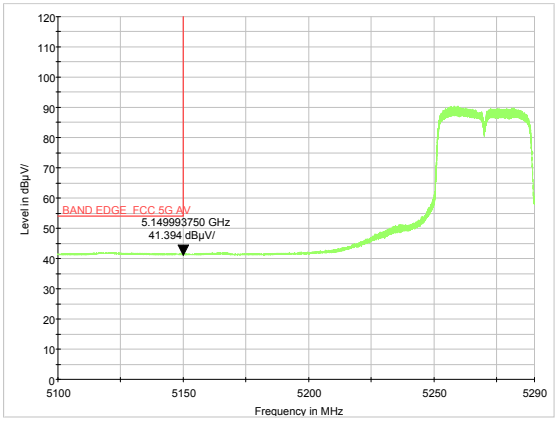
802.11n HT40-Channel 54: Peak



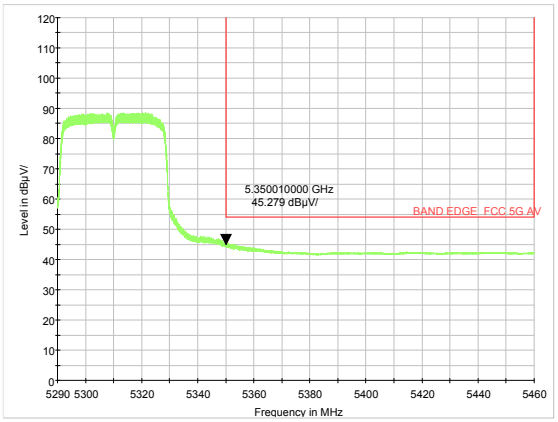
802.11n HT40-Channel 62: Peak



802.11n HT40-Channel 54: Average



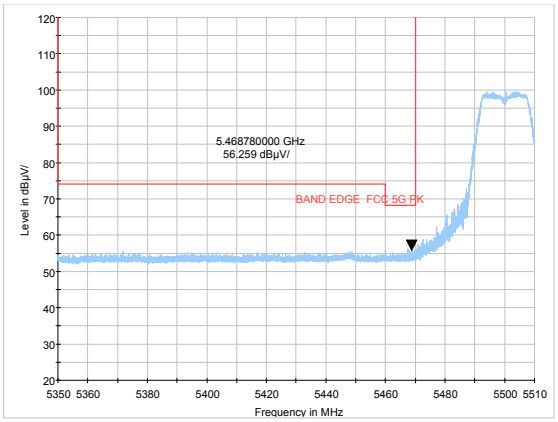
802.11n HT40-Channel 62: Average



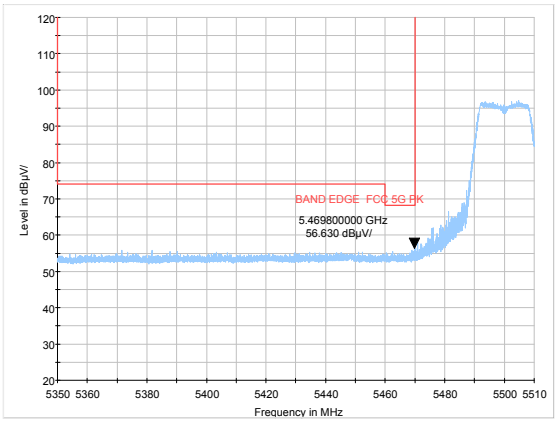
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-2C

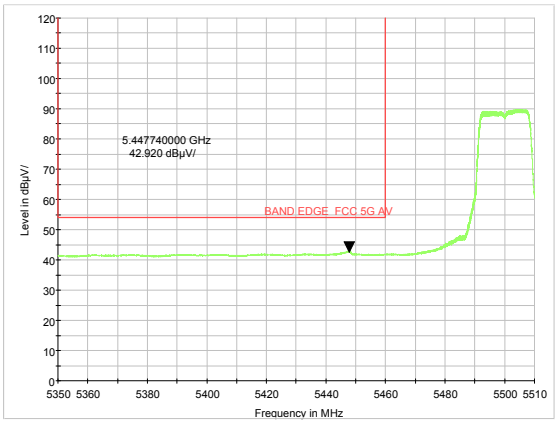
802.11a-Channel 100: Peak



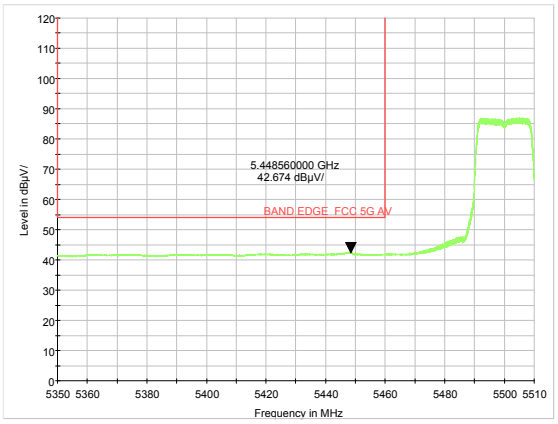
802.11n HT20-Channel 100: Peak



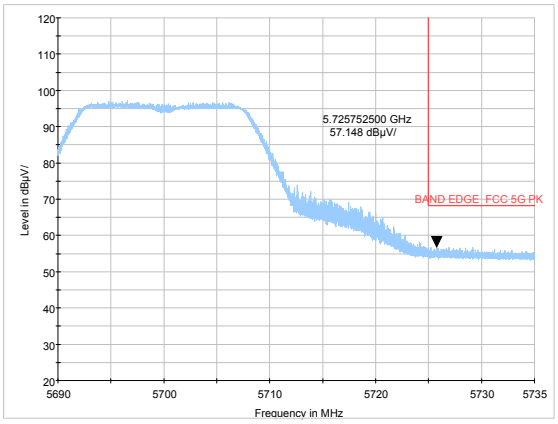
802.11a-Channel 100: Average



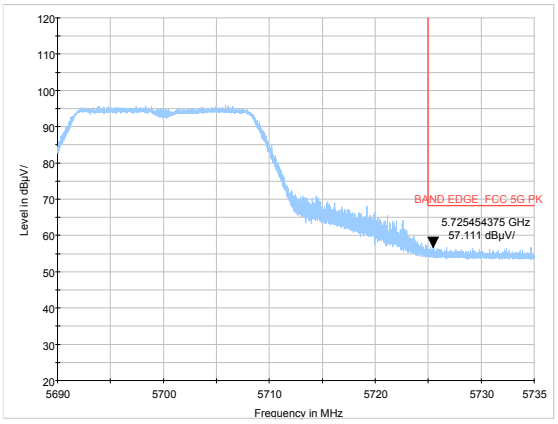
802.11n HT20-Channel 100: Average



802.11a-Channel 140: Peak

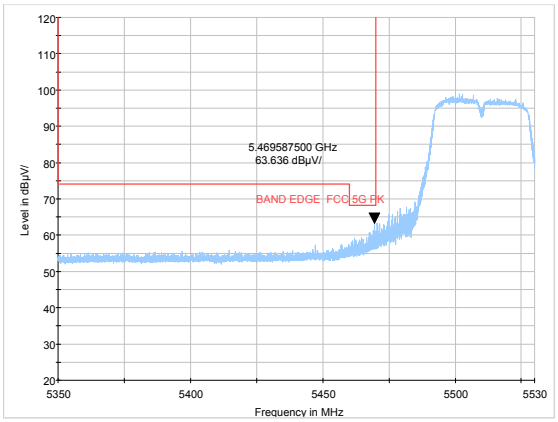


802.11n HT20-Channel 140: Peak

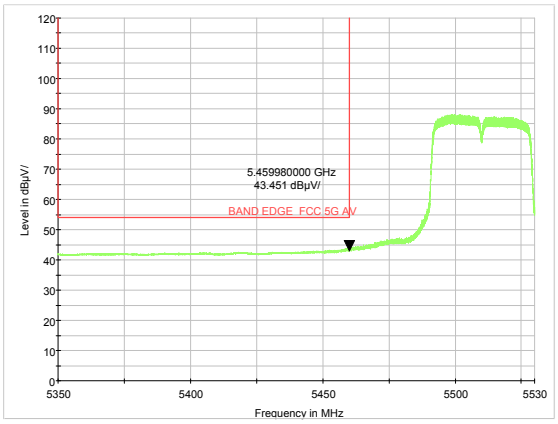


This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

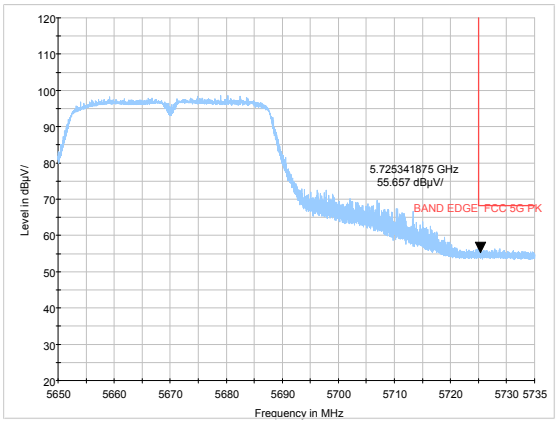
802.11n HT40-Channel 102: Peak



802.11n HT40-Channel 102: Average



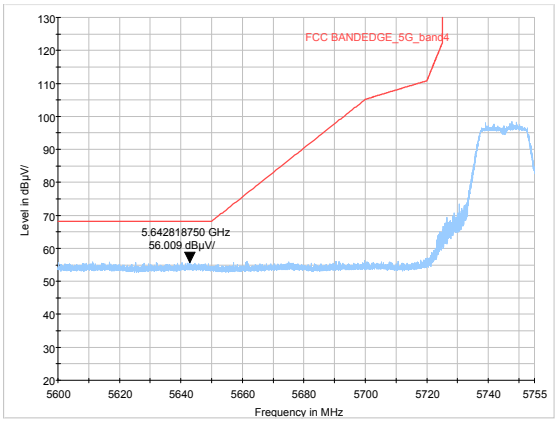
802.11n HT40-Channel 134: Peak



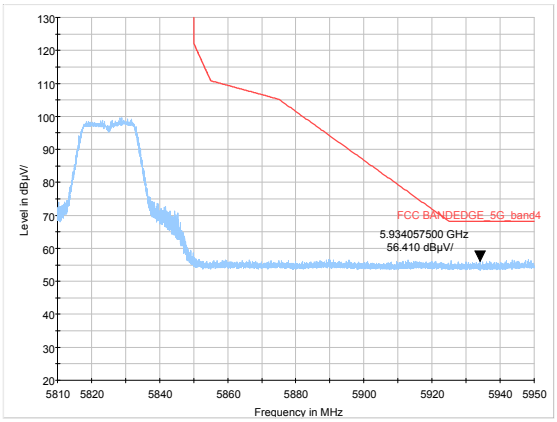
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

U-NII-3

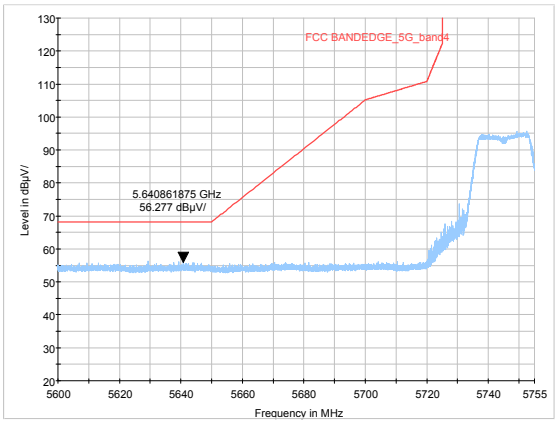
802.11a-Channel 149: Peak



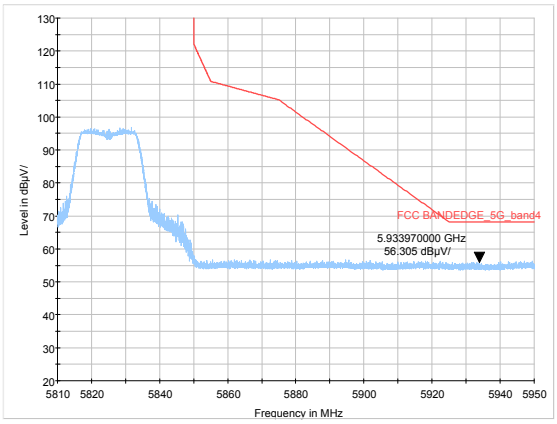
802.11a-Channel 165: Peak



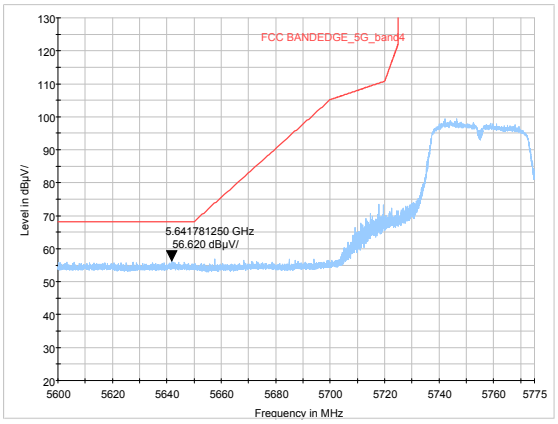
802.11n HT20-Channel 149: Peak



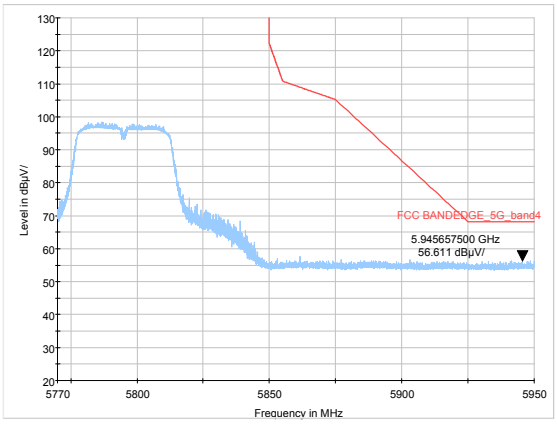
802.11n HT20-Channel 165: Peak



802.11n HT40-Channel 151: Peak



802.11n HT40-Channel 159: Peak



This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Result of RE

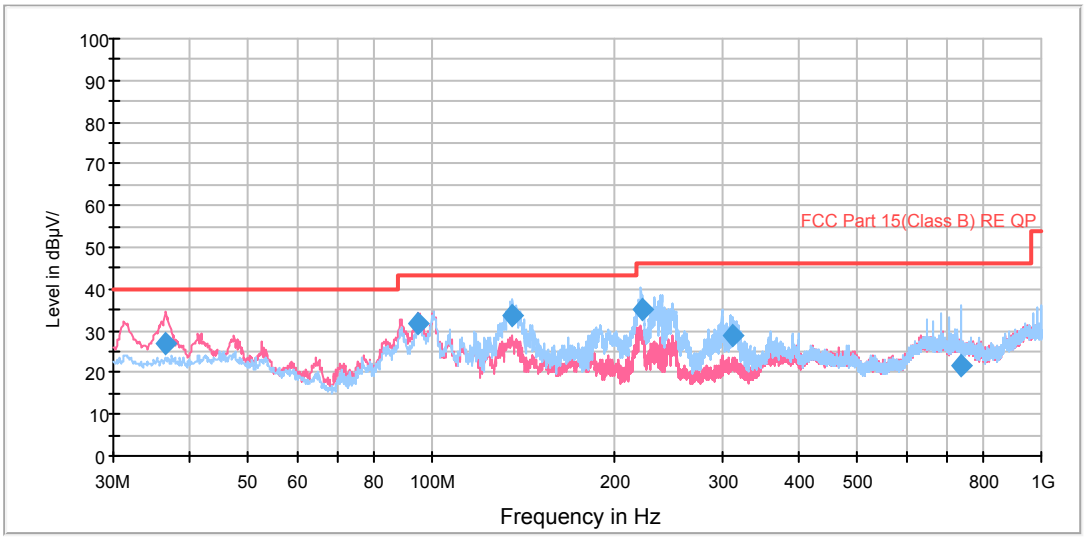
Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz and 18GHz-40GHz are more than 20dB below the limit are not reported.

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels, 802.11n (HT40) CH54 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

Continuous TX mode:

RE 30M-1GHz QP



Radiates Emission from 30MHz to 1GHz

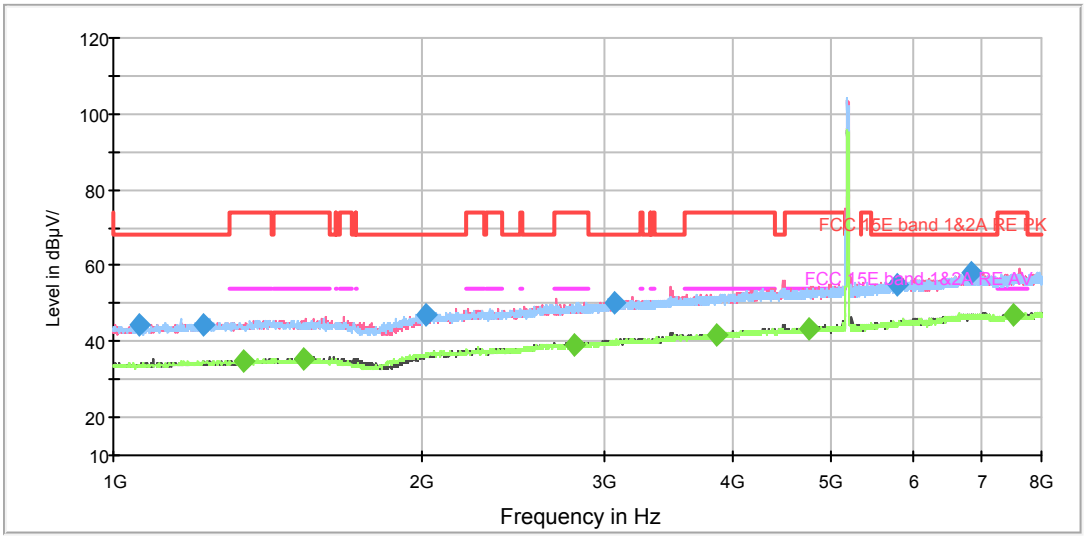
Frequency (MHz)	Quasi-Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
36.616131	27.1	100.0	V	109.0	-4.0	12.9	40.0
94.870631	31.7	100.0	V	86.0	-10.2	11.8	43.5
135.269728	33.4	225.0	H	0.0	-14.0	10.1	43.5
220.773500	35.2	120.0	H	207.0	-11.8	10.8	46.0
311.367500	29.0	100.0	H	283.0	-8.5	17.0	46.0
739.314750	21.7	195.0	H	253.0	-2.1	24.3	46.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak

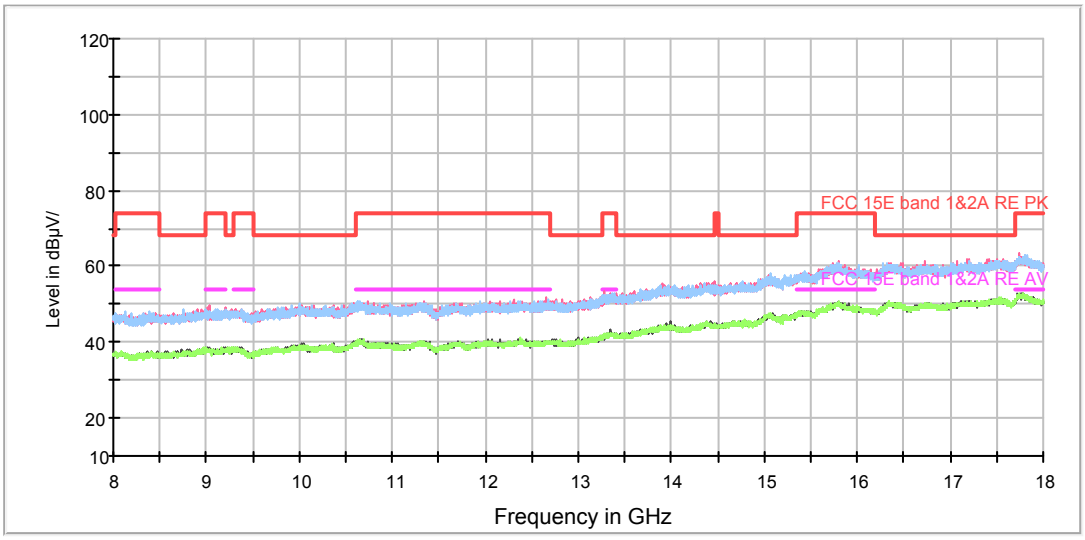
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH36



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1059.500000	44.2	100.0	H	260.0	-0.3	24.0	68.2
1221.375000	44.6	100.0	V	259.0	0.9	23.6	68.2
2014.125000	46.8	100.0	V	97.0	4.3	21.4	68.2
3066.750000	50.2	100.0	V	301.0	8.5	18.0	68.2
5793.250000	55.2	200.0	V	119.0	15.7	13.0	68.2
6834.500000	57.9	200.0	V	33.0	17.7	10.3	68.2

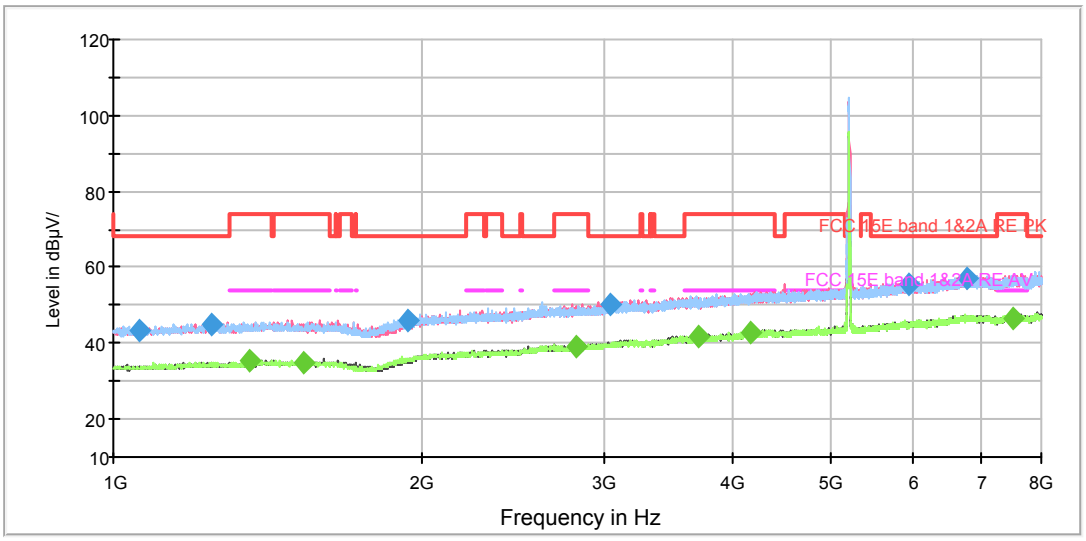
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1341.250000	34.7	100.0	V	0.0	1.4	19.3	54.0
1531.125000	35.4	200.0	V	327.0	2.2	18.6	54.0
2806.875000	39.3	200.0	V	119.0	7.4	14.7	54.0
3860.375000	41.6	100.0	V	119.0	11.0	12.4	54.0
4753.750000	43.3	200.0	V	203.0	13.2	10.7	54.0
7497.750000	47.0	200.0	V	16.0	18.5	7.0	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

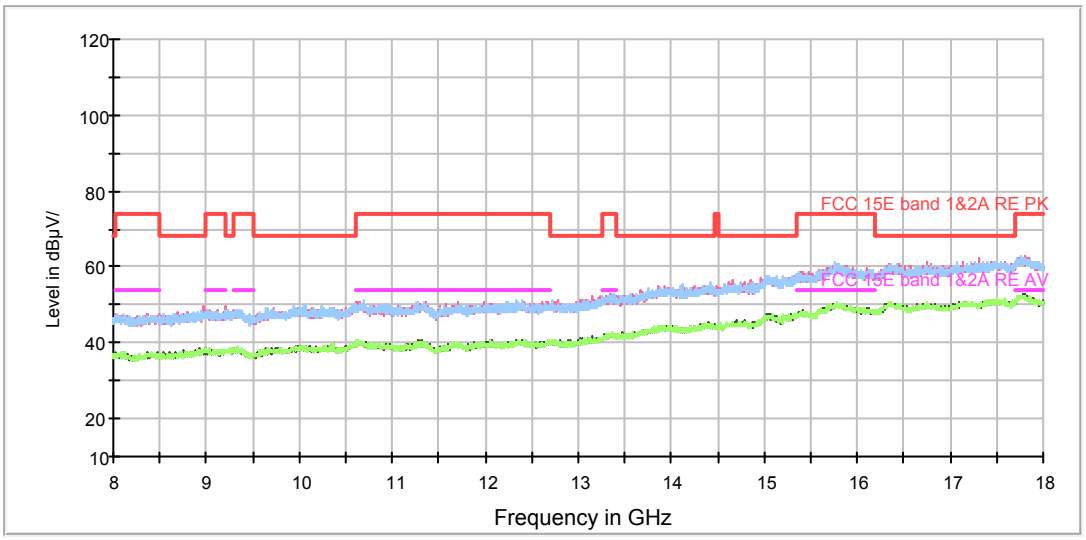
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH40



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1058.625000	43.4	200.0	V	96.0	-0.3	24.8	68.2
1247.625000	45.2	100.0	V	348.0	1.0	23.0	68.2
1938.000000	46.1	100.0	V	283.0	3.9	22.1	68.2
3042.250000	50.3	100.0	V	311.0	8.4	17.9	68.2
5950.750000	55.5	200.0	V	32.0	15.9	12.7	68.2
6777.625000	57.2	100.0	H	220.0	17.7	11.0	68.2

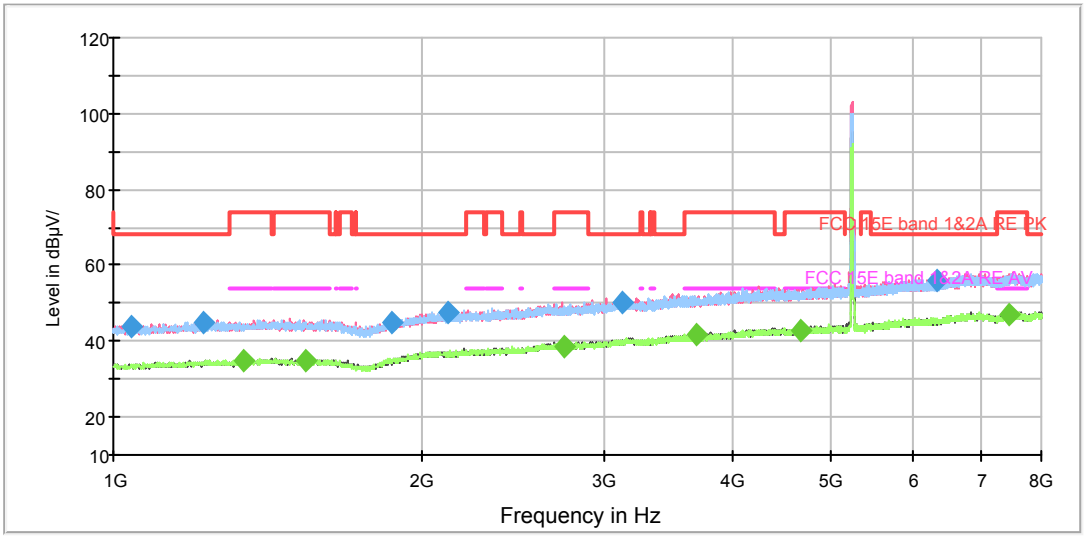
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1355.250000	35.2	100.0	H	357.0	1.5	18.8	54.0
1534.625000	34.8	200.0	H	12.0	2.2	19.2	54.0
2818.250000	39.3	200.0	V	24.0	7.5	14.7	54.0
3717.750000	41.7	100.0	V	230.0	10.5	12.3	54.0
4173.625000	42.7	200.0	H	288.0	12.1	11.3	54.0
7517.000000	46.6	100.0	V	185.0	18.6	7.4	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

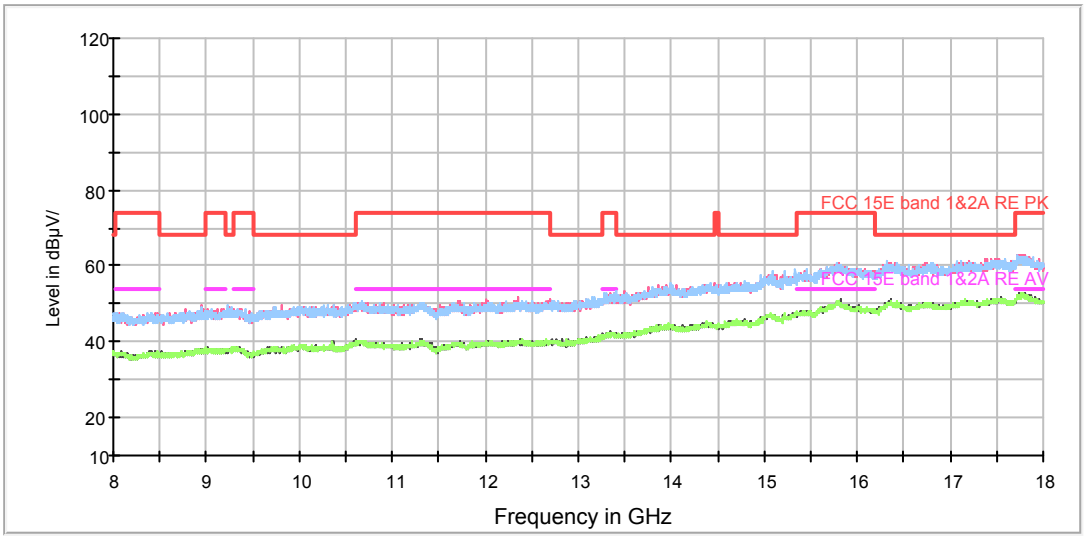
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH48



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1041.125000	43.9	100.0	V	352.0	-0.4	24.3	68.2
1226.625000	44.8	100.0	V	209.0	0.9	23.4	68.2
1868.000000	44.6	200.0	V	25.0	3.6	23.6	68.2
2118.250000	47.4	200.0	V	1.0	4.6	20.8	68.2
3126.250000	50.0	200.0	V	100.0	8.7	18.2	68.2
6345.375000	56.1	200.0	V	49.0	16.6	12.1	68.2

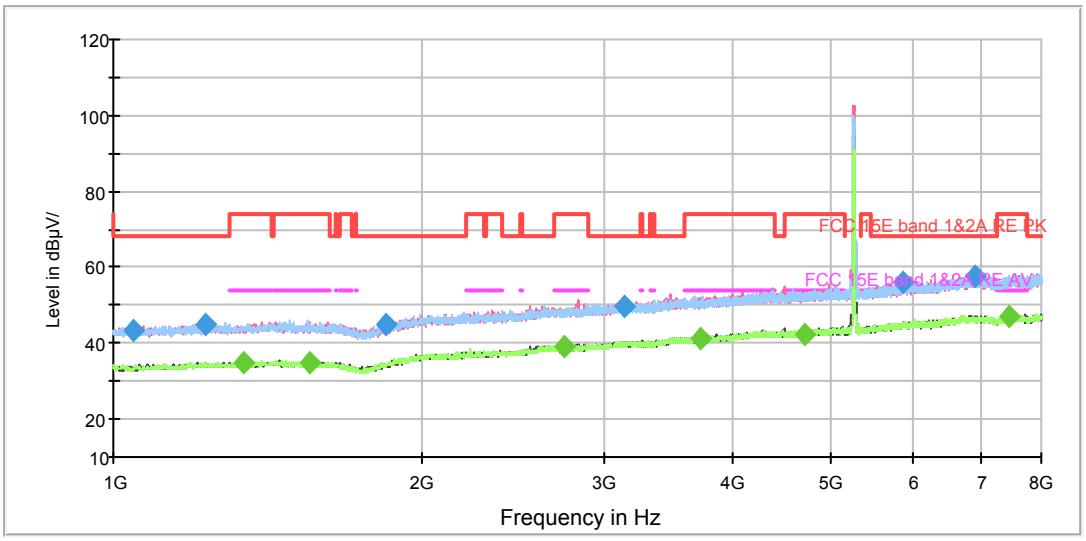
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1340.375000	34.8	100.0	V	39.0	1.4	19.2	54.0
1538.125000	34.7	100.0	V	209.0	2.2	19.3	54.0
2744.750000	38.8	200.0	V	331.0	7.2	15.2	54.0
3698.500000	41.6	200.0	H	65.0	10.4	12.4	54.0
4663.625000	42.8	100.0	H	267.0	13.0	11.2	54.0
7435.625000	46.8	100.0	V	302.0	18.2	7.2	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

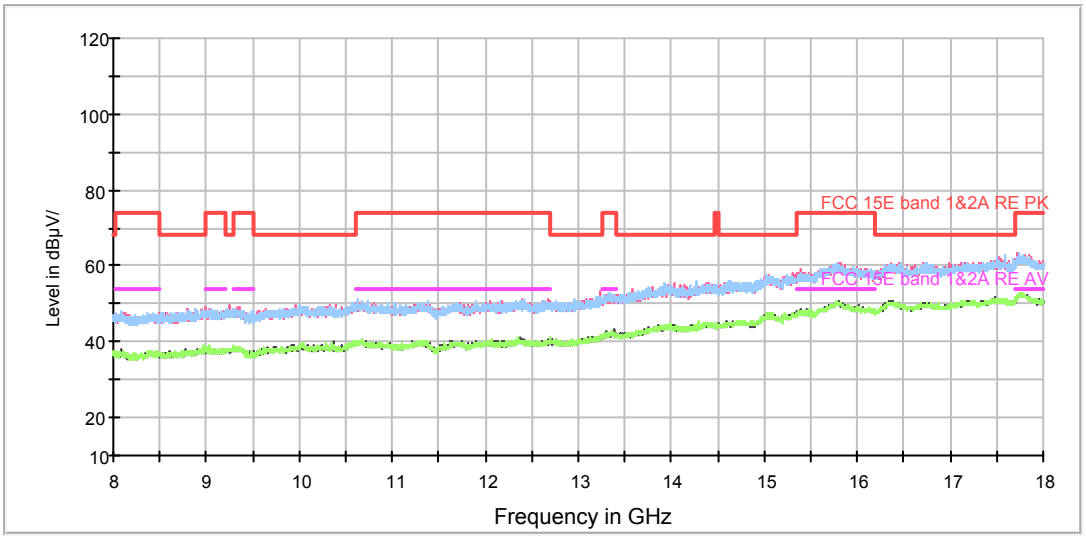
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH52



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1046.375000	43.4	200.0	V	5.0	-0.4	24.8	68.2
1231.000000	44.9	100.0	H	0.0	0.9	23.3	68.2
1843.500000	45.2	200.0	V	167.0	3.6	23.0	68.2
3146.375000	49.8	200.0	V	13.0	8.8	18.4	68.2
5858.000000	55.9	200.0	V	71.0	15.8	12.3	68.2
6902.750000	57.4	200.0	V	311.0	17.7	10.8	68.2

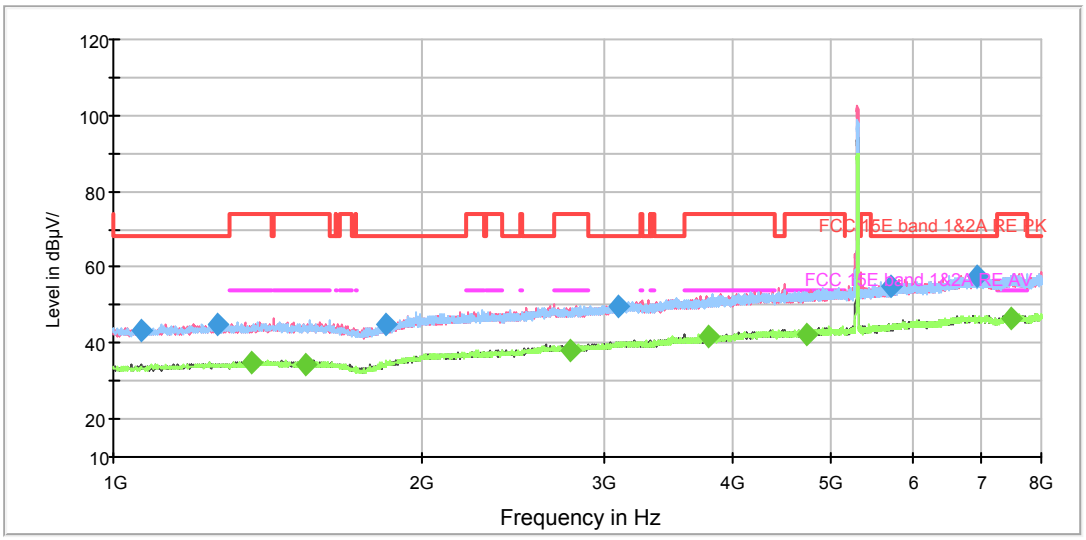
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1341.250000	34.8	100.0	V	0.0	1.4	19.2	54.0
1553.000000	34.7	200.0	H	282.0	2.3	19.3	54.0
2747.375000	38.9	200.0	H	329.0	7.2	15.1	54.0
3734.375000	41.4	100.0	V	214.0	10.5	12.6	54.0
4717.875000	42.5	100.0	V	345.0	13.1	11.5	54.0
7460.125000	47.0	200.0	V	38.0	18.3	7.0	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

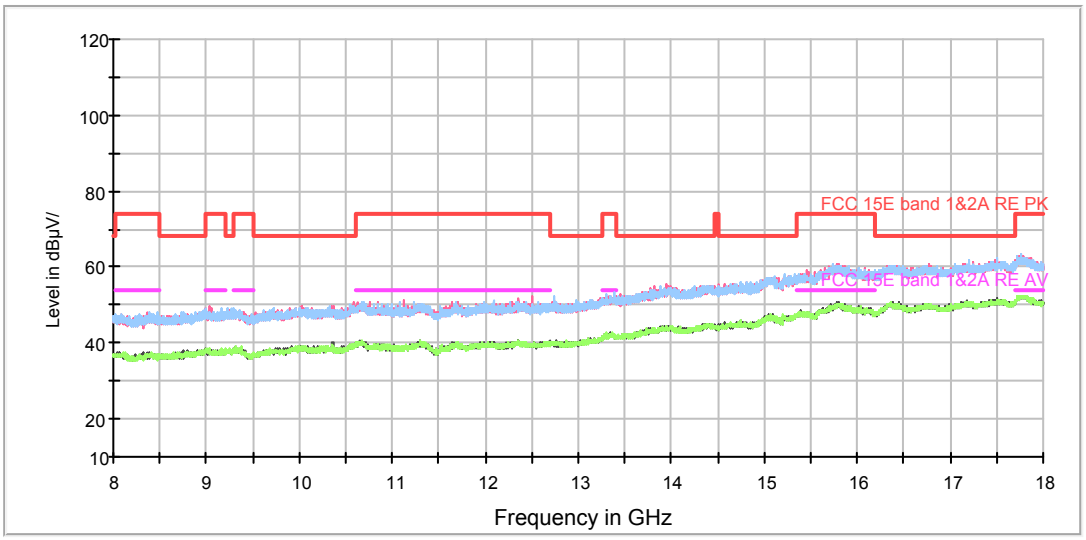
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH60



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1063.000000	43.4	200.0	V	4.0	-0.3	24.8	68.2
1260.750000	44.6	100.0	H	42.0	1.0	23.6	68.2
1841.750000	45.1	200.0	H	110.0	3.5	23.1	68.2
3103.500000	49.8	200.0	V	79.0	8.6	18.4	68.2
5701.375000	55.2	100.0	V	86.0	15.4	13.0	68.2
6933.375000	57.7	200.0	H	288.0	17.7	10.5	68.2

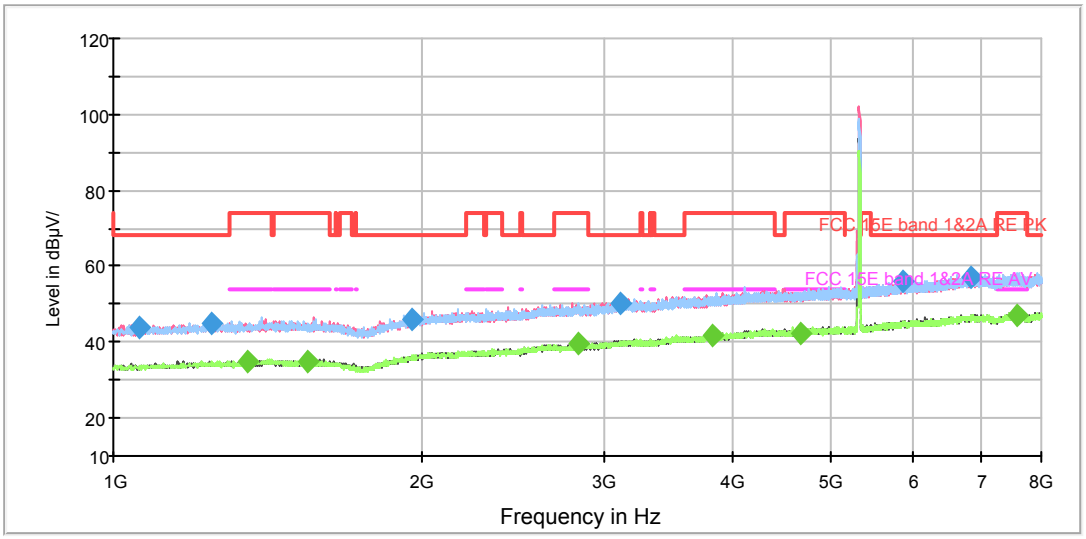
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1361.375000	34.6	200.0	V	326.0	1.6	19.4	54.0
1538.125000	34.2	200.0	V	177.0	2.2	19.8	54.0
2790.250000	37.9	200.0	V	141.0	7.3	16.1	54.0
3800.000000	41.7	200.0	V	87.0	10.8	12.3	54.0
4731.875000	42.1	200.0	V	191.0	13.2	11.9	54.0
7478.500000	46.6	200.0	V	19.0	18.4	7.4	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

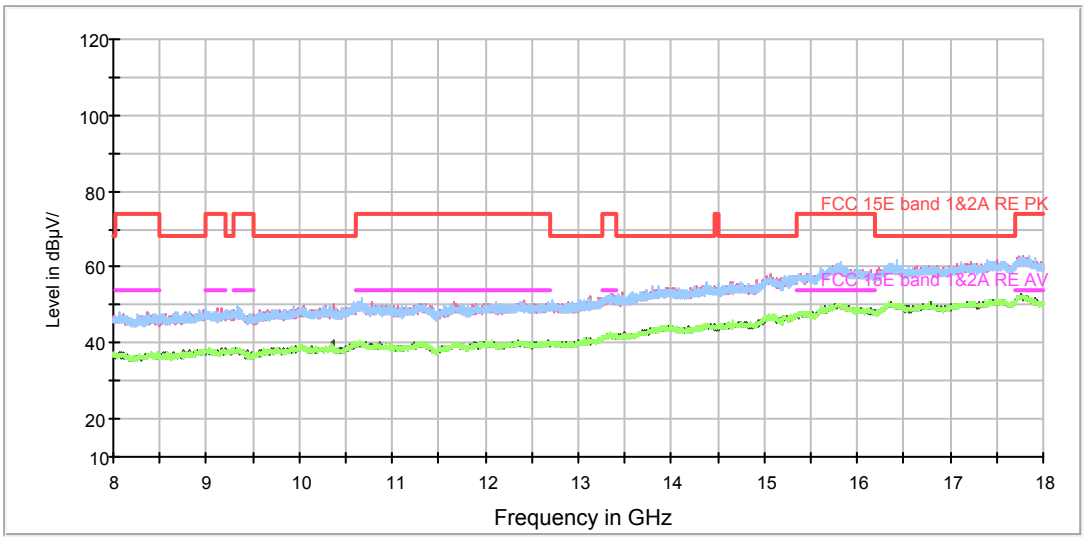
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH64



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1057.750000	44.1	100.0	H	0.0	-0.3	24.1	68.2
1248.500000	45.1	200.0	H	65.0	1.0	23.1	68.2
1956.375000	45.9	100.0	V	0.0	4.1	22.3	68.2
3117.500000	50.2	200.0	V	18.0	8.7	18.0	68.2
5866.750000	55.8	100.0	V	196.0	15.8	12.4	68.2
6834.500000	57.2	200.0	V	90.0	17.7	11.0	68.2

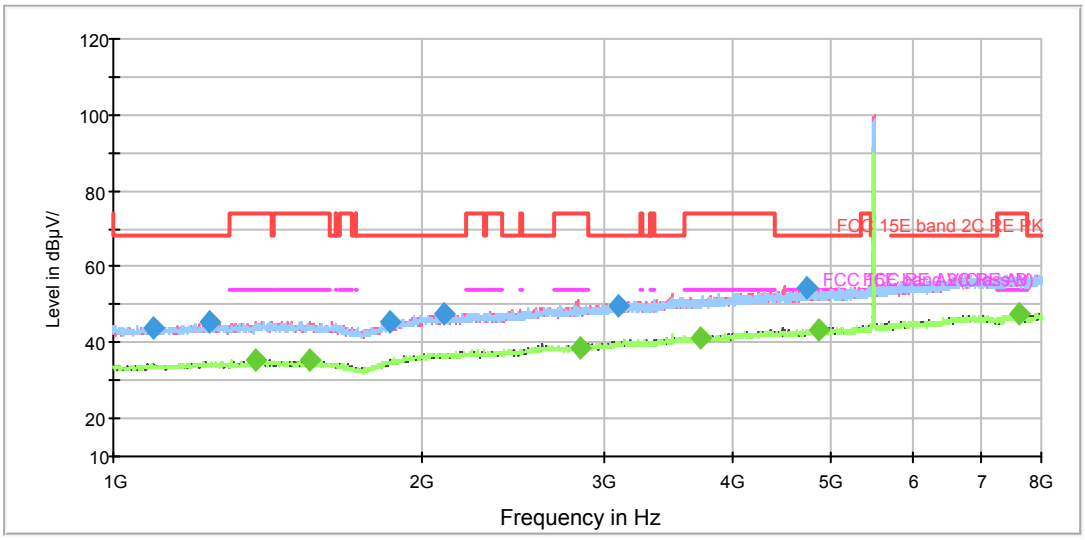
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1352.625000	34.9	100.0	V	227.0	1.5	19.1	54.0
1548.625000	34.7	200.0	H	223.0	2.3	19.3	54.0
2828.750000	39.7	200.0	H	235.0	7.5	14.3	54.0
3838.500000	41.6	200.0	H	297.0	10.9	12.4	54.0
4672.375000	42.1	200.0	V	107.0	13.0	11.9	54.0
7594.000000	46.8	200.0	V	0.0	18.8	7.2	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

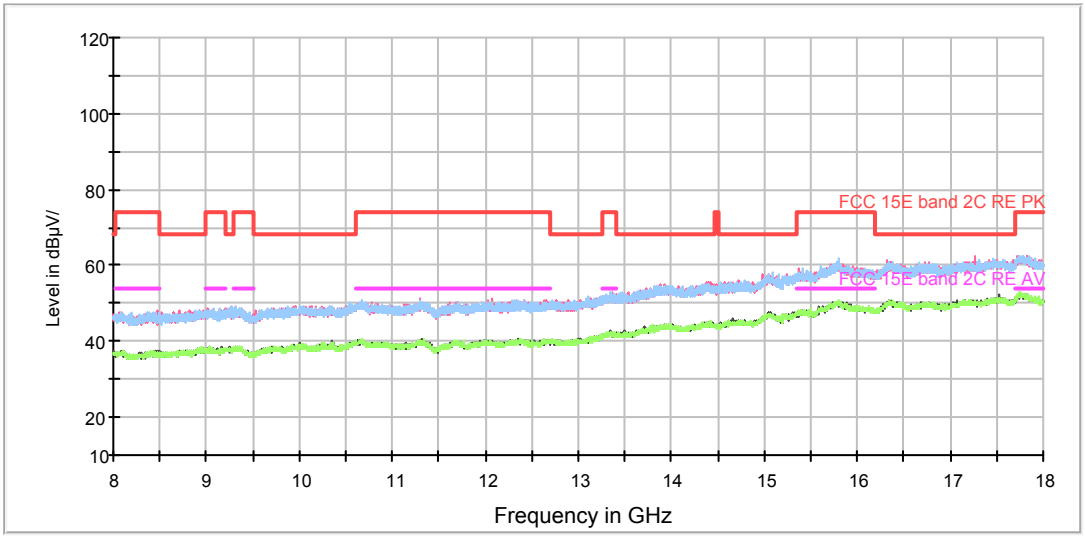
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH100



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1095.375000	44.0	200.0	H	240.0	0.0	24.2	68.2
1239.750000	45.6	100.0	V	0.0	0.9	22.6	68.2
1855.750000	45.6	100.0	V	266.0	3.6	22.6	68.2
2100.750000	47.5	200.0	V	61.0	4.5	20.7	68.2
3100.875000	49.6	100.0	V	277.0	8.6	18.6	68.2
4738.875000	54.6	200.0	V	27.0	13.2	13.6	68.2

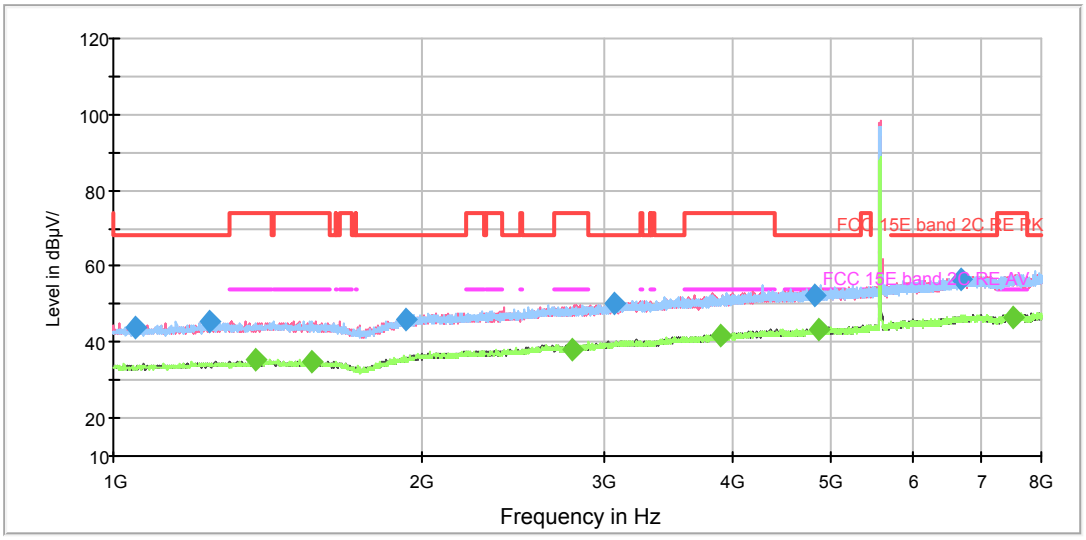
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1373.625000	35.4	200.0	H	304.0	1.6	18.6	54.0
1551.250000	35.3	200.0	V	321.0	2.3	18.7	54.0
2846.250000	38.4	100.0	V	177.0	7.5	15.6	54.0
3727.375000	41.3	100.0	V	236.0	10.5	12.7	54.0
4857.875000	43.2	200.0	V	169.0	13.4	10.8	54.0
7601.875000	47.3	100.0	V	266.0	18.8	6.7	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

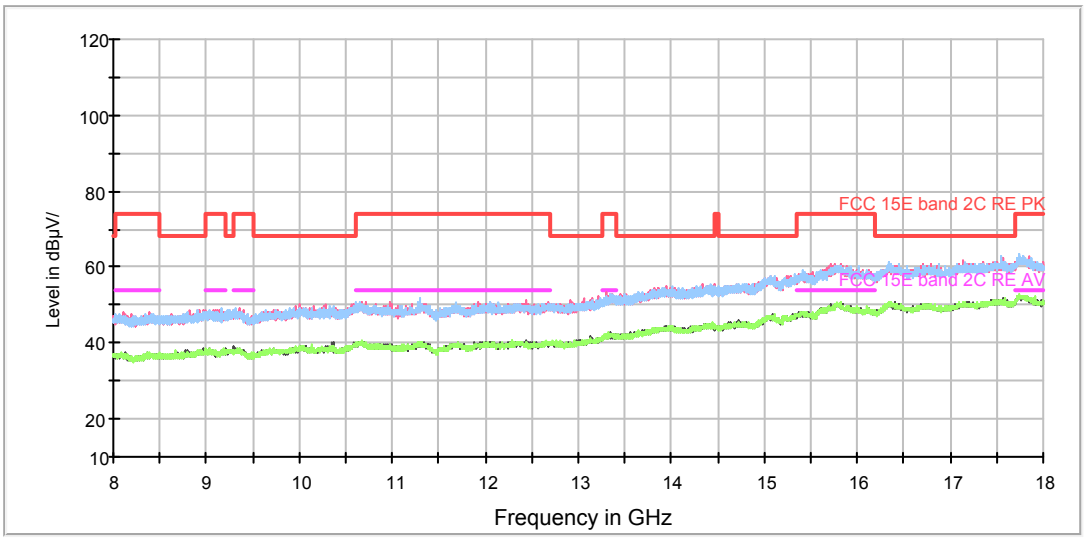
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH116



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1051.625000	43.6	200.0	H	1.0	-0.4	24.6	68.2
1240.625000	45.5	100.0	V	349.0	0.9	22.7	68.2
1928.375000	45.9	200.0	H	193.0	3.9	22.3	68.2
3078.125000	50.4	200.0	V	129.0	8.5	17.8	68.2
4811.500000	52.5	100.0	V	290.0	13.3	15.7	68.2
6691.000000	56.7	200.0	H	168.0	17.6	11.5	68.2

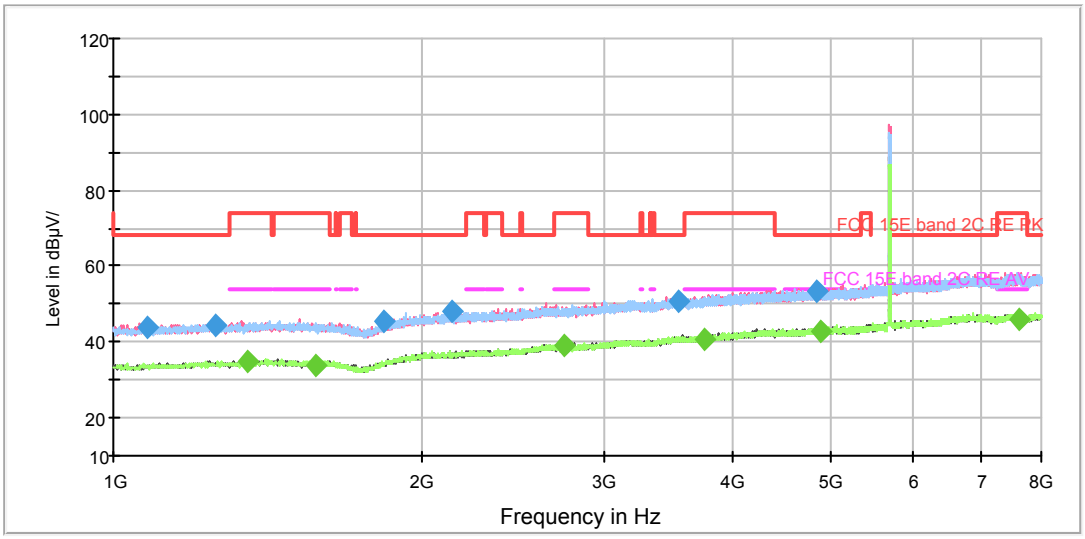
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1378.000000	35.2	100.0	V	69.0	1.7	18.8	54.0
1559.125000	34.8	200.0	V	344.0	2.3	19.2	54.0
2792.000000	38.2	200.0	V	113.0	7.4	15.8	54.0
3891.000000	41.7	200.0	V	0.0	11.1	12.3	54.0
4869.250000	43.4	100.0	H	83.0	13.4	10.6	54.0
7515.250000	46.6	200.0	V	63.0	18.6	7.4	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

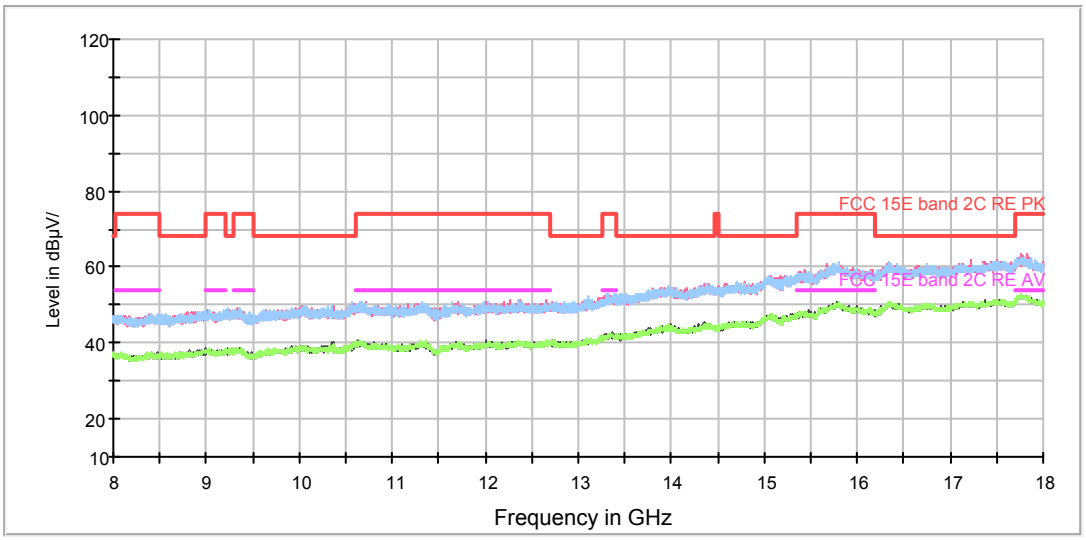
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH140



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1080.500000	43.9	100.0	H	63.0	-0.1	24.3	68.2
1256.375000	44.5	100.0	H	226.0	1.0	23.7	68.2
1831.250000	45.6	100.0	H	161.0	3.5	22.6	68.2
2132.250000	48.2	200.0	H	294.0	4.6	20.0	68.2
3542.750000	50.9	200.0	V	113.0	10.2	17.3	68.2
4848.250000	53.2	100.0	H	119.0	13.4	15.0	68.2

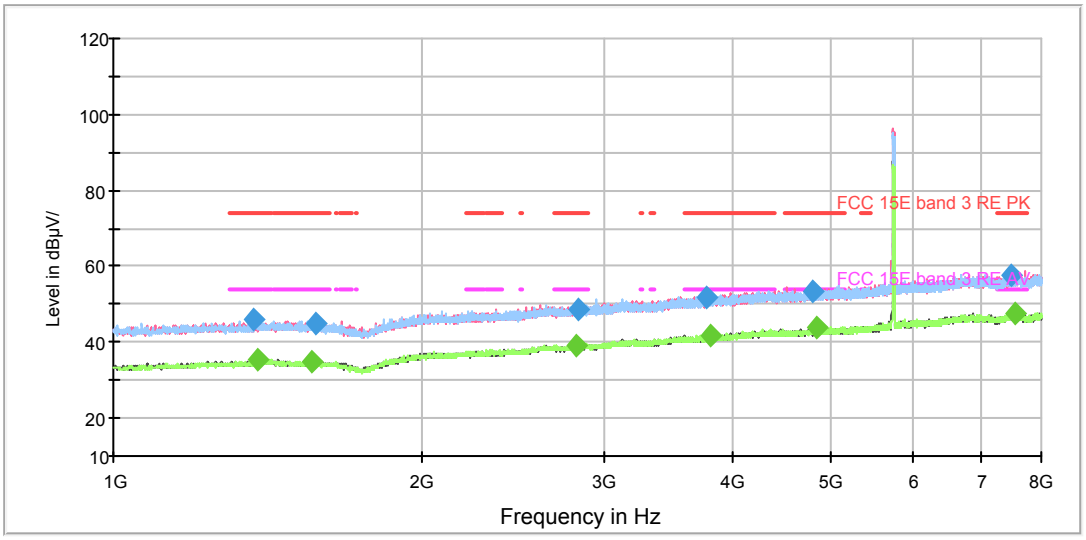
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1349.125000	34.6	100.0	V	290.0	1.5	19.4	54.0
1572.250000	33.7	100.0	V	290.0	2.4	20.3	54.0
2743.000000	38.8	200.0	H	275.0	7.2	15.2	54.0
3754.500000	40.6	200.0	V	139.0	10.6	13.4	54.0
4872.750000	42.7	200.0	V	268.0	13.4	11.3	54.0
7628.125000	46.2	200.0	V	32.0	18.8	7.8	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

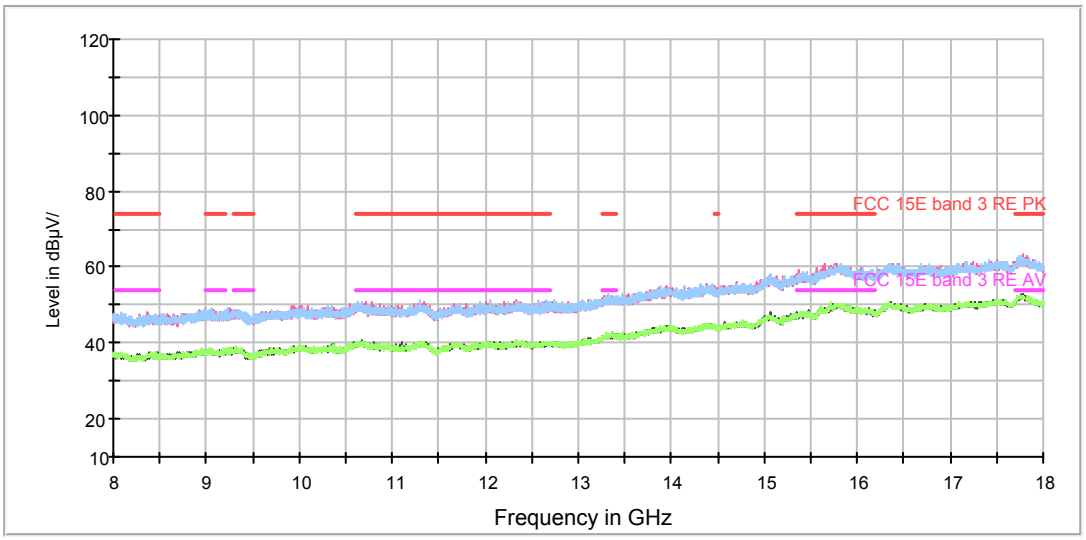
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH149



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1370.125000	46.0	100.0	H	213.0	1.6	28.0	74
1577.500000	44.9	100.0	V	0.0	2.4	29.1	74
2837.500000	48.7	200.0	V	287.0	7.5	25.3	74
3786.875000	51.7	200.0	V	95.0	10.7	22.3	74
4803.625000	53.4	200.0	V	310.0	13.3	20.6	74
7477.625000	57.5	200.0	V	304.0	18.4	16.5	74

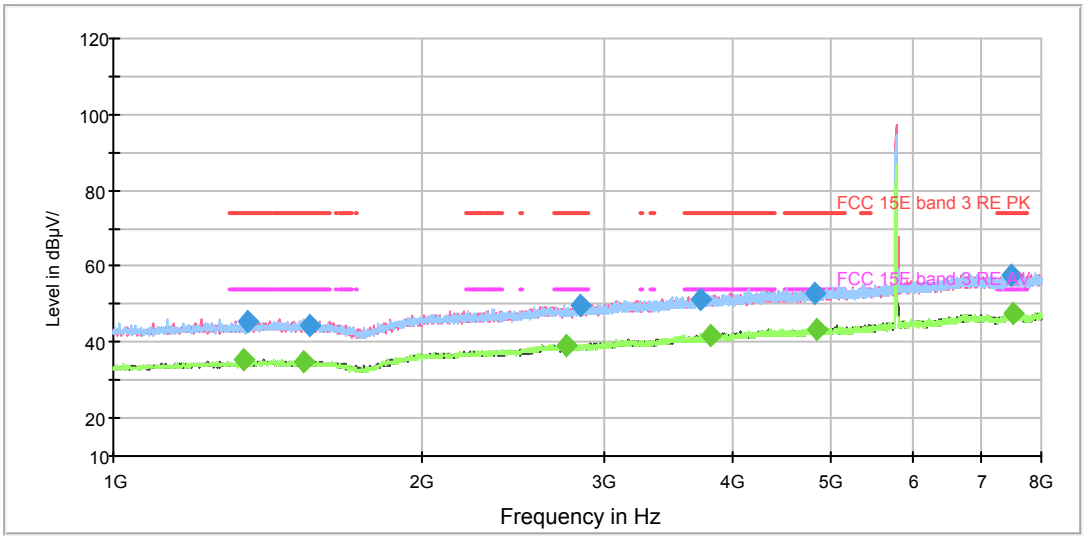
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1381.500000	35.5	200.0	H	343.0	1.7	18.5	54.0
1562.625000	34.9	200.0	V	28.0	2.3	19.1	54.0
2825.250000	39.0	200.0	V	154.0	7.5	15.0	54.0
3814.000000	41.6	200.0	V	3.0	10.9	12.4	54.0
4830.750000	44.0	100.0	H	174.0	13.4	10.0	54.0
7539.750000	47.7	100.0	V	232.0	18.6	6.3	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

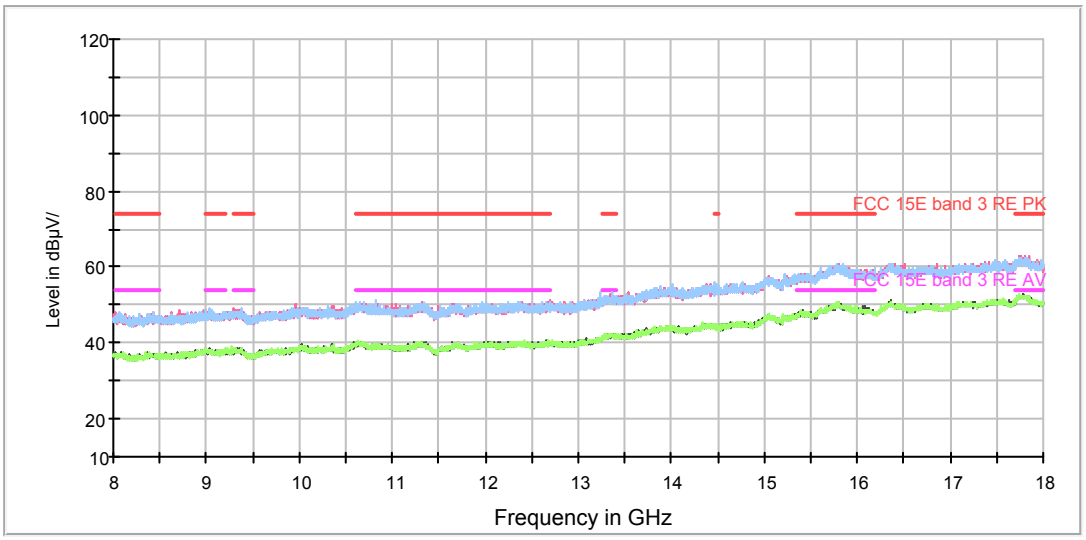
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH157



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1352.625000	45.4	100.0	V	306.0	1.5	28.6	74
1551.250000	44.5	200.0	V	154.0	2.3	29.5	74
2851.500000	49.6	100.0	V	215.0	7.6	24.4	74
3728.250000	51.0	200.0	V	0.0	10.5	23.0	74
4819.375000	52.7	200.0	V	61.0	13.3	21.3	74
7482.875000	57.8	100.0	H	105.0	18.4	16.2	74

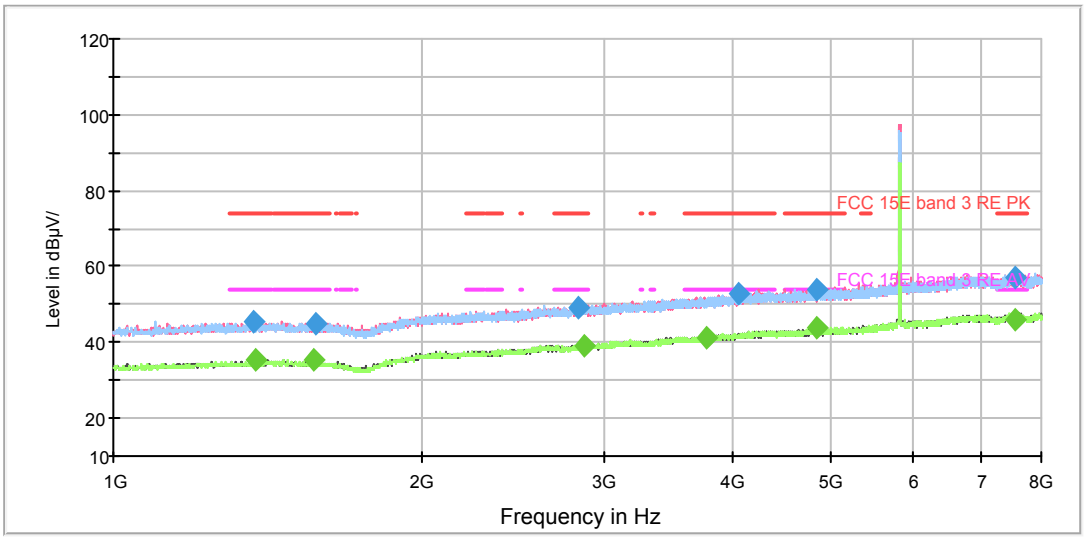
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1339.500000	35.6	200.0	H	37.0	1.4	18.4	54.0
1534.625000	34.6	100.0	H	207.0	2.2	19.4	54.0
2754.375000	39.3	200.0	V	61.0	7.2	14.7	54.0
3814.000000	41.7	200.0	H	239.0	10.9	12.3	54.0
4833.375000	43.3	100.0	V	340.0	13.4	10.7	54.0
7507.375000	47.4	200.0	H	0.0	18.5	6.6	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

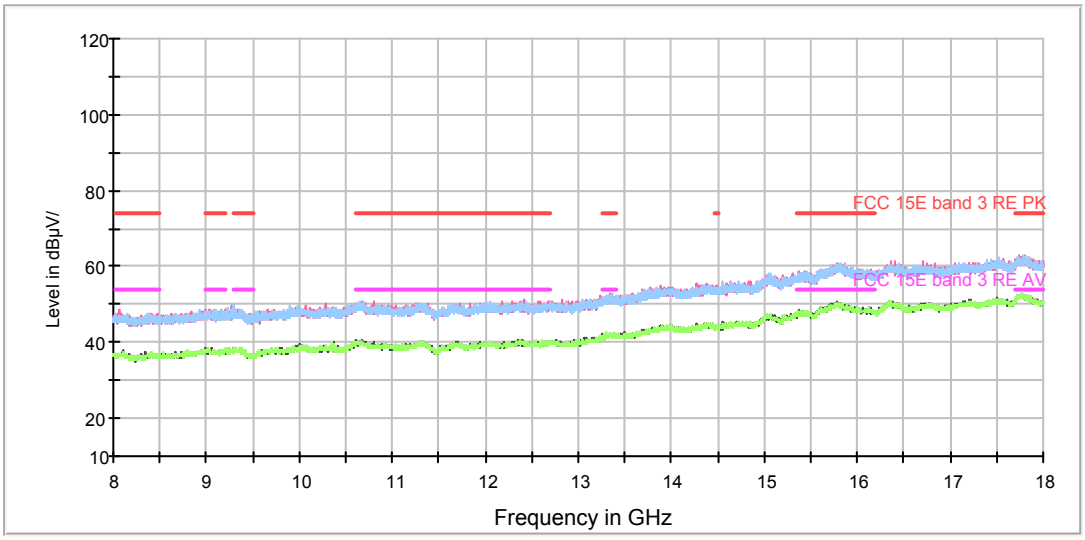
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11a CH165



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1371.000000	45.4	100.0	V	287.0	1.6	28.6	74
1574.000000	44.7	200.0	V	307.0	2.4	29.3	74
2837.500000	49.2	200.0	V	233.0	7.5	24.8	74
4061.625000	53.0	100.0	V	120.0	11.8	21.0	74
4843.875000	54.1	200.0	V	56.0	13.4	19.9	74
7532.750000	57.2	200.0	V	0.0	18.6	16.8	74

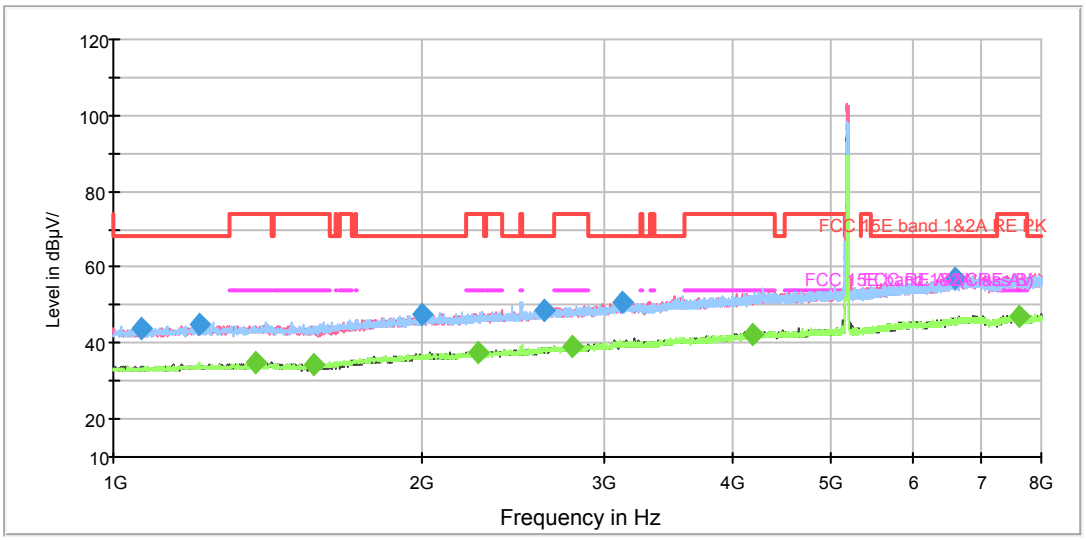
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1377.125000	35.2	100.0	H	134.0	1.7	18.8	54.0
1567.000000	35.2	200.0	V	0.0	2.4	18.8	54.0
2877.750000	39.3	100.0	V	317.0	7.7	14.7	54.0
3779.000000	41.3	100.0	V	197.0	10.7	12.7	54.0
4834.250000	43.7	100.0	V	278.0	13.4	10.3	54.0
7533.625000	46.1	100.0	V	206.0	18.6	7.9	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

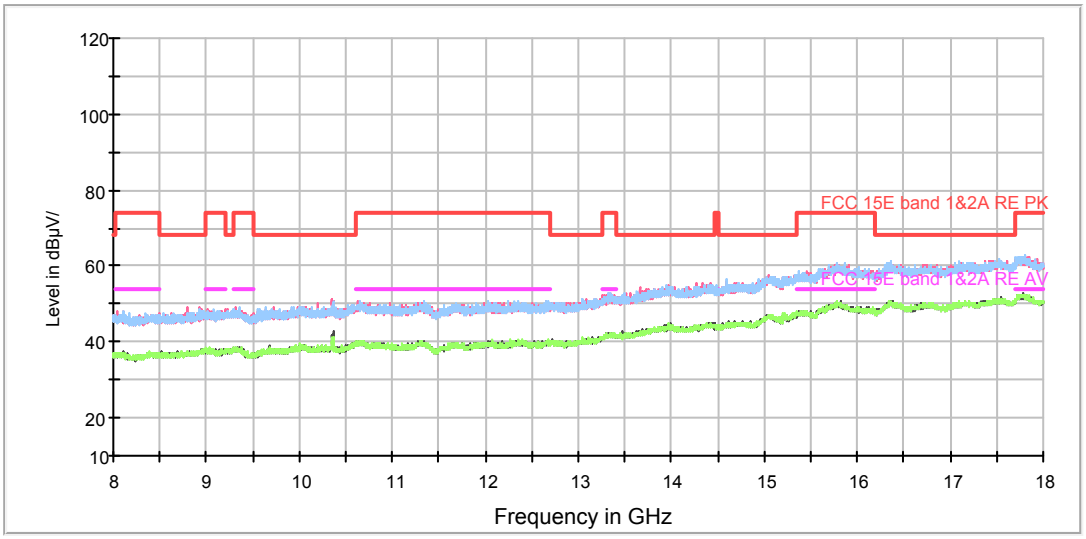
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH36



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1065.625000	43.9	100.0	H	269.0	-0.2	24.3	68.2
1213.500000	44.7	100.0	H	209.0	0.8	23.5	68.2
1998.375000	47.6	200.0	H	34.0	4.3	20.6	68.2
2627.500000	48.5	100.0	V	44.0	6.8	19.7	68.2
3126.250000	50.7	200.0	H	334.0	8.7	17.5	68.2
6592.125000	56.8	200.0	H	74.0	17.3	11.4	68.2

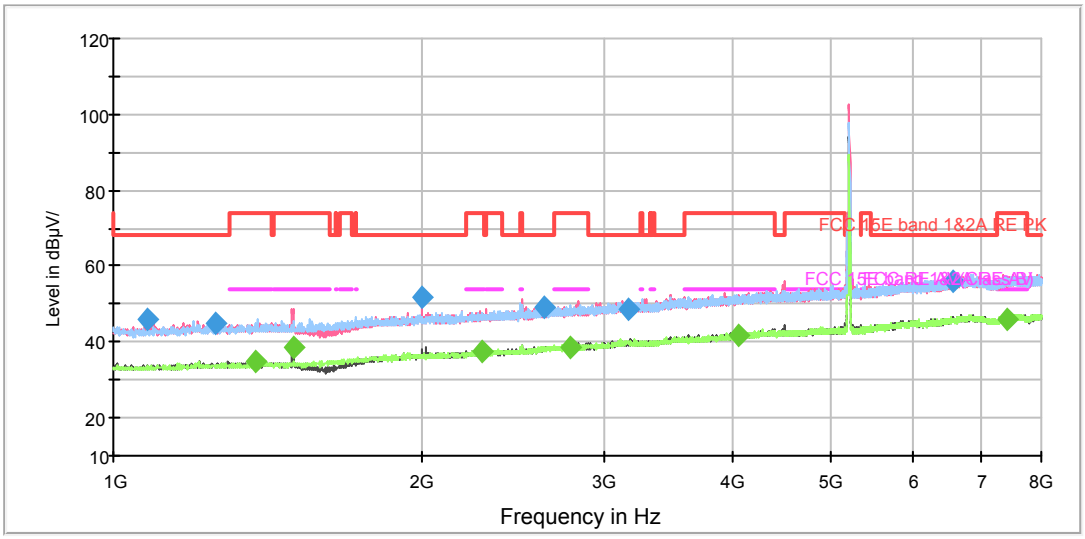
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1373.625000	34.9	100.0	V	157.0	1.6	19.1	54.0
1566.125000	34.1	100.0	H	95.0	2.4	19.9	54.0
2263.500000	37.7	100.0	V	166.0	5.3	16.3	54.0
2802.500000	39.0	100.0	V	107.0	7.4	15.0	54.0
4192.875000	42.1	100.0	H	120.0	12.1	11.9	54.0
7602.750000	46.9	200.0	V	35.0	18.8	7.1	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

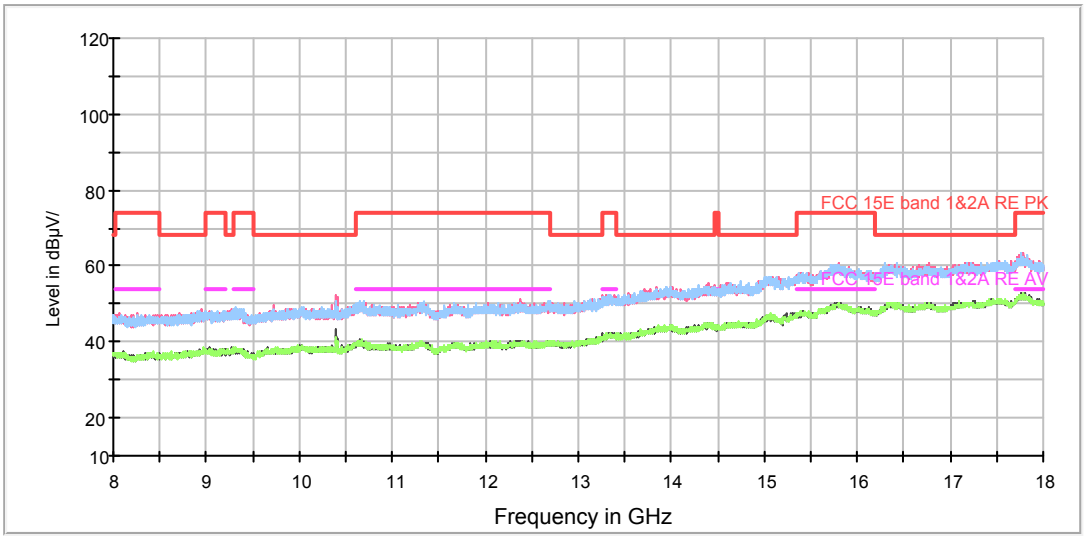
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH40



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1078.750000	45.9	100.0	V	285.0	-0.1	22.3	68.2
1259.875000	45.1	100.0	V	139.0	1.0	23.1	68.2
1998.375000	51.8	100.0	V	178.0	4.3	16.4	68.2
2623.125000	49.2	200.0	V	2.0	6.8	19.0	68.2
3171.750000	48.4	100.0	H	83.0	8.8	19.8	68.2
6553.625000	55.8	200.0	V	0.0	17.2	12.4	68.2

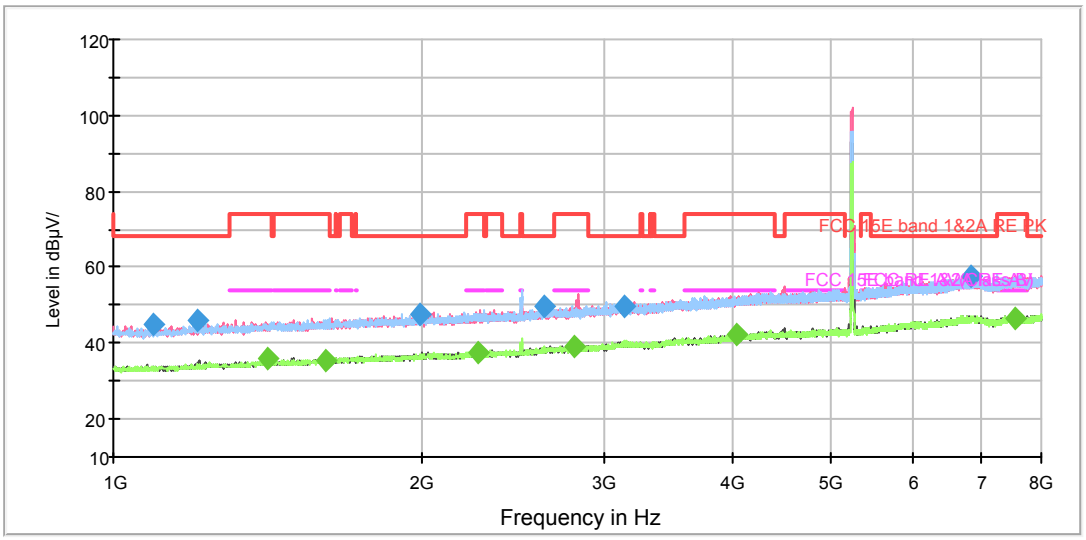
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1373.625000	34.7	200.0	V	47.0	1.6	19.3	54.0
1497.000000	38.5	200.0	V	105.0	2.2	15.5	54.0
2288.000000	37.5	200.0	V	2.0	5.4	16.5	54.0
2778.875000	38.7	100.0	H	45.0	7.3	15.3	54.0
4066.875000	41.9	200.0	V	38.0	11.8	12.1	54.0
7425.125000	46.2	200.0	V	24.0	18.2	7.8	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

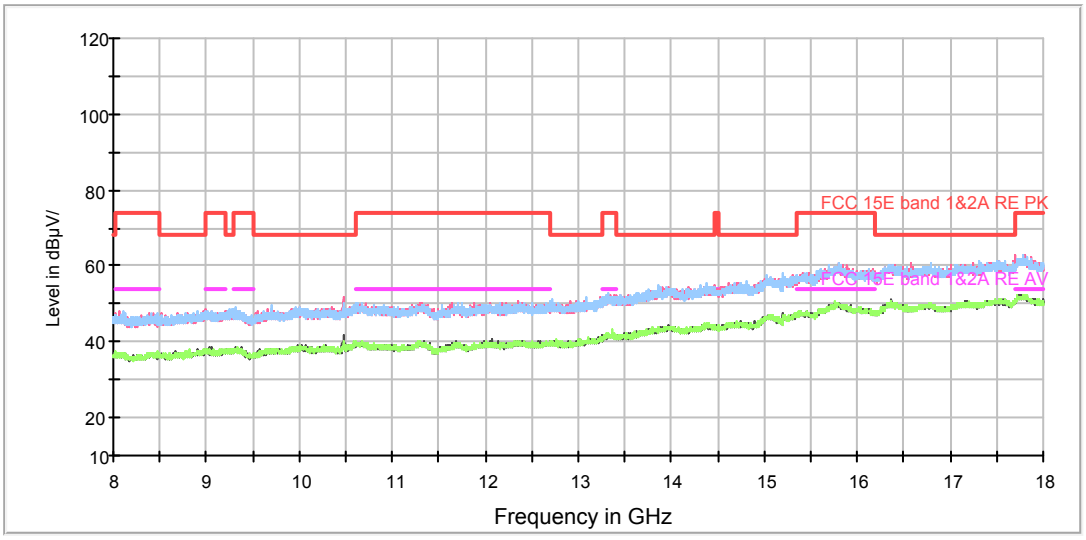
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH48



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1095.375000	44.7	200.0	H	324.0	0.0	23.5	68.2
1210.000000	46.0	200.0	V	107.0	0.8	22.2	68.2
1984.375000	47.5	100.0	H	354.0	4.2	20.7	68.2
2629.250000	49.6	100.0	V	58.0	6.8	18.6	68.2
3137.625000	49.7	200.0	H	338.0	8.8	18.5	68.2
6835.375000	57.5	200.0	H	168.0	17.7	10.7	68.2

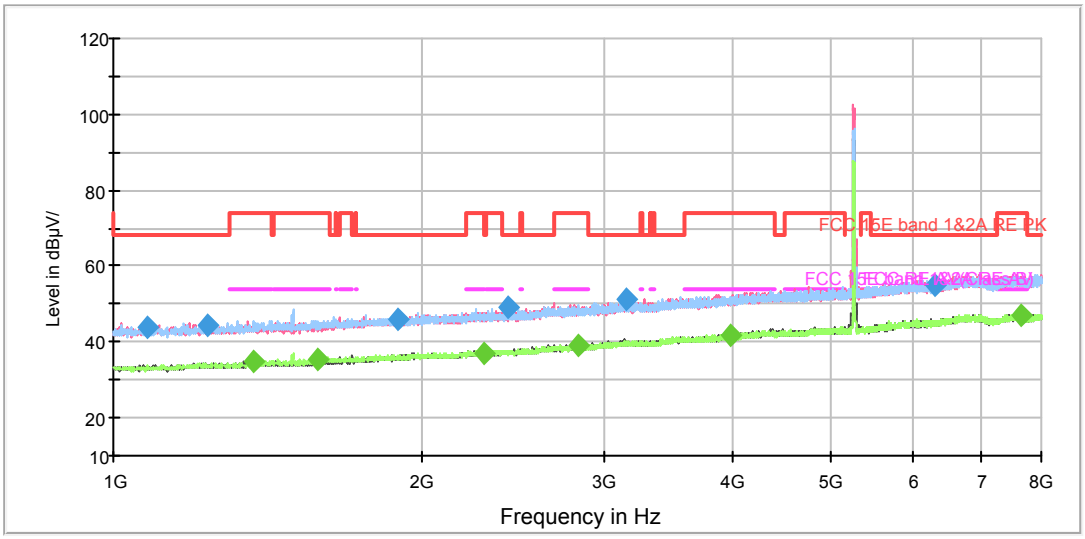
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1413.000000	35.8	200.0	H	162.0	1.9	18.2	54.0
1608.125000	35.3	100.0	V	18.0	2.6	18.7	54.0
2261.750000	37.5	100.0	V	201.0	5.2	16.5	54.0
2809.500000	39.0	100.0	H	106.0	7.4	15.0	54.0
4047.625000	42.4	200.0	V	269.0	11.7	11.6	54.0
7552.000000	46.6	100.0	V	0.0	18.7	7.4	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

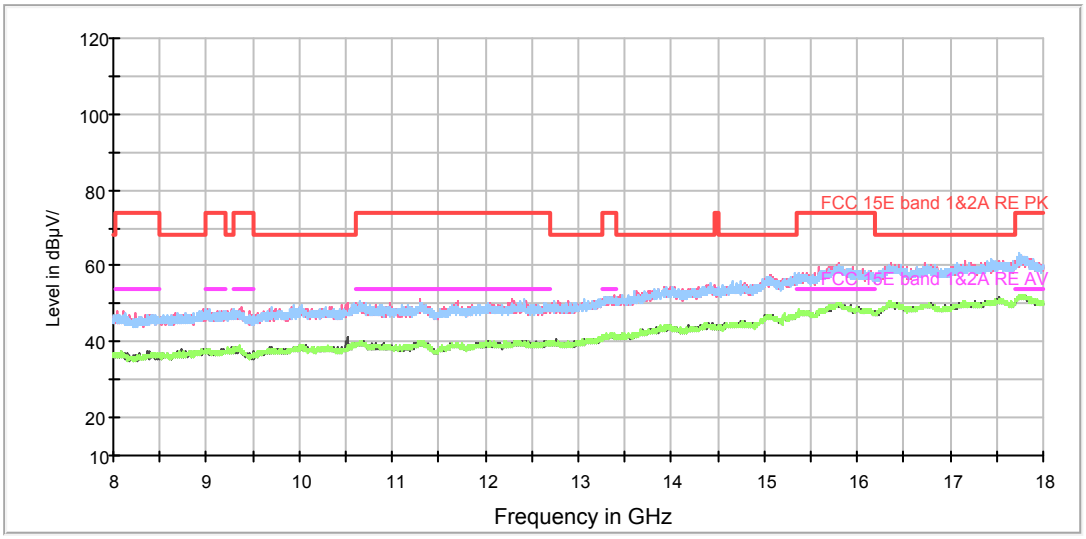
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH52



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1077.875000	43.9	200.0	V	6.0	-0.1	24.3	68.2
1234.500000	44.6	200.0	H	272.0	0.9	23.6	68.2
1894.250000	46.1	200.0	V	57.0	3.7	22.1	68.2
2418.375000	48.9	100.0	V	94.0	5.8	19.3	68.2
3156.875000	51.5	200.0	V	49.0	8.8	16.7	68.2
6318.250000	55.1	200.0	V	170.0	16.6	13.1	68.2

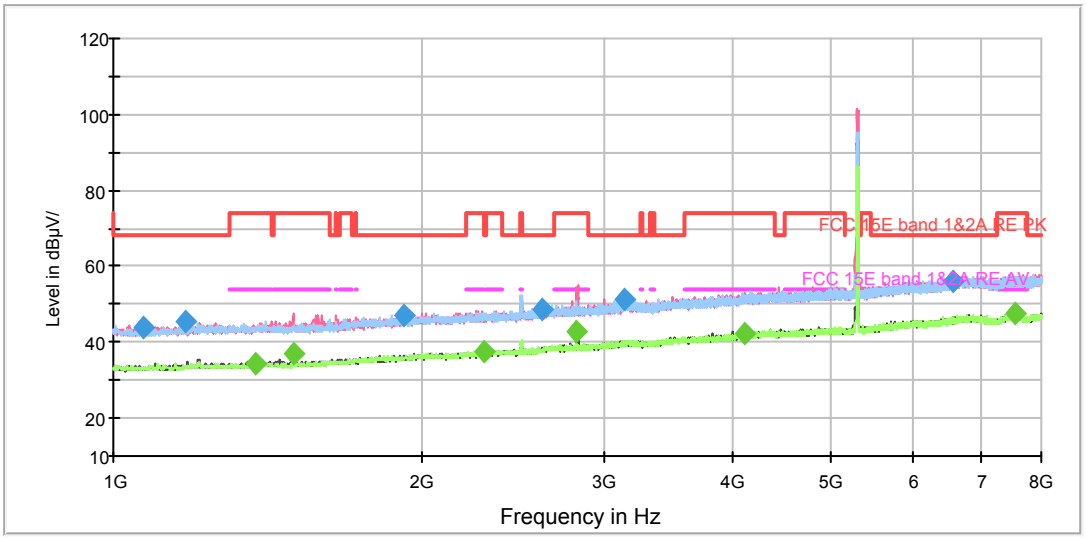
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1370.125000	34.8	100.0	H	11.0	1.6	19.2	54.0
1581.875000	35.2	100.0	H	123.0	2.5	18.8	54.0
2299.375000	36.9	100.0	V	253.0	5.4	17.1	54.0
2832.250000	39.3	100.0	H	25.0	7.5	14.7	54.0
3988.125000	41.6	200.0	V	20.0	11.5	12.4	54.0
7633.375000	46.8	100.0	V	278.0	18.8	7.2	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

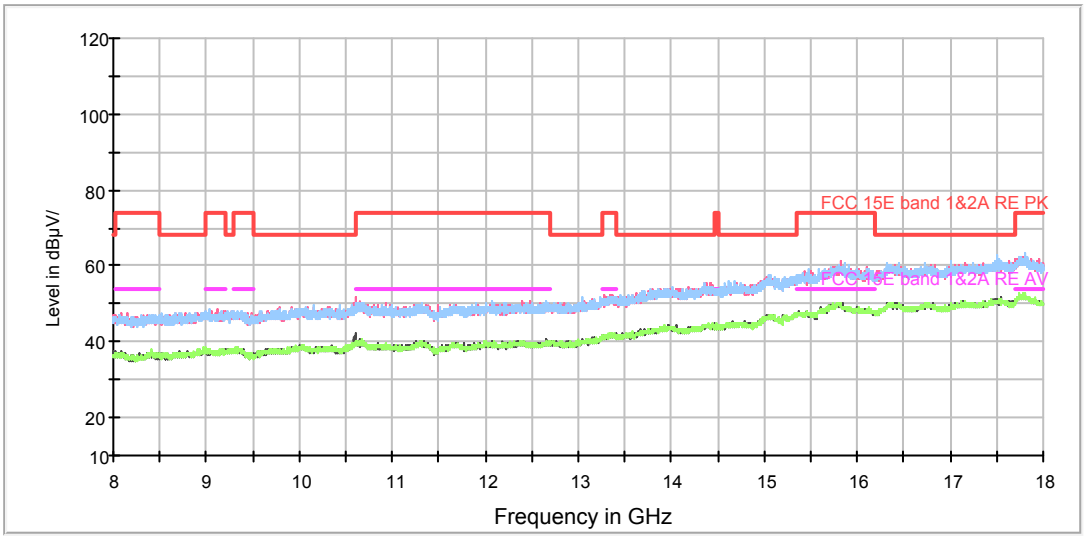
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH60



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1070.875000	43.9	200.0	H	322.0	-0.2	24.3	68.2
1176.750000	45.4	100.0	V	329.0	0.6	22.8	68.2
1920.500000	46.8	100.0	H	288.0	3.9	21.4	68.2
2617.000000	48.6	200.0	H	113.0	6.7	19.6	68.2
3142.000000	51.4	100.0	V	279.0	8.8	16.8	68.2
6572.875000	55.8	100.0	V	136.0	17.2	12.4	68.2

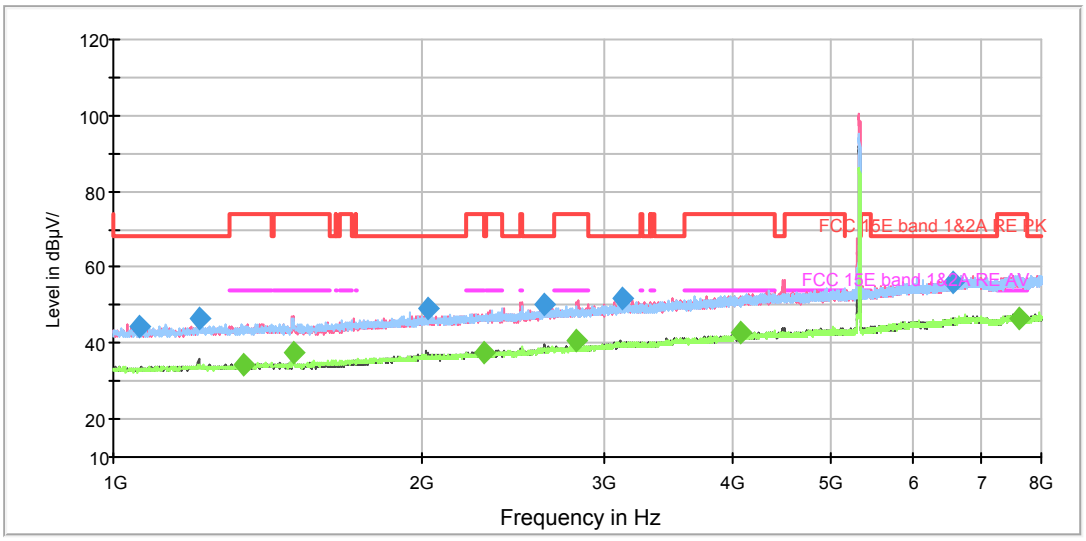
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1373.625000	34.2	200.0	H	172.0	1.6	19.8	54.0
1495.250000	37.1	200.0	V	85.0	2.2	16.9	54.0
2293.250000	37.7	200.0	H	347.0	5.4	16.3	54.0
2827.875000	43.0	200.0	V	192.0	7.5	11.0	54.0
4114.125000	42.5	200.0	H	239.0	12.0	11.5	54.0
7535.375000	47.4	100.0	V	337.0	18.6	6.6	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

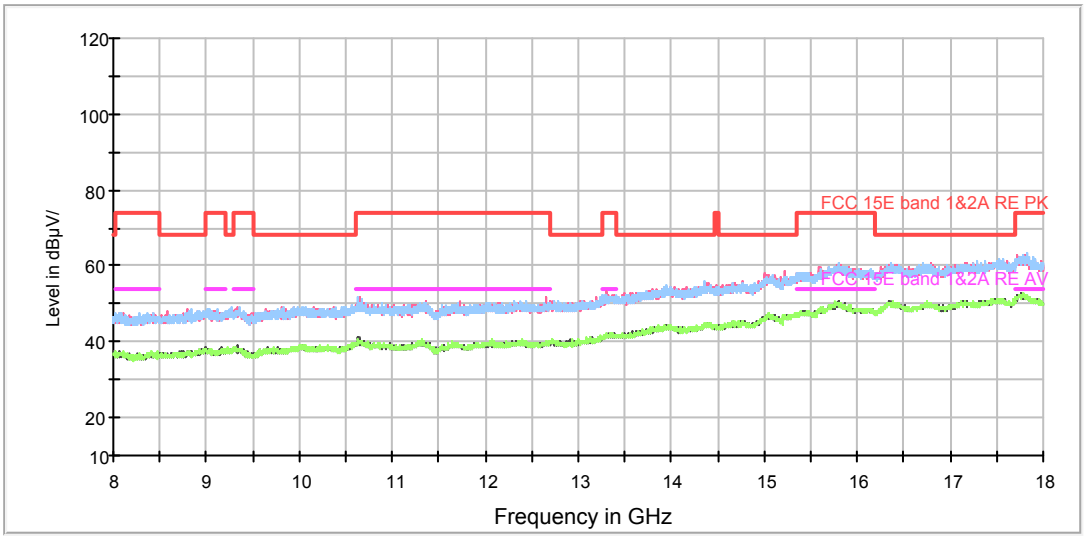
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH64



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1057.750000	44.5	200.0	V	0.0	-0.3	23.7	68.2
1211.750000	46.6	100.0	V	190.0	0.8	21.6	68.2
2022.875000	49.1	200.0	V	102.0	4.3	19.1	68.2
2631.000000	50.0	100.0	V	165.0	6.8	18.2	68.2
3130.625000	51.7	100.0	V	87.0	8.7	16.5	68.2
6558.000000	56.2	200.0	H	278.0	17.2	12.0	68.2

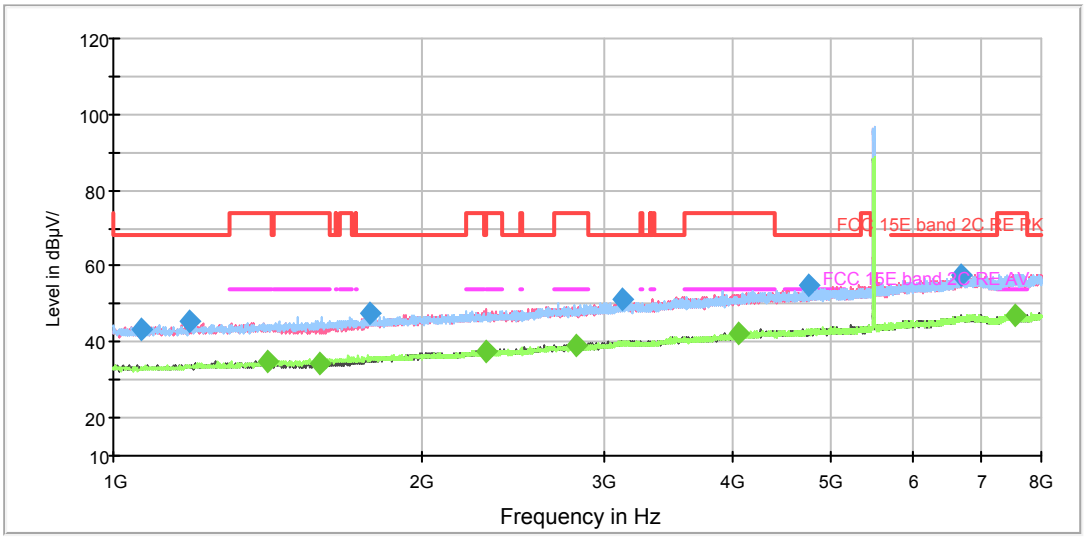
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1339.500000	34.1	200.0	H	71.0	1.4	19.9	54.0
1498.750000	37.3	100.0	V	113.0	2.2	16.7	54.0
2293.250000	37.5	200.0	H	141.0	5.4	16.5	54.0
2827.875000	40.4	100.0	V	76.0	7.5	13.6	54.0
4080.875000	42.7	200.0	V	250.0	11.8	11.3	54.0
7611.500000	46.7	100.0	V	327.0	18.8	7.3	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

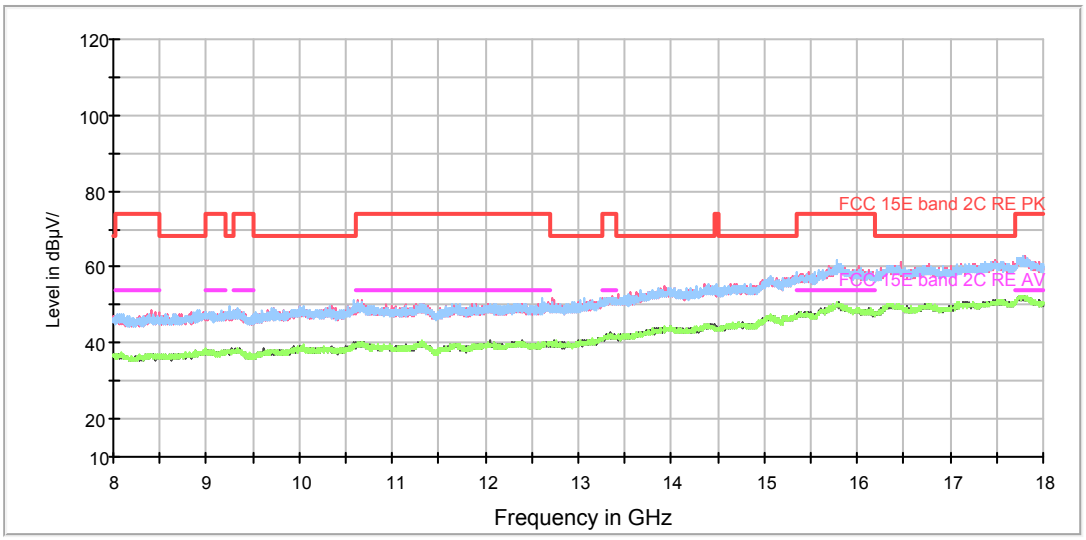
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH100



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1064.750000	43.4	200.0	V	30.0	-0.2	24.8	68.2
1184.625000	45.3	200.0	H	321.0	0.7	22.9	68.2
1776.125000	47.4	200.0	H	271.0	3.3	20.8	68.2
3131.500000	51.3	200.0	V	310.0	8.7	16.9	68.2
4751.125000	54.7	200.0	H	108.0	13.2	13.5	68.2
6671.750000	57.4	200.0	V	47.0	17.5	10.8	68.2

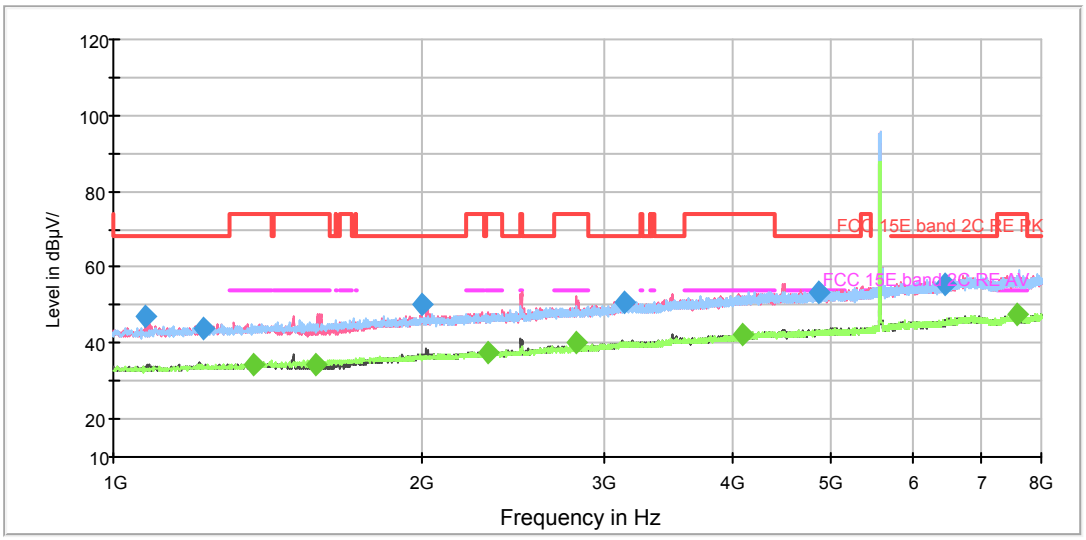
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1413.875000	34.9	100.0	H	105.0	1.9	19.1	54.0
1589.750000	34.4	200.0	V	14.0	2.5	19.6	54.0
2302.000000	37.6	200.0	H	279.0	5.5	16.4	54.0
2821.750000	38.9	100.0	V	283.0	7.5	15.1	54.0
4052.000000	42.4	100.0	H	68.0	11.8	11.6	54.0
7545.000000	47.1	200.0	H	329.0	18.6	6.9	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

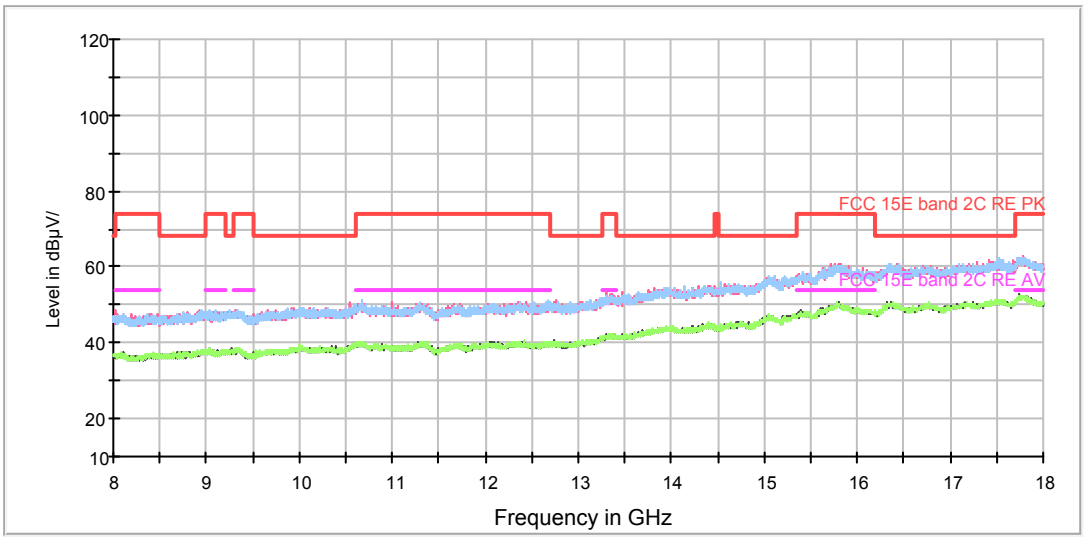
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH116



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1074.375000	47.1	200.0	V	129.0	-0.2	21.1	68.2
1223.125000	44.0	200.0	V	129.0	0.9	24.2	68.2
1994.875000	50.1	100.0	V	173.0	4.2	18.1	68.2
3136.750000	50.5	200.0	H	225.0	8.8	17.7	68.2
4851.750000	53.1	200.0	H	171.0	13.4	15.1	68.2
6436.375000	55.5	200.0	H	272.0	16.9	12.7	68.2

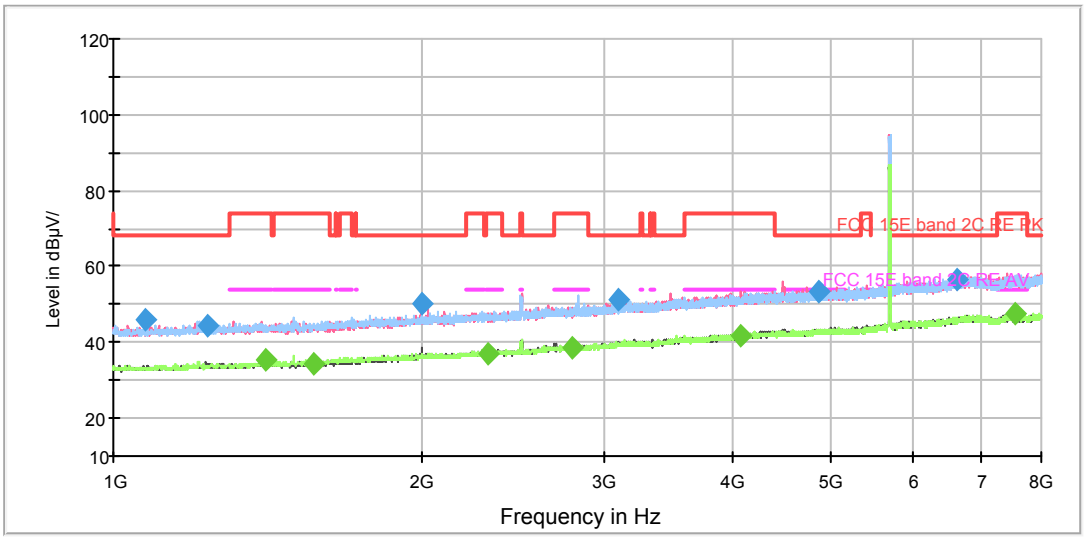
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1369.250000	34.2	100.0	V	321.0	1.6	19.8	54.0
1577.500000	34.4	200.0	H	42.0	2.4	19.6	54.0
2316.000000	37.5	100.0	V	173.0	5.5	16.5	54.0
2821.750000	40.0	200.0	V	99.0	7.5	14.0	54.0
4089.625000	42.5	200.0	V	82.0	11.9	11.5	54.0
7569.500000	47.5	100.0	H	234.0	18.7	6.5	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

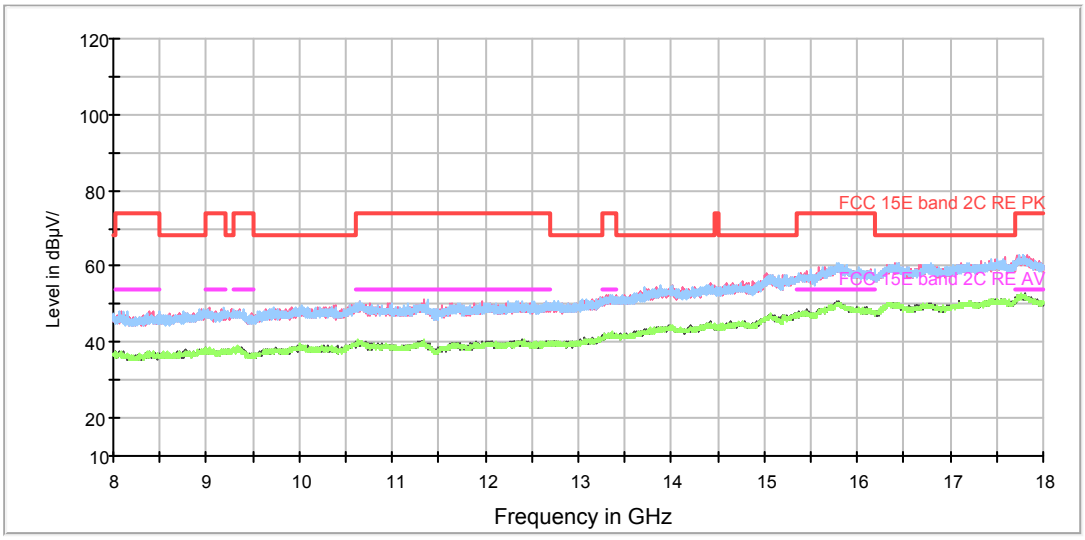
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH140



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1074.375000	46.2	100.0	V	120.0	-0.2	22.0	68.2
1235.375000	44.5	100.0	V	228.0	0.9	23.7	68.2
1998.375000	50.2	100.0	V	162.0	4.3	18.0	68.2
3098.250000	51.0	100.0	V	0.0	8.6	17.2	68.2
4870.125000	53.3	100.0	H	143.0	13.4	14.9	68.2
6615.750000	56.6	100.0	V	267.0	17.4	11.6	68.2

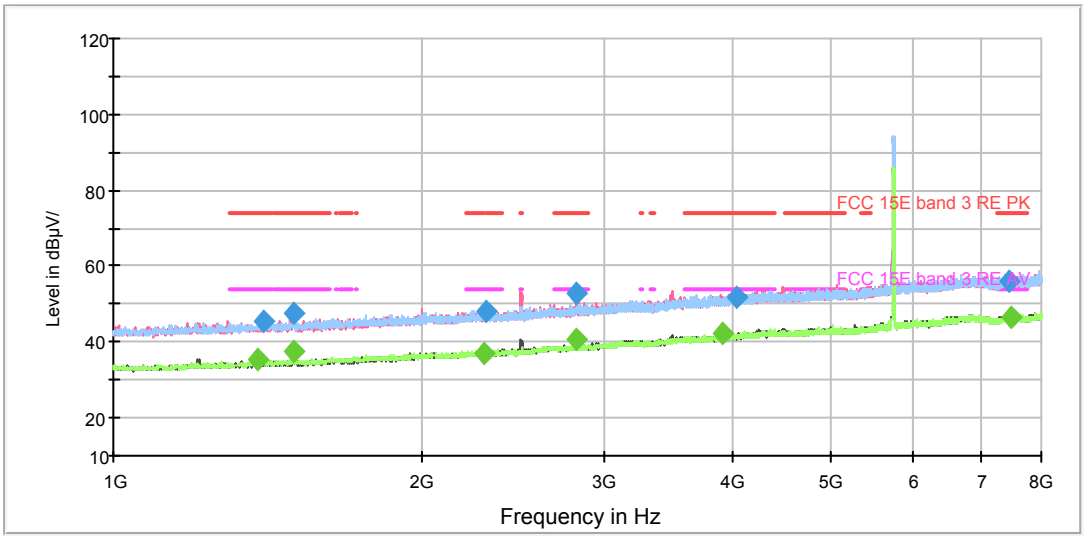
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1405.125000	35.2	100.0	H	272.0	1.9	18.8	54.0
1568.750000	34.2	200.0	V	339.0	2.4	19.8	54.0
2313.375000	37.0	100.0	H	81.0	5.5	17.0	54.0
2792.000000	38.8	200.0	H	338.0	7.4	15.2	54.0
4071.250000	41.8	100.0	V	356.0	11.8	12.2	54.0
7553.750000	47.3	100.0	V	292.0	18.7	6.7	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

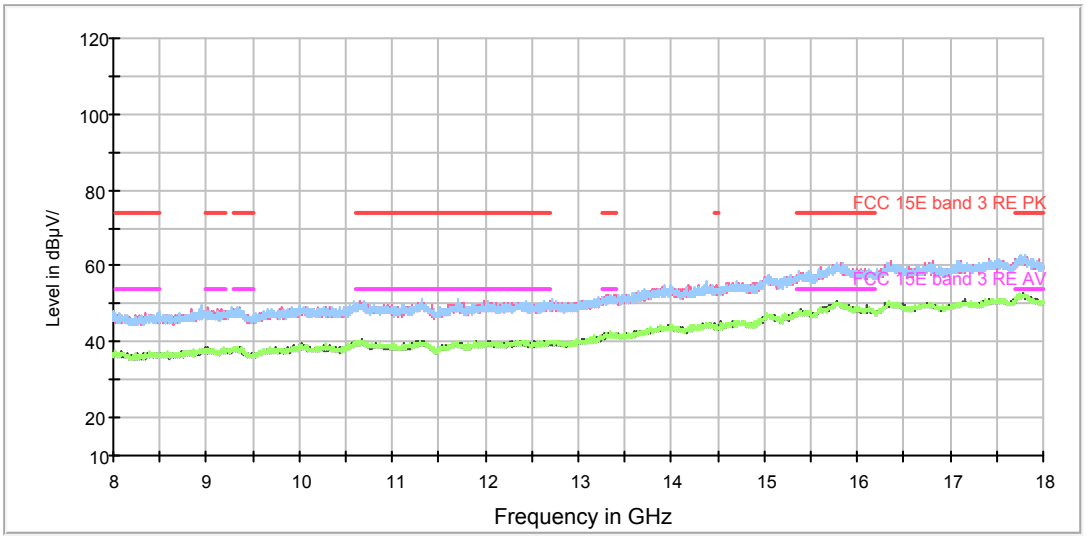
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH149



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1402.500000	45.4	100.0	V	226.0	1.9	28.6	74.0
1497.875000	47.4	200.0	V	119.0	2.2	26.6	74.0
2302.875000	48.0	100.0	H	48.0	5.5	26.0	74.0
2827.000000	52.8	100.0	V	86.0	7.5	21.2	74.0
4050.250000	52.0	200.0	H	0.0	11.8	22.0	74.0
7459.250000	56.0	100.0	V	234.0	18.3	18.0	74.0

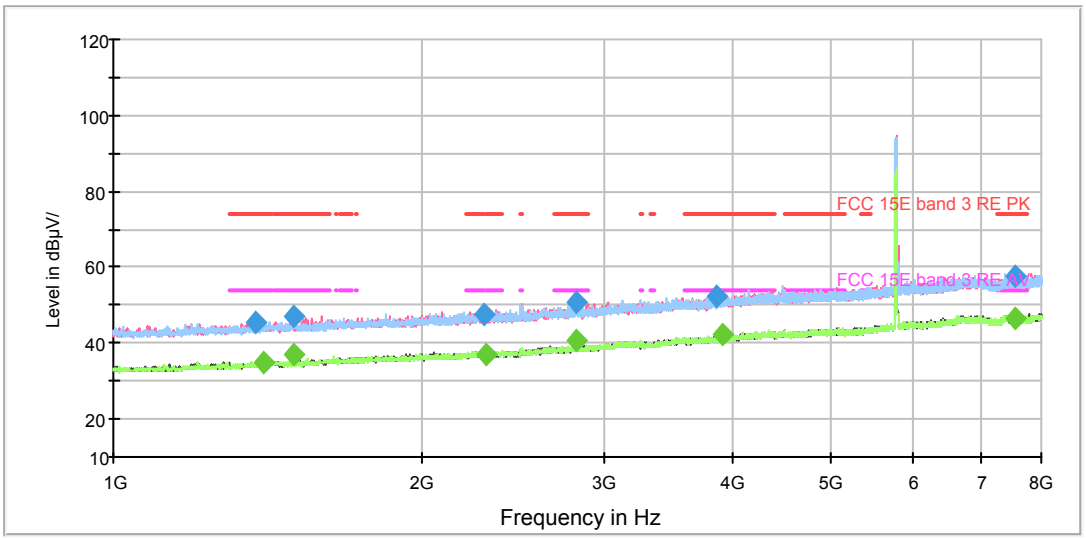
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1383.250000	35.3	100.0	H	274.0	1.7	18.7	54.0
1497.000000	37.4	200.0	V	119.0	2.2	16.6	54.0
2295.875000	37.0	200.0	V	297.0	5.4	17.0	54.0
2823.500000	40.8	100.0	V	86.0	7.5	13.2	54.0
3918.125000	42.2	100.0	V	217.0	11.2	11.8	54.0
7490.750000	46.7	200.0	V	170.0	18.5	7.3	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

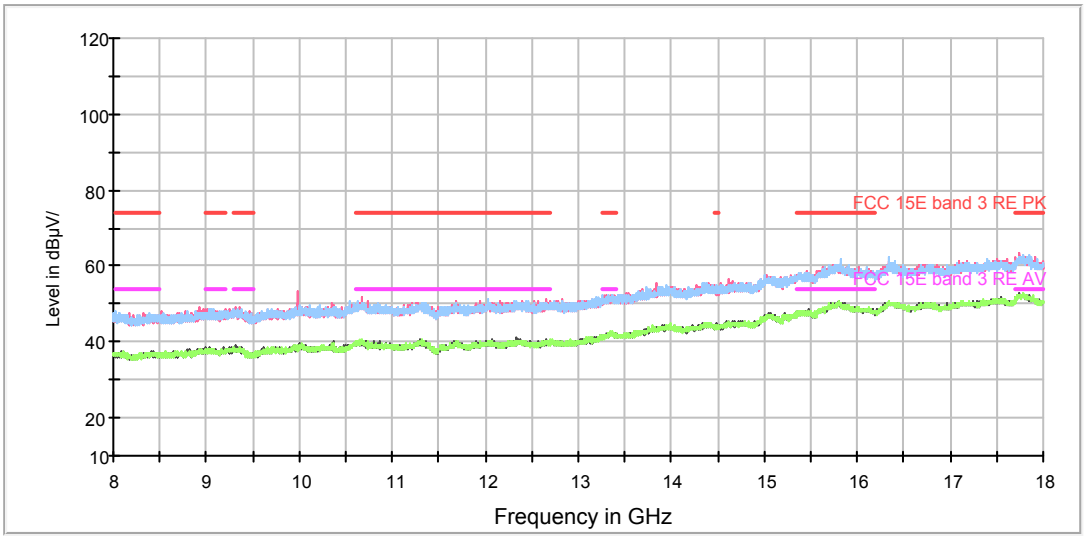
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH157



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1377.125000	45.4	100.0	V	207.0	1.7	28.6	74.0
1497.000000	47.1	200.0	V	110.0	2.2	26.9	74.0
2293.250000	47.8	100.0	V	224.0	5.4	26.2	74.0
2824.375000	50.8	100.0	V	149.0	7.5	23.2	74.0
3868.250000	52.3	200.0	H	341.0	11.0	21.7	74.0
7549.375000	57.7	200.0	V	135.0	18.7	16.3	74.0

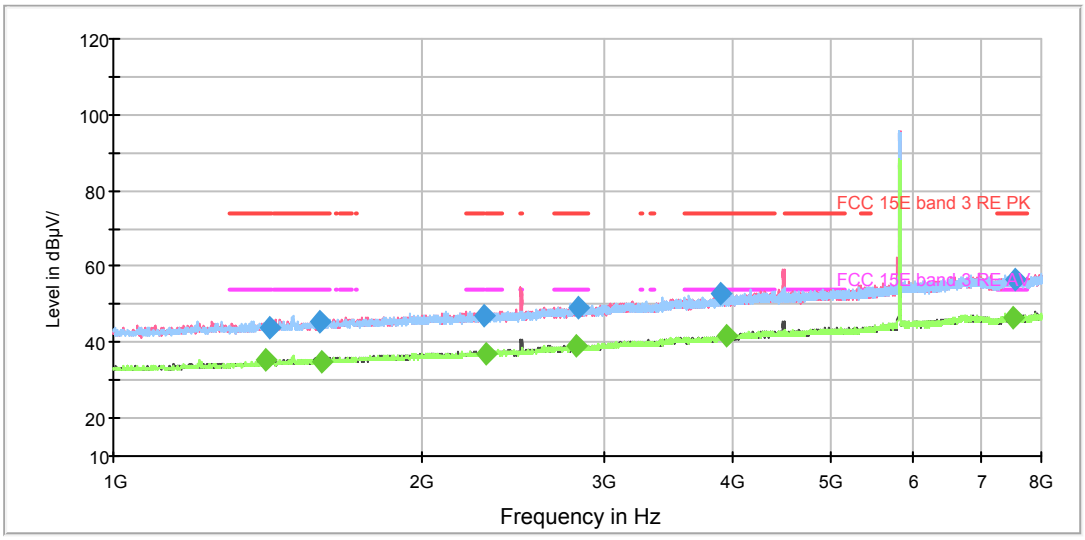
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1402.500000	35.1	100.0	H	269.0	1.9	18.9	54.0
1497.000000	37.1	200.0	V	110.0	2.2	16.9	54.0
2302.875000	37.0	100.0	V	129.0	5.5	17.0	54.0
2823.500000	40.8	100.0	V	149.0	7.5	13.2	54.0
3908.500000	42.0	100.0	H	122.0	11.2	12.0	54.0
7549.375000	46.7	200.0	V	135.0	18.7	7.3	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

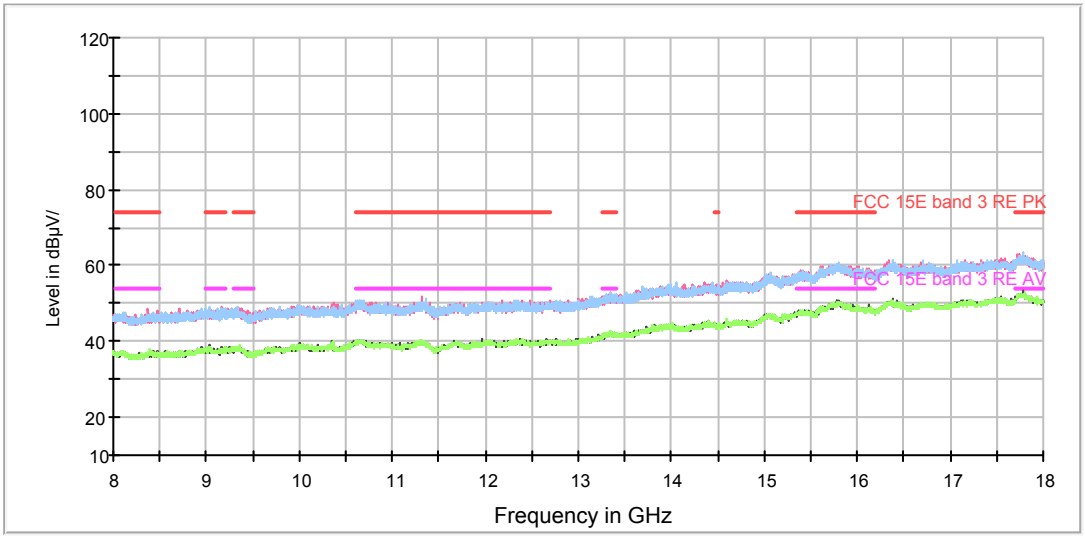
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT20) CH165



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1419.125000	44.0	100.0	V	359.0	1.9	30.0	74.0
1585.375000	45.4	100.0	V	282.0	2.5	28.6	74.0
2299.375000	47.2	100.0	V	170.0	5.4	26.8	74.0
2835.750000	49.2	200.0	V	287.0	7.5	24.8	74.0
3903.250000	52.7	100.0	H	197.0	11.2	21.3	74.0
7534.500000	56.7	200.0	H	194.0	18.6	17.3	74.0

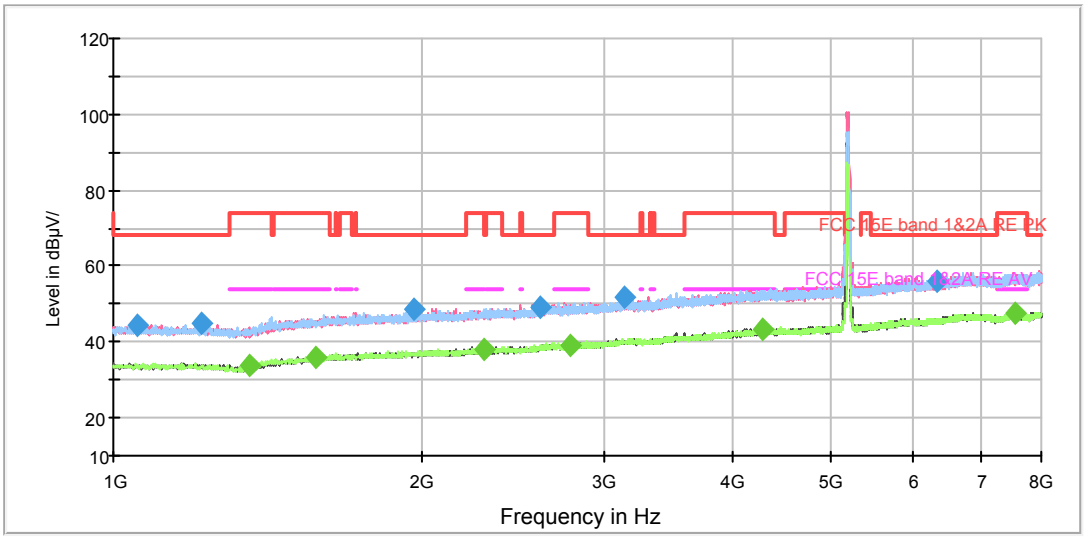
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1405.125000	35.2	100.0	V	99.0	1.9	18.8	54.0
1597.625000	35.0	200.0	V	46.0	2.5	19.0	54.0
2307.250000	36.9	200.0	V	170.0	5.5	17.1	54.0
2826.125000	39.1	200.0	V	224.0	7.5	14.9	54.0
3946.125000	42.0	100.0	H	252.0	11.4	12.0	54.0
7524.875000	46.3	100.0	V	212.0	18.6	7.7	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

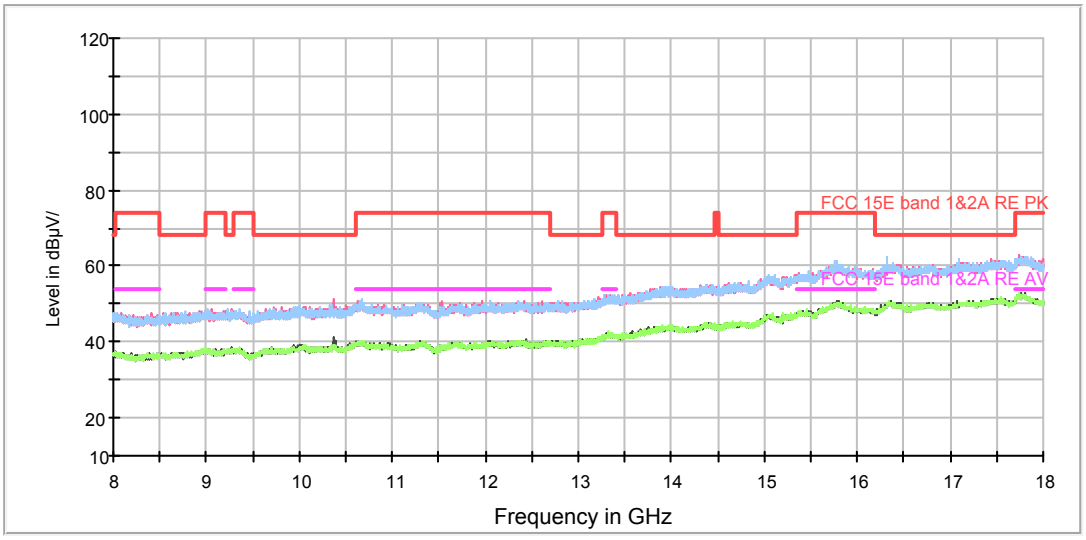
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH38



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1053.375000	44.3	100.0	H	215.0	-0.3	23.9	68.2
1219.625000	44.7	200.0	V	93.0	0.9	23.5	68.2
1957.250000	48.6	200.0	V	70.0	4.1	19.6	68.2
2597.750000	49.4	200.0	V	45.0	6.6	18.8	68.2
3148.125000	51.8	200.0	H	186.0	8.8	16.4	68.2
6320.875000	56.1	100.0	V	172.0	16.6	12.1	68.2

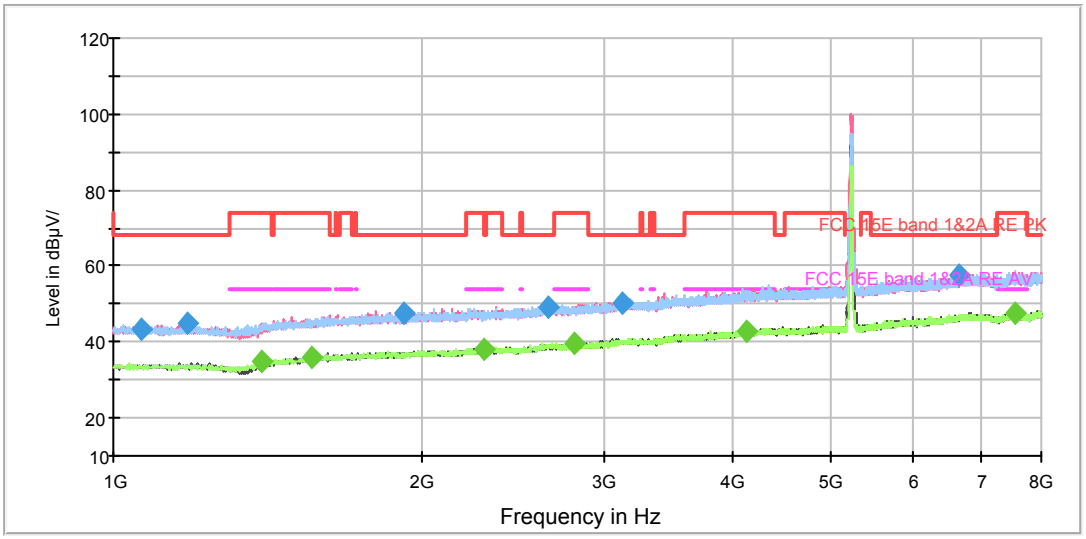
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1358.750000	33.7	100.0	V	6.0	1.5	20.3	54.0
1575.750000	35.9	100.0	V	172.0	2.4	18.1	54.0
2300.250000	38.1	200.0	V	332.0	5.4	15.9	54.0
2780.625000	39.3	200.0	V	182.0	7.3	14.7	54.0
4276.875000	43.5	200.0	V	281.0	12.3	10.5	54.0
7558.125000	47.5	100.0	V	209.0	18.7	6.5	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

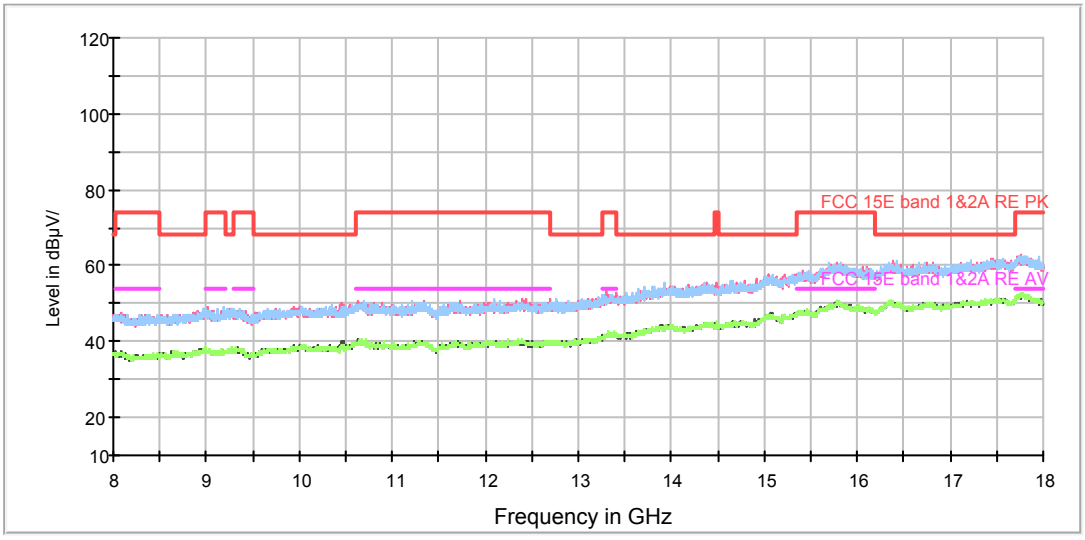
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH46



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1065.625000	43.3	200.0	V	0.0	-0.2	24.9	68.2
1178.500000	45.1	100.0	V	182.0	0.6	23.1	68.2
1921.375000	47.4	100.0	H	93.0	3.9	20.8	68.2
2652.875000	49.3	200.0	V	64.0	6.9	18.9	68.2
3125.375000	50.4	100.0	H	165.0	8.7	17.8	68.2
6646.375000	57.6	100.0	H	214.0	17.4	10.6	68.2

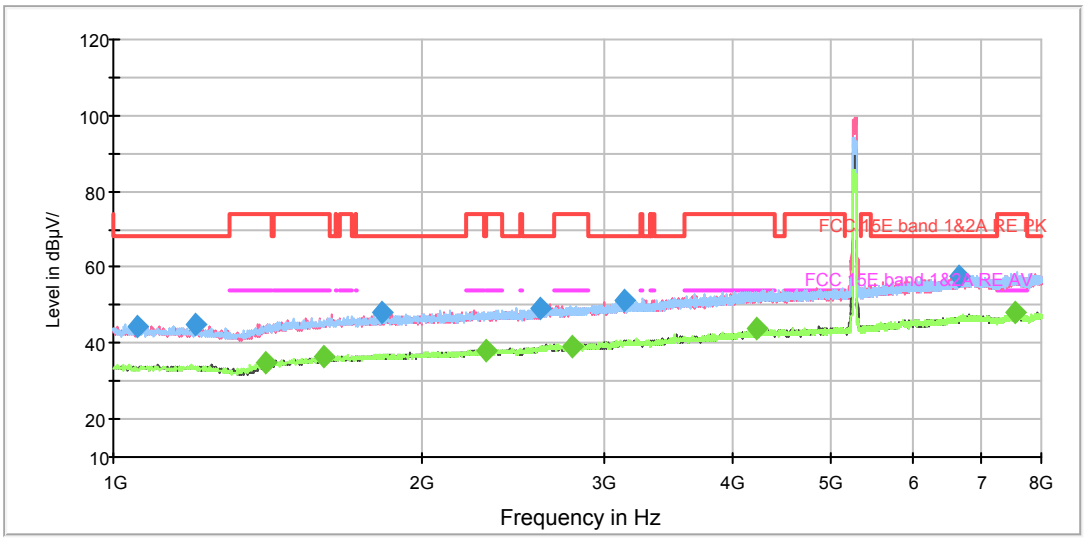
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1396.375000	35.1	100.0	H	153.0	1.8	18.9	54.0
1559.125000	36.0	100.0	V	219.0	2.3	18.0	54.0
2295.000000	38.2	200.0	V	15.0	5.4	15.8	54.0
2805.125000	39.4	100.0	H	160.0	7.4	14.6	54.0
4137.750000	42.7	100.0	V	327.0	12.0	11.3	54.0
7559.875000	47.4	200.0	V	243.0	18.7	6.6	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

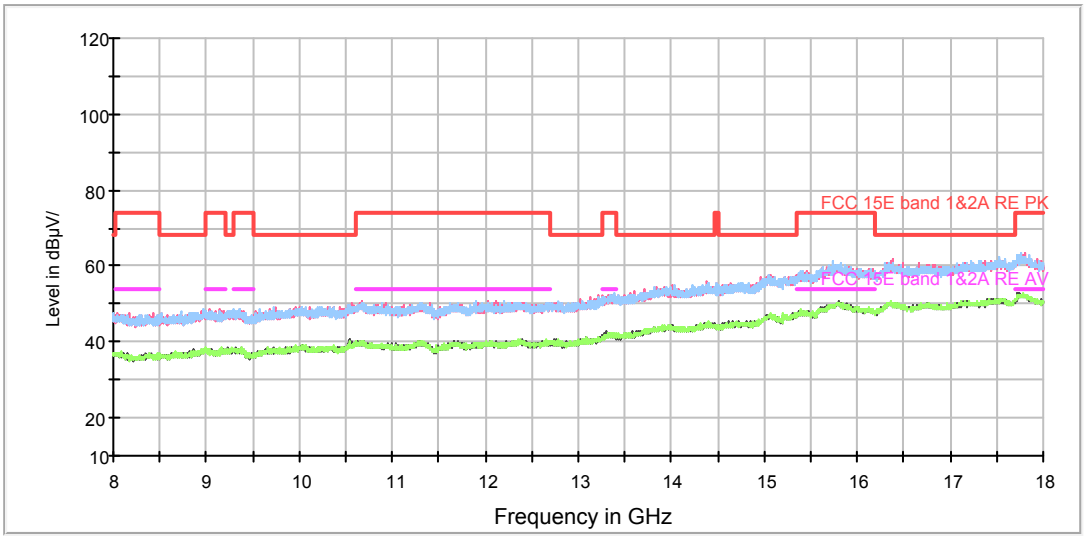
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH54



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1056.000000	44.6	100.0	H	127.0	-0.3	23.6	68.2
1201.250000	44.9	100.0	V	0.0	0.8	23.3	68.2
1829.500000	47.9	200.0	H	318.0	3.5	20.3	68.2
2605.625000	49.2	100.0	V	337.0	6.7	19.0	68.2
3137.625000	51.0	200.0	H	233.0	8.8	17.2	68.2
6650.750000	57.6	100.0	V	217.0	17.5	10.6	68.2

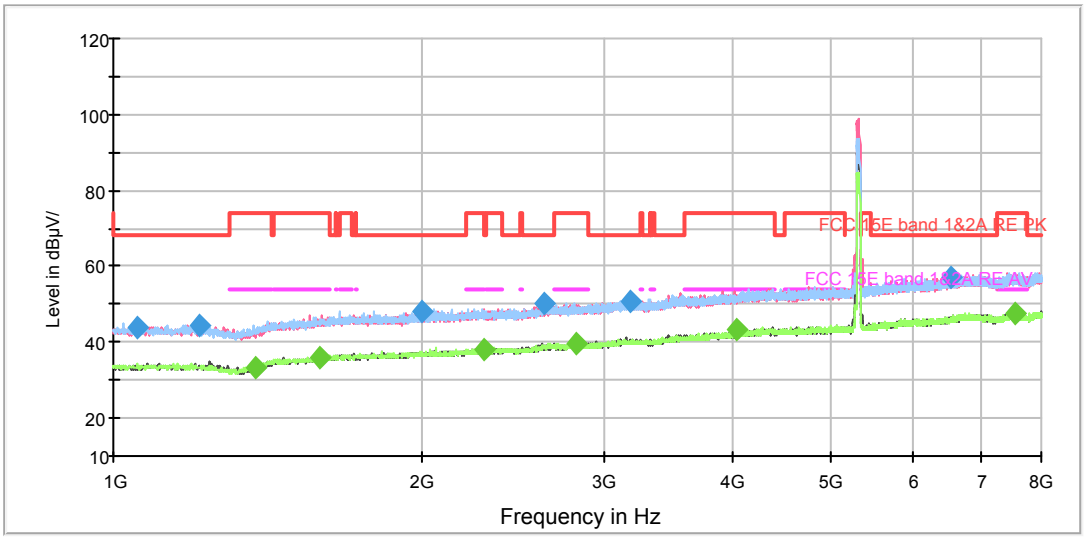
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1409.500000	35.1	100.0	H	14.0	1.9	18.9	54.0
1600.250000	36.5	200.0	V	4.0	2.6	17.5	54.0
2309.875000	38.2	200.0	V	344.0	5.5	15.8	54.0
2799.000000	38.9	100.0	V	359.0	7.4	15.1	54.0
4225.250000	43.9	100.0	V	162.0	12.2	10.1	54.0
7557.250000	48.0	100.0	V	203.0	18.7	6.0	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

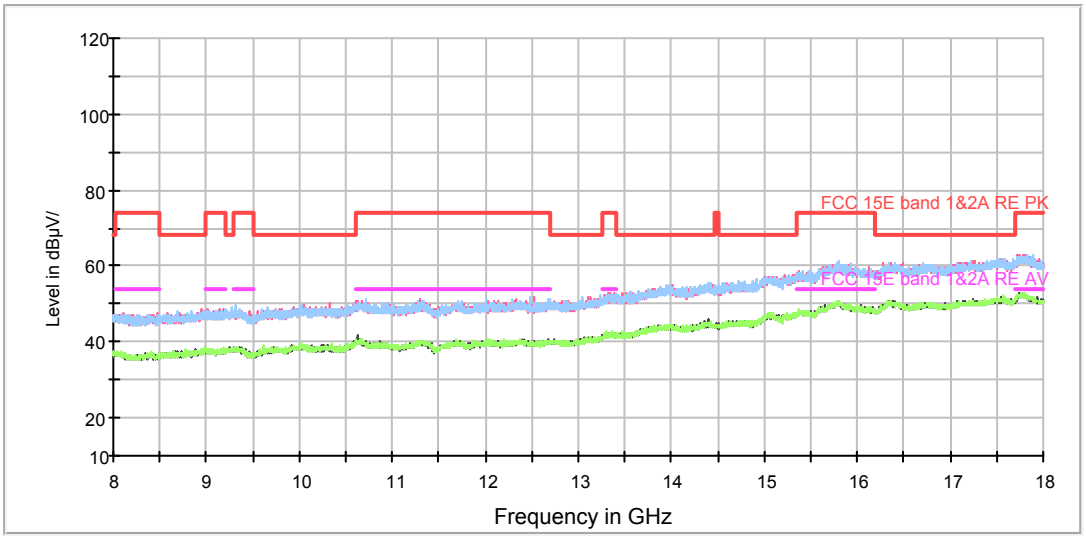
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH62



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1056.000000	43.9	100.0	V	322.0	-0.3	24.3	68.2
1210.875000	44.3	200.0	V	0.0	0.8	23.9	68.2
1995.750000	48.2	200.0	H	284.0	4.2	20.0	68.2
2623.125000	50.0	200.0	V	141.0	6.8	18.2	68.2
3181.375000	50.9	200.0	H	170.0	8.9	17.3	68.2
6542.250000	56.8	200.0	H	137.0	17.2	11.4	68.2

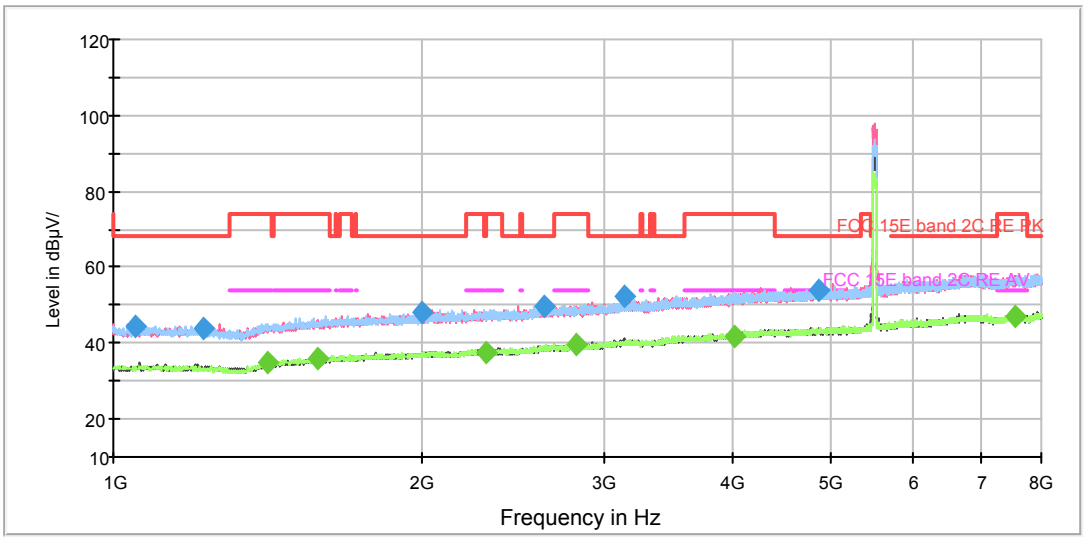
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1378.000000	33.5	100.0	H	170.0	1.7	20.5	54.0
1585.375000	35.9	100.0	V	353.0	2.5	18.1	54.0
2292.375000	38.1	200.0	V	189.0	5.4	15.9	54.0
2823.500000	39.4	200.0	H	39.0	7.5	14.6	54.0
4039.750000	43.2	100.0	V	216.0	11.7	10.8	54.0
7556.375000	47.7	200.0	H	187.0	18.7	6.3	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

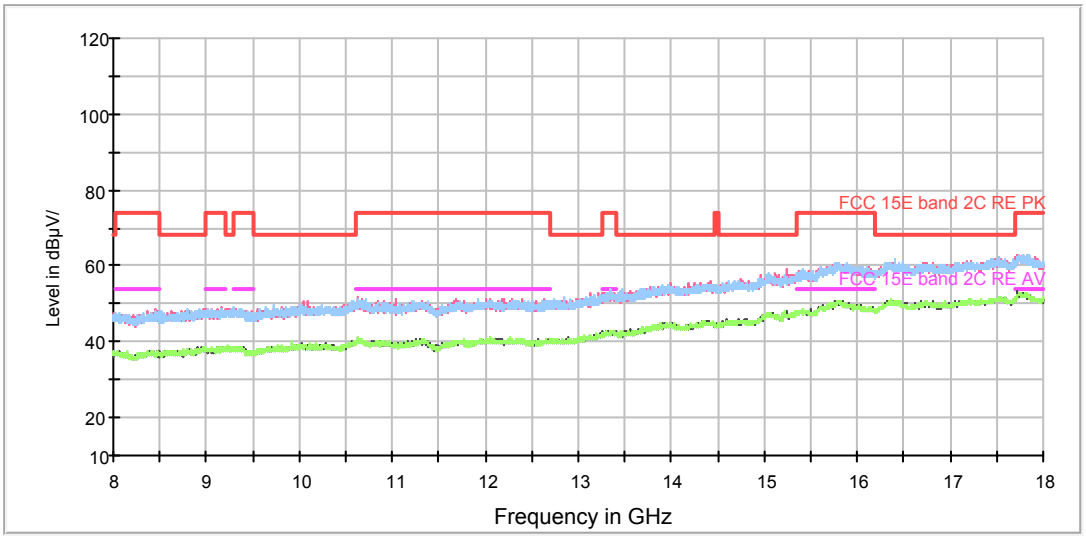
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH102



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1049.000000	44.2	200.0	V	202.0	-0.4	24.0	68.2
1223.125000	43.6	200.0	H	51.0	0.9	24.6	68.2
1996.625000	47.9	100.0	V	0.0	4.2	20.3	68.2
2628.375000	49.7	200.0	H	171.0	6.8	18.5	68.2
3149.000000	52.2	200.0	V	168.0	8.8	16.0	68.2
4849.125000	53.9	100.0	V	269.0	13.4	14.3	68.2

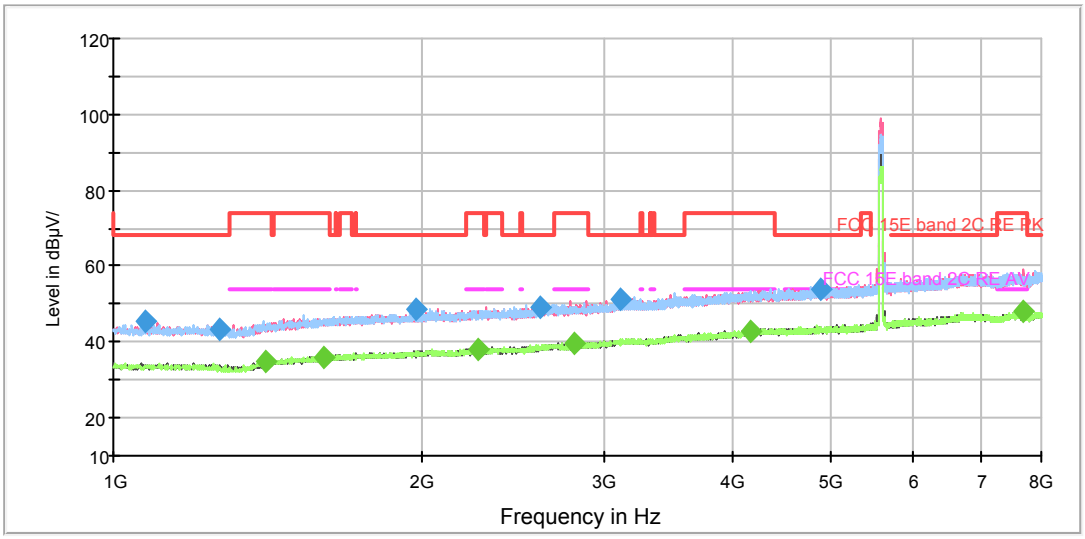
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1413.875000	35.0	100.0	H	0.0	1.9	19.0	54.0
1580.125000	35.9	200.0	H	327.0	2.4	18.1	54.0
2305.500000	37.6	100.0	H	315.0	5.5	16.4	54.0
2827.000000	39.4	200.0	V	49.0	7.5	14.6	54.0
4021.375000	41.8	200.0	V	58.0	11.7	12.2	54.0
7550.250000	47.3	200.0	V	24.0	18.7	6.7	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

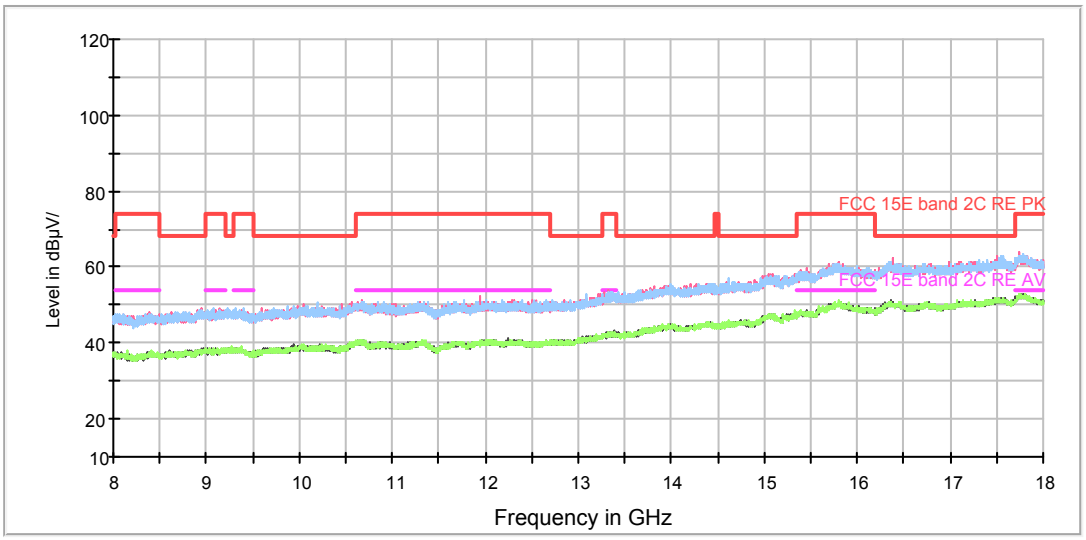
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH118



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1073.500000	45.4	100.0	H	137.0	-0.2	22.8	68.2
1270.375000	43.5	200.0	V	0.0	1.1	24.7	68.2
1972.125000	48.4	100.0	V	244.0	4.2	19.8	68.2
2605.625000	49.4	200.0	V	103.0	6.7	18.8	68.2
3112.250000	51.3	100.0	H	0.0	8.7	16.9	68.2
4879.750000	53.9	200.0	V	320.0	13.5	14.3	68.2

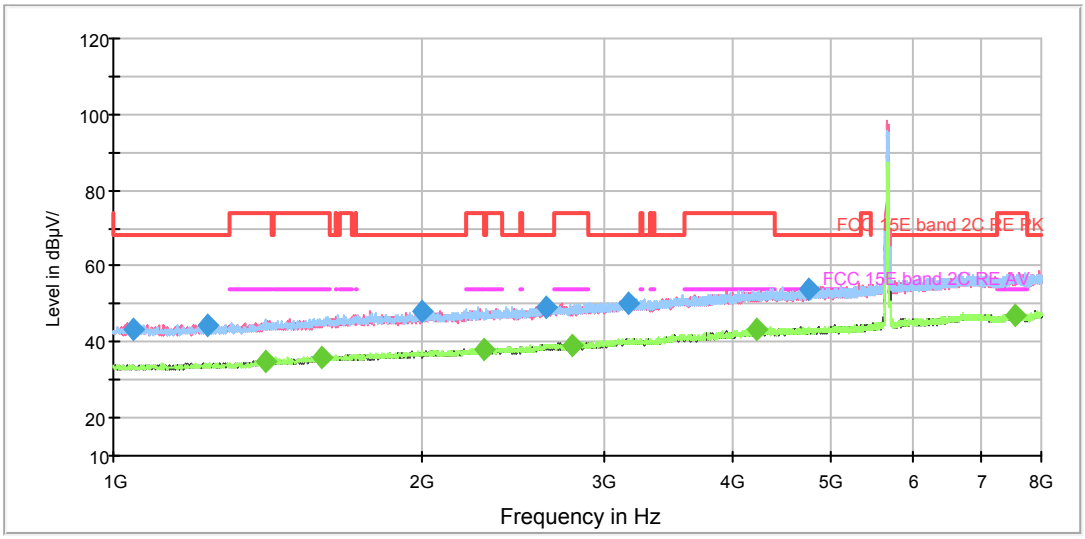
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1409.500000	34.8	100.0	H	19.0	1.9	19.2	54.0
1602.875000	35.9	100.0	H	0.0	2.6	18.1	54.0
2260.875000	38.1	200.0	V	9.0	5.2	15.9	54.0
2809.500000	39.6	200.0	H	236.0	7.4	14.4	54.0
4163.125000	42.8	100.0	V	351.0	12.0	11.2	54.0
7670.125000	47.8	200.0	H	114.0	18.9	6.2	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

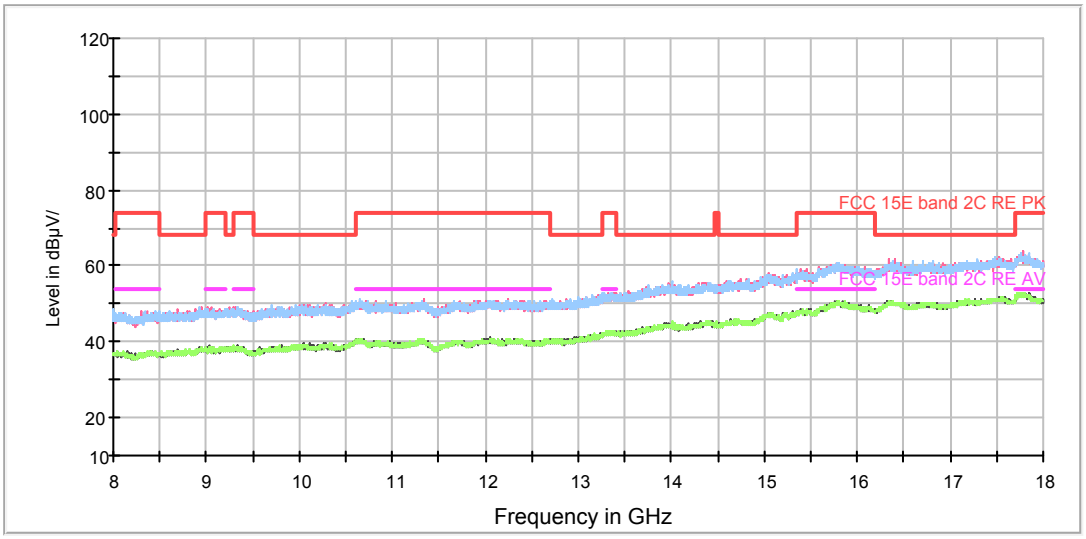
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH134



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1046.375000	43.6	100.0	V	203.0	-0.4	24.6	68.2
1233.625000	44.2	100.0	H	0.0	0.9	24.0	68.2
1998.375000	48.3	200.0	H	359.0	4.3	19.9	68.2
2640.625000	49.2	200.0	V	86.0	6.9	19.0	68.2
3178.750000	50.1	200.0	V	19.0	8.9	18.1	68.2
4746.750000	53.7	200.0	V	44.0	13.2	14.5	68.2

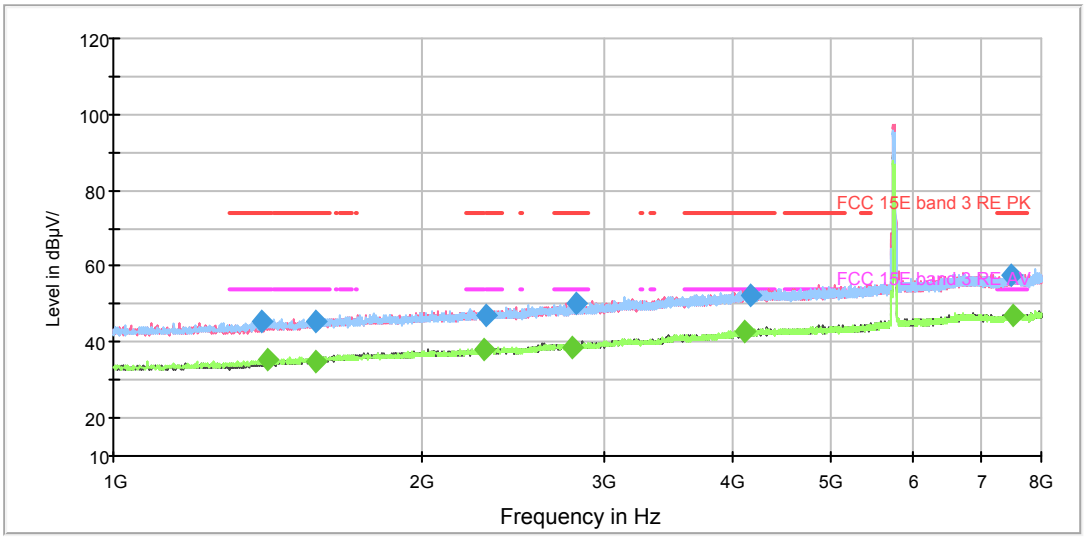
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1408.625000	35.0	200.0	V	52.0	1.9	19.0	54.0
1594.125000	35.9	100.0	H	220.0	2.5	18.1	54.0
2294.125000	38.3	100.0	H	2.0	5.4	15.7	54.0
2793.750000	39.2	200.0	V	69.0	7.4	14.8	54.0
4224.375000	43.3	200.0	V	78.0	12.2	10.7	54.0
7536.250000	46.9	200.0	V	119.0	18.6	7.1	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

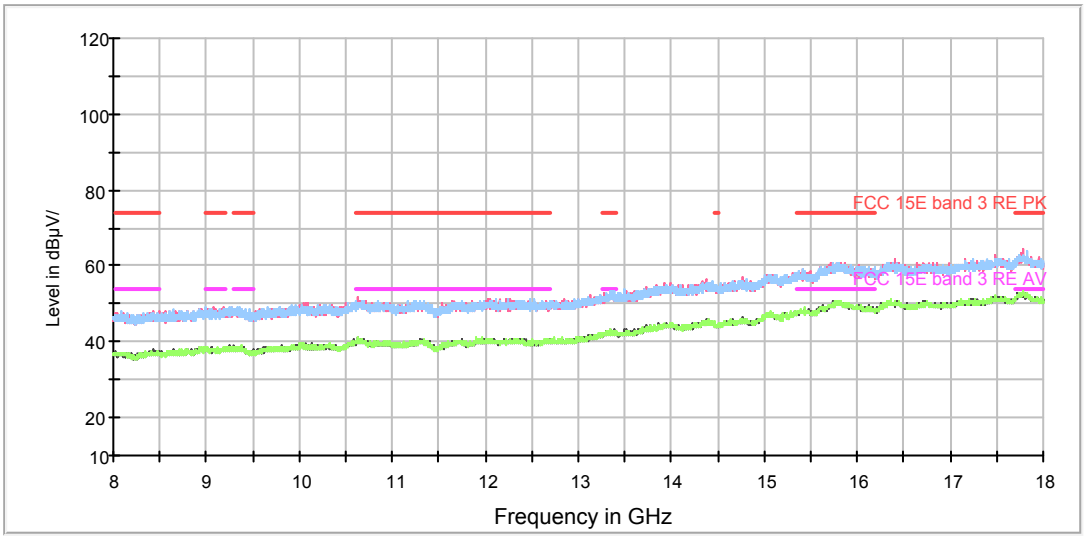
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH151



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1394.625000	45.6	200.0	H	163.0	1.8	28.4	74.0
1572.250000	45.5	200.0	H	264.0	2.4	28.5	74.0
2306.375000	47.1	100.0	V	107.0	5.5	26.9	74.0
2820.875000	50.4	100.0	V	229.0	7.5	23.6	74.0
4162.250000	52.6	100.0	V	235.0	12.0	21.4	74.0
7482.875000	57.4	100.0	V	292.0	18.4	16.6	74.0

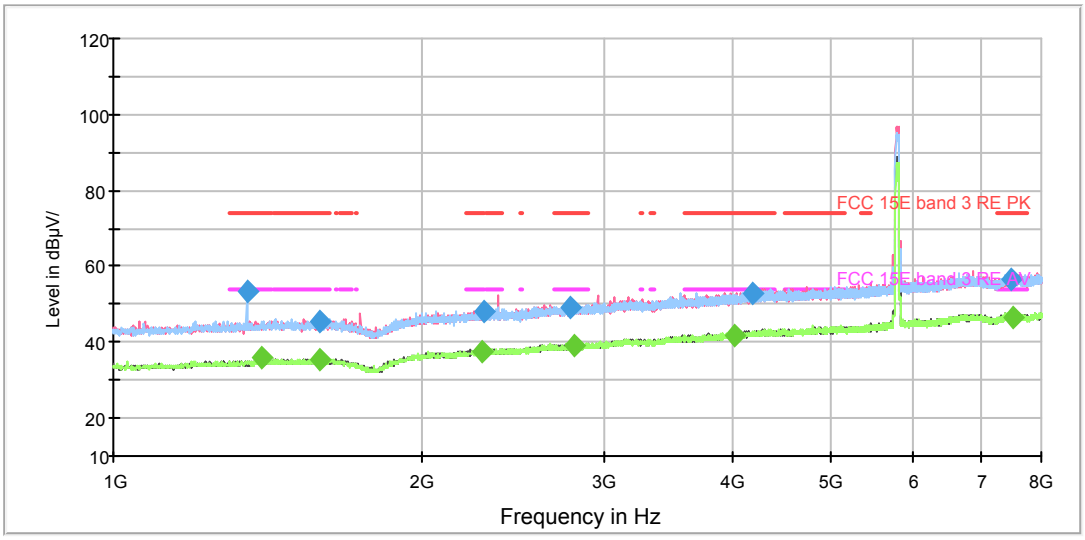
Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1411.250000	35.4	100.0	H	303.0	1.9	18.6	54.0
1574.000000	35.0	200.0	V	197.0	2.4	19.0	54.0
2299.375000	37.9	100.0	V	220.0	5.4	16.1	54.0
2799.000000	38.7	200.0	V	35.0	7.4	15.3	54.0
4121.125000	42.8	200.0	V	0.0	12.0	11.2	54.0
7498.625000	47.3	200.0	H	304.0	18.5	6.7	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

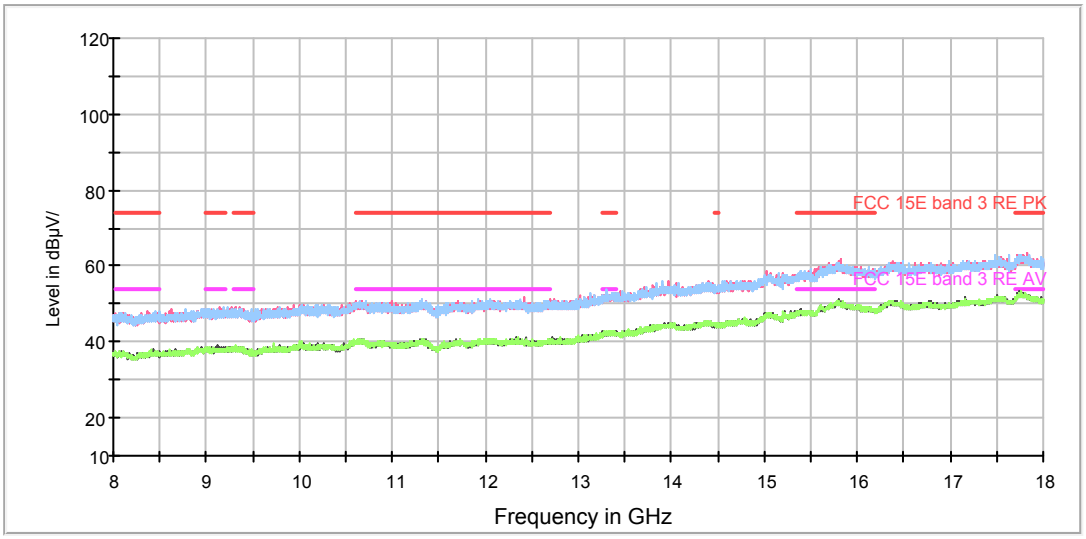
This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

802.11n (HT40) CH159



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 8GHz



Radiates Emission from 8GHz to 18GHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Frequency (MHz)	Peak (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1348.250000	53.4	200.0	H	345.0	1.5	20.6	74.0
1585.375000	45.4	200.0	V	29.0	2.5	28.6	74.0
2295.000000	47.8	100.0	V	345.0	5.4	26.2	74.0
2783.250000	49.3	100.0	V	136.0	7.3	24.7	74.0
4184.125000	52.6	100.0	H	192.0	12.1	21.4	74.0
7489.875000	56.8	100.0	H	192.0	18.5	17.2	74.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

Frequency (MHz)	Average (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1393.750000	35.7	200.0	H	111.0	1.8	18.3	54.0
1590.625000	35.3	200.0	V	85.0	2.5	18.7	54.0
2285.375000	37.6	100.0	V	345.0	5.4	16.4	54.0
2811.250000	39.3	100.0	H	192.0	7.4	14.7	54.0
4021.375000	41.7	100.0	V	322.0	11.7	12.3	54.0
7507.375000	46.4	200.0	V	217.0	18.5	7.6	54.0

Remark: 1. Correction Factor = Antenna factor+ Insertion loss (cable loss + amplifier gain)

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

5.6. Conducted Emission

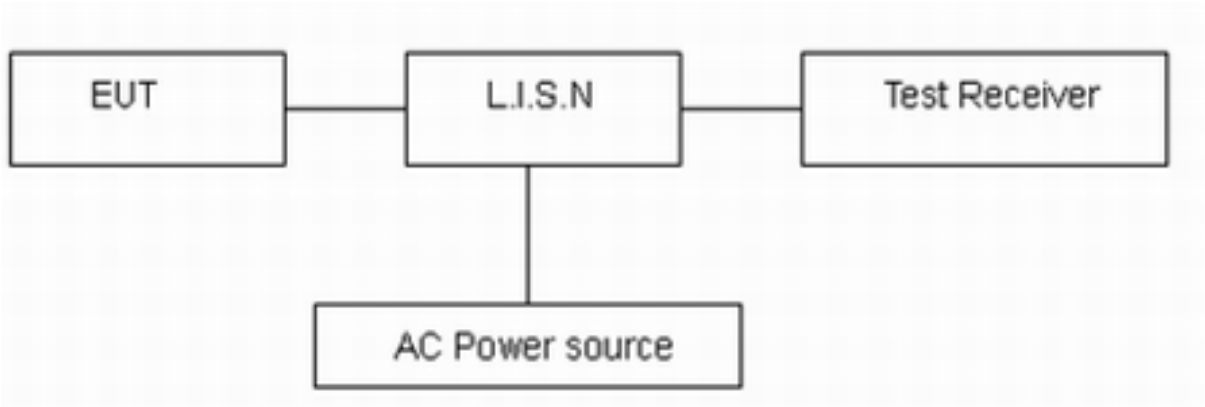
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Methods of Measurement

The EUT IS placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10-2013.Connect the AC power line of the EUT to the LISN Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9kHz, VBW is set to 30kHz The measurement result should include both L line and N line.
The test is in transmitting mode.

Test Setup



Note: AC Power source is used to change the voltage 110V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

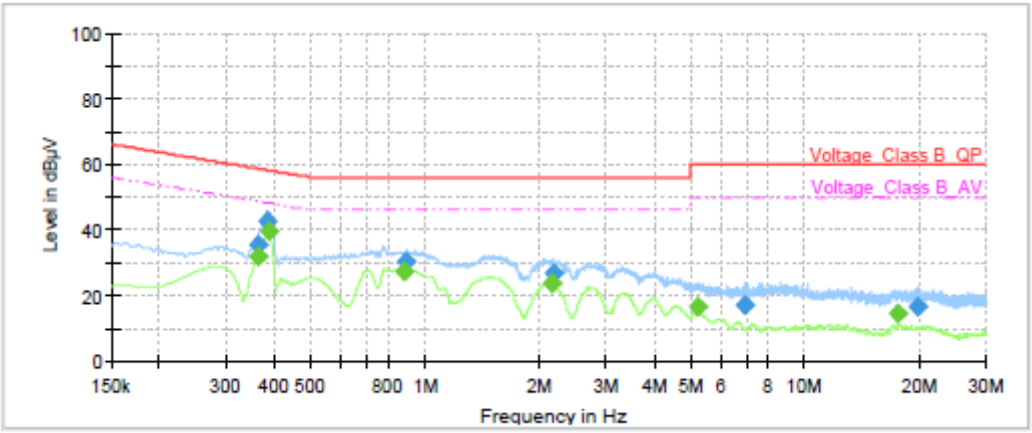
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.69 dB.

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Test Results:

Following plots, Blue trace uses the peak detection and Green trace uses the average detection. During the test, the Conducted Emission was performed in all modes with all channels, 802.11n (HT40) CH54 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

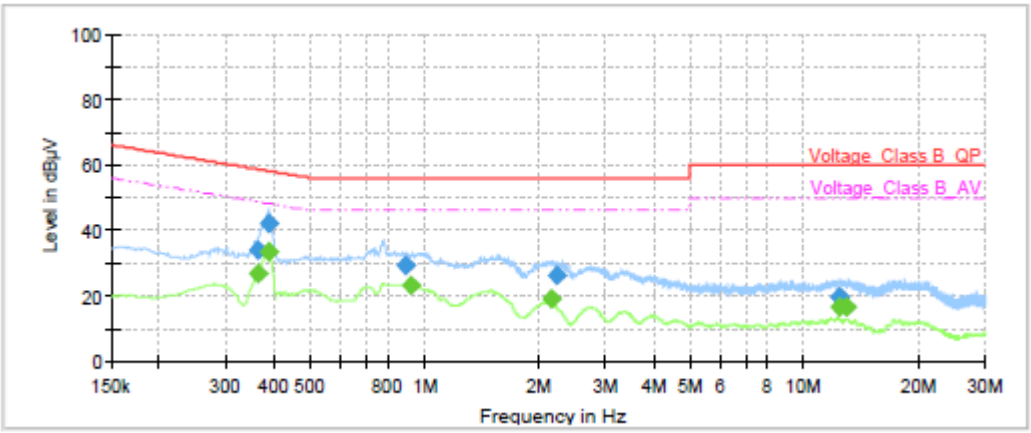


Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.36	---	31.68	48.69	17.01	1000.0	9.000	L1	ON	19.19
0.36	35.23	---	58.69	23.46	1000.0	9.000	L1	ON	19.19
0.38	42.73	---	58.19	15.46	1000.0	9.000	L1	ON	19.23
0.39	---	39.28	48.10	8.82	1000.0	9.000	L1	ON	19.23
0.88	---	27.25	46.00	18.75	1000.0	9.000	L1	ON	19.24
0.89	30.10	---	56.00	25.90	1000.0	9.000	L1	ON	19.24
2.15	---	23.75	46.00	22.25	1000.0	9.000	L1	ON	19.07
2.18	26.82	---	56.00	29.18	1000.0	9.000	L1	ON	19.07
5.23	---	16.50	50.00	33.50	1000.0	9.000	L1	ON	19.09
6.94	16.97	---	60.00	43.03	1000.0	9.000	L1	ON	19.16
17.63	---	14.34	50.00	35.66	1000.0	9.000	L1	ON	19.58
19.73	16.26	---	60.00	43.74	1000.0	9.000	L1	ON	19.66

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 KHz to 30 MHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.36	---	26.71	48.69	21.98	1000.0	9.000	N	ON	19.19
0.36	33.62	---	58.69	25.07	1000.0	9.000	N	ON	19.19
0.39	41.94	---	58.14	16.20	1000.0	9.000	N	ON	19.23
0.39	---	33.50	48.10	14.60	1000.0	9.000	N	ON	19.23
0.89	29.10	---	56.00	26.90	1000.0	9.000	N	ON	19.24
0.92	---	23.11	46.00	22.89	1000.0	9.000	N	ON	19.24
2.15	---	18.91	46.00	27.09	1000.0	9.000	N	ON	19.07
2.23	25.90	---	56.00	30.10	1000.0	9.000	N	ON	19.07
12.38	19.48	---	60.00	40.52	1000.0	9.000	N	ON	19.40
12.38	---	16.16	50.00	33.84	1000.0	9.000	N	ON	19.40
12.44	19.26	---	60.00	40.74	1000.0	9.000	N	ON	19.41
12.95	---	16.17	50.00	33.83	1000.0	9.000	N	ON	19.48

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 KHz to 30 MHz

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

6. Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Spectrum Analyzer	R&S	FSV40	15195-01-00	2019-05-19	2020-05-18
EMI Test Receiver	R&S	ESCI	100948	2019-05-19	2020-05-18
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2019-11-17
Double Ridged Waveguide Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Standard Gain Horn	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Standard Gain Horn	STEATITE	QSH-SL-26-40 -K-15	16779	2017-07-20	2019-07-19
Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	430	2018-07-07	2020-07-06
EMI Test Receiver	R&S	ESR	101667	2019-05-19	2020-05-18
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Spectrum Analyzer	KEYSIGHT	N9020A	MY54420163	2018-12-16	2019-12-15
RF Cable	Agilent	SMA 15cm	0001	2019-03-15	2019-06-14
TEMPERATURE CHAMBER	WEISS	VT4002	582261194500 10	2018-12-16	2019-12-15
WLAN AP	Cisco	Air-AP1262N-A-K9	LDK102073 (FCC ID)	/	/
AV Power Meter	R&S	NRP	104306	2019-05-19	2020-05-18
Power Probe	R&S	NRP-Z21	104799	2019-05-19	2020-05-18
DC Power Supply	GWINSTEK	GPS-3030D	GEP882653	2019-05-19	2020-05-18
Software	R&S	EMC32	9.26.0	/	/

*******END OF REPORT *******

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance

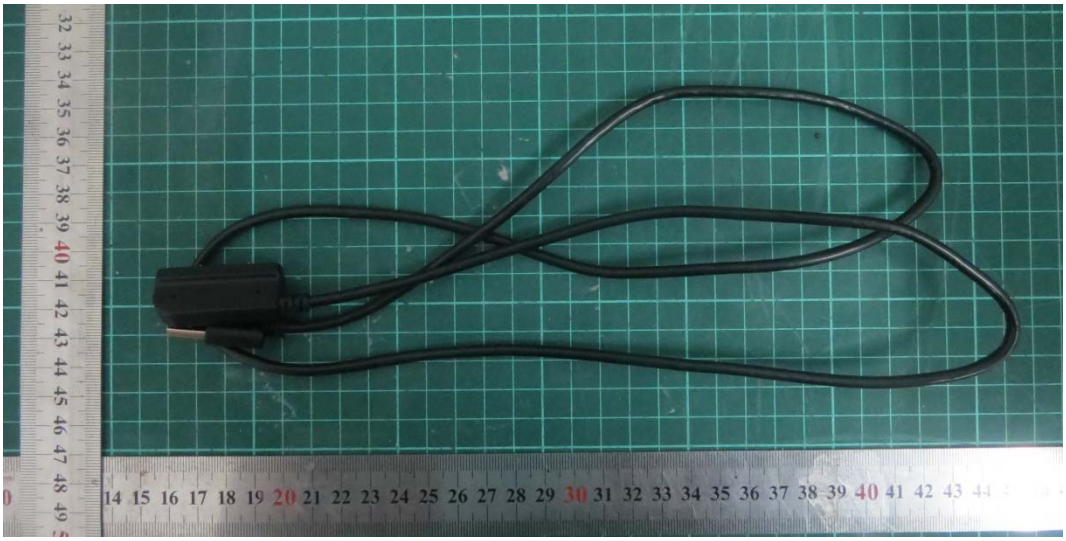
Front Side

Back Side

a: EUT

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

b: Adapter



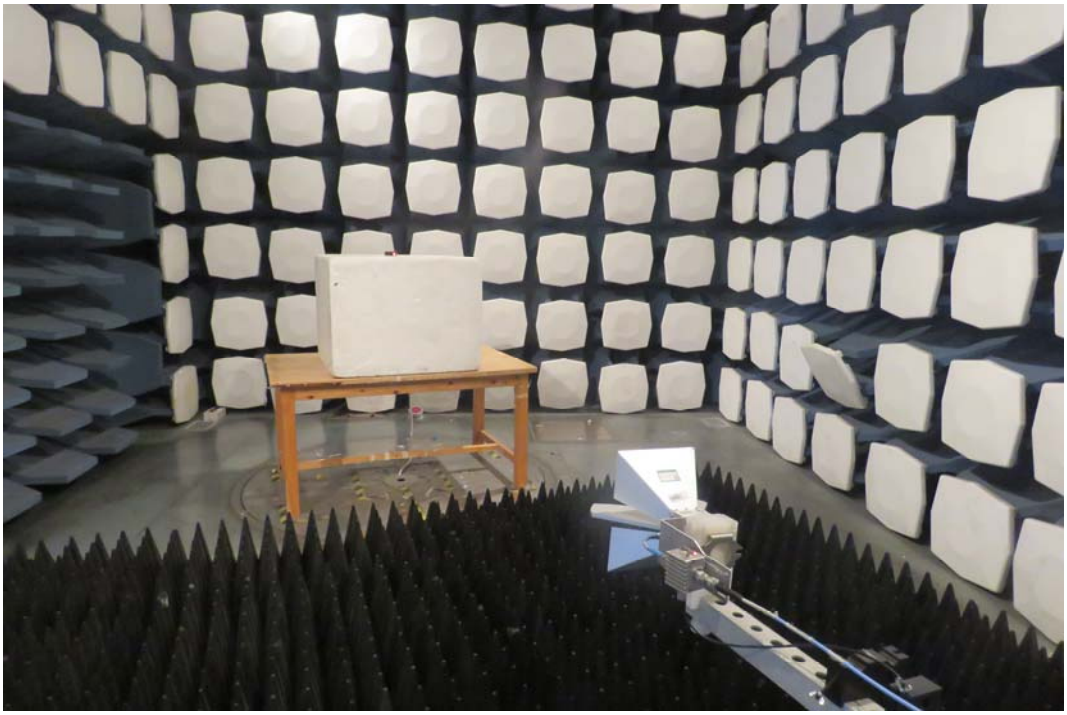
c: USB Cable

Picture 1 EUT and Accessory

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

A.2 Test Setup

30MHz-1GHz



Above 1GHz

Picture 2 Radiated Emission Test Setup

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.

Picture 3 Conducted Emission Test Setup

This report shall not be reproduced except in full, without the written approval of TA Technology (Shanghai) Co., Ltd.