RADIO TEST REPORT
EN 300 440 V2.2.1 (2018-07)

Product：	Smartphone
Trade Mark：	CUBOT
Model Name：	NOTE 30
Family Model：	N/A
Report No.：	S22092202103005

Prepared for

Shenzhen Huafurui Technology Co., Ltd

Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen,P.R. China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Huafurui Technology Co., Ltd
Address	:	Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen,P.R. China
Manufacturer's Name	:	Shenzhen Huafurui Technology Co., Ltd
Address	:	Unit 1401 &1402, 14/F, Jinqi Zhigu Mansion (No. 4 Building of Chongwen Garden), Crossing of the Liuxian Street and Tangling Road, Taoyuan Street, Nanshan District, Shenzhen,P.R. China

Product description

Product name	:	Smartphone
Trademark	:	CUBOT
Model and/or type reference	:	NOTE 30
Family Model	:	N/A
Sample number		S220922021009
Standards	:	EN 300 440 V2.2.1 (2018-07)

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the of Radio Equipment Regulations (SI 2017/1206) requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

Date of Test .....:

Date (s) of performance of tests	:	Sep 26. 2022 ~ Oct 25. 2022
Date of Issue	:	Oct 26. 2022
Test Result	:	**Pass**

Testing Engineer : (Allen Liu)

Authorized Signatory : (Alex Li)

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Revision History

Report No.	Version	Description	Issued Date
S22092202103005	Rev.01	Initial issue of report	Oct 26. 2022

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
EN 300 440 V2.2.1 (2018-07)

Clause	Description of Test Item	Remarks	Results
Transmitter Parameters			
4.2.2	-6 dB channel bandwidth	Conducted	Pass
4.2.2	Effective isotropic radiated power	Conducted	Pass
4.2.3	Permitted range of operation frequencies	Conducted	Pass
4.2.4	Unwanted emissions in the spurious domain	Radiated	Pass
4.2.5	Duty cycle	Conducted	Pass
4.2.6	Additional requirements for FHSS equipment	Conducted	N/A
Receiver Parameters			
4.3.3	Adjacent channel selectivity(For Receiver category 1)	Conducted	N/A
4.3.4	Blocking or desensitization(For Receiver category 1,2,3)	Conducted	Pass
4.3.5	Spurious emissions(For Receiver category 1,2,3)	Radiated	Pass

Note: The antenna gain provided by customer is used to calculate the EIRP result. NTEK is not responsible for the accuracy of antenna gain parameter

1.1 TEST FACILITY

Shenzhen NTEK Testing Technology Co., Ltd.
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China
FCC Registered No.: 463705 IC Registered No.:9270A-1
CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Radio frequency	±1 x 10-7
2	RF power (conducted)	±2,5 dB
3	Radiated emission of transmitter, valid to 26,5 GHz	±6 dB
4	Radiated emission of transmitter, valid between 26,5 GHz and 66 GHz	±8 dB
5	Radiated emission of receiver, valid to 26,5 GHz	±6 dB
6	Radiated emission of receiver, valid between 26,5 GHz and 66 GHz	±8 dB
7	Temperature	±1℃
8	Humidity	±5 %
9	Voltage (DC)	±1 %
10	Voltage (AC, < 10 kHz)	±2 %
NOTE: For radiated emissions above 26,5 GHz it may not be possible to achieve measurement uncertainties complying with the levels specified in this table. In these cases alone it is acceptable to employ the alternative interpretation procedure specified in EN 300440 V2.2.1 clause 5.9.1.		

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smartphone
Trade Mark	CUBOT
Model Name	NOTE 30
Family Model	N/A
Model Difference	N/A
Product Description	Operation Frequency: 5745-5825 MHz for 802.11a/n20/ac20; 5755-5795 MHz for 802.11n40/ac40; 5775MHz for 802.11 ac80; Data Rate: 802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS7; 802.11ac(VHT20/ VHT40/VHT80): NSS1, MCS0-MCS9, NSS2 Modulation: OFDM with BPSK/QPSK/16QAM/64QAM/256QAM Channel No.: 5 channels for 802.11a/n20/ac20 in the 5745-5825MHz band ; 2 channels for 802.11 n40/ac40 in the 5755-5795MHz band ; 1 channels for 802.11 ac80 in the 5775MHz band ; Antenna Designation: PIFA Antenna Antenna Gain(Peak) 0.3dBi
Receiver category	☐ Category 1: Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person). ☐ Category 2: Medium reliable SRD communication media e.g. causing inconvenience to persons, which cannot simply be overcome by other means. ☒ Category 3: Standard reliable SRD communication media e.g. Inconvenience to persons, which can simply be overcome by other means (e.g. manual).
Channel List	Refer to below
Adapter	Model: HJ-0502000-UK Input: 100-240V~50/60Hz, 0.3A Output: 5.0V⎓2.0A 10.0W
Battery	DC 3.85V, 4000mAh
Rating	DC 3.85V from battery or DC 5V from Adapter.
Hardware Version	A567-MB-V9.0
Software Version	CUBOT_NOTE_30_C063C_V01_20220920

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Channel list:

Frequency and Channel list for 802.11a/n/ac(20 MHz) band IV (5745-5825MHz):

802.11a/n/ac(20 MHz) Carrier Frequency Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	153	5765	157	5785	161	5805
165	5825	-	-	-	-	-	-

Frequency and Channel list for 802.11n/ac(40MHz) band IV (5755-5795MHz):

802.11n/ac 40MHz Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795	-	-

Frequency and Channel list for 802.11ac(80MHz) band IV (5775MHz):

802.11ac 80MHz Carrier Frequency Channel	
Channel	Frequency (MHz)
155	5775

2.2 TEST CONDITIONS

	Normal Test Conditions	Extreme Test Conditions
Temperature	15°C - 35°C	-10°C ~ 40°C Note1
Relative Humidity	20% - 75%	N/A
Power Rating	DC 3.85V	N/A
Test voltage	DC 3.85V	DC 4.2V-DC 3.4V Note2

Note:

(1) The temperature range as declared by the manufacturer; or one of the following specified temperature ranges:
- Temperature category I (General): -20 °C to +55 °C;
- Temperature category II (Portable): -10 °C to +55 °C;
- Temperature category III (Equipment for normal indoor use): 5 °C to +35 °C.

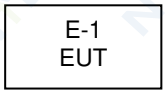
(2) The High Voltage 4.2V and Low Voltage 3.4V was declarated by manufacturer.

2.3 DESCRIPTION OF TEST CONDITIONS

For Conducted Test	
Pretest Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 155

For Radiated Test	
Final Test Mode	Description
Mode 1	802.11a /n/ ac 20 CH149/ CH157/ CH 165
Mode 2	802.11n/ ac40 CH 151 / CH 159
Mode 3	802.11 ac80 CH 155

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Series No.	Note
E-1	Smartphone	NOTE 30	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” means “shielded” or “with ferrite core”;”NO” means “unshielded” or”without ferrite core”

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
EMI Test Receiver	R&S	ESPI7	101318	2022.04.06	2023.04.05	1 year
Bilog Antenna	TESEQ	CBL6111D	31216	2022.03.30	2023.03.29	1 year
Turn Table	EM	SC100_1	60531	N/A	N/A	N/A
Antnna Mast	EM	SC100	N/A	N/A	N/A	N/A
Horn Antenna	EM	EM-AH-10180	2011071402	2022.03.31	2023.03.30	1 year
Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2022.04.06	2023.04.05	1 year
Test Cable (30MHz-1GHz)	N/A	R-01	N/A	2020.05.11	2023.05.10	3 year
Test Cable (1-18GHz)	N/A	R-02	N/A	2020.05.11	2023.05.10	3 year
50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
Pre-Amplifier	EMC	EMC051835SE	980246	2022.06.17	2023.06.16	1 year
Spectrum Analyzer	Agilent	E4407B	MY45108040	2022.04.06	2023.04.05	1 year
Filter	TRILTHIC	2400MHz	29	2020.04.07	2023.04.06	3 year
Attenuator	Weinschel	33-10-33	AR4010	2020.04.07	2023.04.06	3 year
Attenuator	Weinschel	24-20-34	BP4485	2020.04.07	2023.04.06	3 year
MXA Signal Analyzer	Agilent	N9020A	MY49100060	2022.06.16	2023.06.15	1 year
ESG VETCTOR SIGNAL GENERAROR	Agilent	E4438C	MY45093347	2022.04.06	2023.04.05	1 year
PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2022.06.16	2023.06.15	1 year
Power Splitter	Mini-Circuits/ USA	ZN2PD-63-S+	SF025101428	2020.04.07	2023.04.06	3 year
Coupler	Mini-Circuits	ZADC-10-63-S +	SF794101410	2020.04.07	2023.04.06	3 year
Directional Coupler	MCLI/USA	CB11-20	0D2L51502	2020.07.17	2023.07.16	3 year
Attenuator	Agilent	8495B	MY42147029	2020.04.13	2023.04.12	3 year
Power Meter	DARE	RPR3006W	15I00041SNO 84	2022.06.16	2023.06.15	1 year
MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2022.04.06	2023.04.05	1 year
Wideband Radio Communication Tester Specifications	R&S	CMW500	148500	2022.04.06	2023.04.05	1 year
temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

3. EQUIVALENT ISOTROPICALLY RADIATED POWER (E.I.R.P.)

3.1 APPLICABILITY

The equivalent isotropically radiated power requirement shall apply to all transmitters.

3.2 LIMITS

Table 2: Maximum radiated peak power (e.i.r.p.)

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

3.3 GENERAL REQUIREMENTS

1. To measure e.i.r.p. it is first necessary to determine the appropriate method of measurement: see EN 300440 V2.2.1 clauses 4.2.2.3.1 and 4.2.2.3.2. The -6 dB transmitter bandwidth shall be determined using a 100 kHz measuring bandwidth in order to establish which measurement method is applicable:

Condition		Method of measurement
☐ Non spread spectrum transmitters with a -6 dB bandwidth of up to 20 MHz and spread spectrum transmitters with channel bandwidth of up to 1 MHz;	☐Non spread spectrum equipment with a -6 dB bandwidth of 20 MHz or less and a duty cycle above 50 %;	Refer to section 3.4.1
	☐Spread spectrum equipment with a -6 dB channel bandwidth of 1 MHz or less.	
☒ for all other transmitter bandwidths.	☐equipment with a -6 dB bandwidth greater than 20 MHz, and equipment with a duty cycle below 50 %;;	Refer to section 3.4.2
	☒spread spectrum equipment with a channel bandwidth above 1 MHz..	

2. Measurements shall be performed at normal test conditions.

3.4 TEST PROCEDURES

3.4.1 FOR NON SPREAD SPECTRUM TRANSMITTERS

The measurement shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range. These frequencies shall be recorded.

Equipment measured as constant envelope modulation equipment

For practical reasons, measurements shall be performed only at the highest power level at which the transmitter is intended to operate. The measurement arrangement in figure 2 shall be used.
The measurement shall be performed preferably in the absence of modulation.
When it is not possible to measure it in the absence of modulation, this fact shall be stated in test reports.
The transmitter shall be set in continuous transmission mode. If this is not possible, the measurements shall be carried
out in a period shorter than the duration of the transmitted burst. It may be necessary to extend the duration of the burst.
The transmitter shall be connected to an artificial antenna (see clause 5.8.2) and the power delivered to this artificial antenna shall be measured.
The equivalent isotropically radiated power is then calculated from the measured value, the known antenna gain, relative to an isotropic antenna, and if applicable, any losses due to cables and connectors in the measurement system.

Equipment measured as non-constant envelope modulation equipment
The measurement shall be performed with test signals D-M2 or D-M3 as appropriate.
The transmitter shall be preferably set in continuous transmission mode. If this is not possible, the measurement can be performed in discontinuous mode.
The transmitter shall be connected to an artificial antenna (see clause 5.8.2) and the power delivered to this artificial antenna shall be measured. The measuring instrument shall have a measurement bandwidth not less than sixteen times the channel bandwidth.
The equivalent isotropically radiated power is then calculated from the measured value, the known antenna gain, relative to an isotropic antenna, and if applicable, any losses due to cables and connectors in the measurement system.

3.4.2 FOR ALL OTHER TRANSMITTER BANDWIDTHS

Step 1:
• using a suitable means, the output of the transmitter shall be coupled to a matched diode detector;
• the output of the diode detector shall be connected to the vertical channel of an oscilloscope;
• the combination of the diode detector and the oscilloscope shall be capable of faithfully reproducing the envelope peaks and the duty cycle of the transmitter output signal;
• the observed duty cycle of the transmitter (Tx on/(Tx on + Tx off)) shall be noted as x, ($0 < x < 1$) And recorded.
Step 2:
• the average output power of the transmitter shall be determined using a wideband, calibrated RF power meter with a matched thermocouple detector or an equivalent thereof and, where applicable, with an integration period that exceeds the repetition period of the transmitter by a factor 5 or more. The observed value shall be recorded as "A" (in dBm);
• the e.i.r.p. shall be calculated from the above measured power output A, the observed duty cycle x, and the applicable antenna assembly gain "G" in dBi, according to the formula:
- $P = A + G + 10 \log (1/x)$;
- P should be EIRP POWER.

3.5 TEST SETUP LAYOUT

3.6 EUT OPERATION DURING TEST

Where possible, the equipment shall be able to operate in a continuous transmit mode for testing purposes.

3.7 TEST RESULT FOR -6 DB BANDWIDTH

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	26°C	Relative Humidity：	60 %
Pressure：	1012 hPa	Test Voltage ：	DC 3.85V (NORMAL)
Test Mode ：	Mode 1/2/3		

Test data reference attachment

3.8 TEST RESULT FOR E.I.R.P

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	26°C	Relative Humidity：	60 %
Pressure：	1012 hPa	Test Voltage ：	DC 3.85V (NORMAL)
Test Mode ：	Mode 1/2/3		

Test data reference attachment

4. PERMITTED RANGE OF OPERATING FREQUENCIES

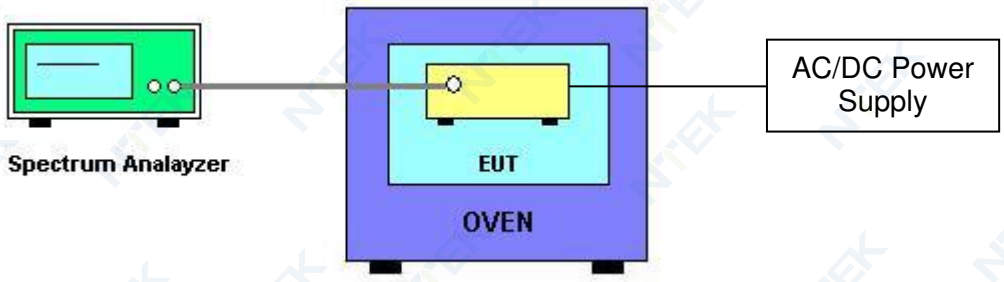
4.1 APPLIED PROCEDURES / LIMIT

The Permitted range of operating frequencies shall apply to all transmitters.
Limits:The width of the power spectrum envelope is fH -fL for a given operating frequency. In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of fL and the highest value of fH resulting from the adjustment of the equipment to the lowest and highest operating frequencies.
The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) of the transmitter shall fall within the assigned frequency band.
For all equipment the frequency range shall lie within the frequency band given by section 3.2, table 2. For non-harmonized frequency bands the available frequency range may differ between national administrations.

4.2 TEST PROCEDURES

These measurements shall be performed under both normal and extreme operating conditions except for the occupied bandwidth assessment for which measurement at normal operating conditions is sufficient.
The measurement procedure shall be as follows:
a) put the spectrum analyser in video averaging mode with a minimum of 50 sweeps selected;
b) select the lowest operating frequency of the equipment under test and activate the transmitter with modulation applied. The RF emission of the equipment shall be displayed on the spectrum analyser;
c) using the marker of the spectrum analyser, find the lowest frequency below the operating frequency at which the spectral power density drops below the level given in clause 4.2.3. This frequency shall be recorded in the test report;
d) select the highest operating frequency of the equipment under test and find the highest frequency at which the spectral power density drops below the value given in clause 4.2.3. This frequency shall be recorded in the test report;
e) the difference between the frequencies measured in steps c) and d) is the operating frequency range. It shall be recorded in the test report.

4.3 TEST SETUP LAYOUT



4.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

4.5 TEST RESULTS

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	26°C	Relative Humidity：	60 %
Pressure：	1012 hPa	Test Voltage ：	DC 3.85V (NORMAL)
Test Mode ：	TX		

802.11a

Extreme condition				Frequency range (MHz)	
				F_L CH149	F_H CH165
T nom (°C)	20	V nom (V)	3.85	5736.63	5833.08
T min (°C)	-10	V max (V)	4.2	5736.641	5833.088
		V nom (V)	3.85	5736.652	5833.096
		V min (V)	3.4	5736.663	5833.104
T max (°C)	40	V max (V)	4.2	5736.674	5833.112
		V nom (V)	3.85	5736.685	5833.12
		V min (V)	3.4	5736.696	5833.128
Min. f_L / Max. f_H Band Edges				5736.630	5833.128
Indoor Use Limits				F_L > 5725.0 MHz	F_L < 5875.0 MHz
Result				**Complies**	

802.11n20

Extreme condition				Frequency range (MHz)	
				F_L CH149	F_H CH165
T nom (°C)	20	V nom (V)	3.85	5736.311	5833.932
T min (°C)	-10	V max (V)	4.2	5736.322	5833.94
		V nom (V)	3.85	5736.333	5833.948
		V min (V)	3.4	5736.344	5833.956
T max (°C)	40	V max (V)	4.2	5736.355	5833.964
		V nom (V)	3.85	5736.366	5833.972
		V min (V)	3.4	5736.377	5833.98
Min. f_L / Max. f_H Band Edges				5736.311	5833.980
Indoor Use Limits				F_L > 5725.0 MHz	F_L < 5875.0 MHz
Result				**Complies**	

802.11n40

Extreme condition				Frequency range (MHz)	
				F_L CH151	**F_H CH159**
T nom (°C)	20	V nom (V)	3.85	5737.046	5813.18
T min (°C)	-10	V max (V)	4.2	5737.057	5813.188
		V nom (V)	3.85	5737.068	5813.196
		V min (V)	3.4	5737.079	5813.204
T max (°C)	40	V max (V)	4.2	5737.09	5813.212
		V nom (V)	3.85	5737.101	5813.22
		V min (V)	3.4	5737.112	5813.228
Min. f_L / Max. f_H Band Edges				5737.046	5813.228
Indoor Use Limits				**F_L** > 5725.0 MHz	**F_L** < 5875.0 MHz
Result				**Complies**	

802.11ac20

Extreme condition				Frequency range (MHz)	
				F_L CH149	**F_H CH165**
T nom (°C)	20	V nom (V)	3.85	5736.058	5833.672
T min (°C)	-10	V max (V)	4.2	5736.069	5833.68
		V nom (V)	3.85	5736.08	5833.688
		V min (V)	3.4	5736.091	5833.696
T max (°C)	40	V max (V)	4.2	5736.102	5833.704
		V nom (V)	3.85	5736.113	5833.712
		V min (V)	3.4	5736.124	5833.72
Min. f_L / Max. f_H Band Edges				5736.058	5833.720
Indoor Use Limits				**F_L** > 5725.0 MHz	**F_L** < 5875.0 MHz
Result				**Complies**	

802.11ac40

Extreme condition				Frequency range (MHz)	
				F_L CH151	**F_H CH159**
T nom (°C)	20	V nom (V)	3.85	5737.767	5813.942
T min (°C)	-10	V max (V)	4.2	5737.778	5813.95
		V nom (V)	3.85	5737.789	5813.958
		V min (V)	3.4	5737.8	5813.966
T max (°C)	40	V max (V)	4.2	5737.811	5813.974
		V nom (V)	3.85	5737.822	5813.982
		V min (V)	3.4	5737.833	5813.99
Min. f_L / Max. f_H Band Edges				5737.767	5813.990
Indoor Use Limits				**F_L** > 5725.0 MHz	**F_L** < 5875.0 MHz
Result				**Complies**	

802.11ac80

Extreme condition				Frequency range (MHz)	
				F_L CH155	**F_H CH155**
T nom (°C)	20	V nom (V)	3.85	5737.48	5812.725
T min (°C)	-10	V max (V)	4.2	5737.491	5812.733
		V nom (V)	3.85	5737.502	5812.741
		V min (V)	3.4	5737.513	5812.749
T max (°C)	40	V max (V)	4.2	5737.524	5812.757
		V nom (V)	3.85	5737.535	5812.765
		V min (V)	3.4	5737.546	5812.773
Min. f_L / Max. f_H Band Edges				5737.480	5812.773
Indoor Use Limits				**F_L** > 5725.0 MHz	**F_L** < 5875.0 MHz
Result				**Complies**	

5. UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

5.1 APPLIED PROCEDURES / LIMIT

The unwanted emissions in the spurious domain requirement shall apply to all transmitters.

State	47 MHz to 74 MHz 87.5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other frequencies ≤□ 1 000 MHz	Frequencies > 1 000 MHz
Operating	4 nW /-54dBm	250 nW/-36dBm	1 μW /-30dBm
Standby	2 nW /-57dBm	2 nW /-57dBm	20 nW /-47dBm

5.2 MEASURING INSTRUMENTS AND SETTING

The following table is the setting of the Spectrum Analyzer.

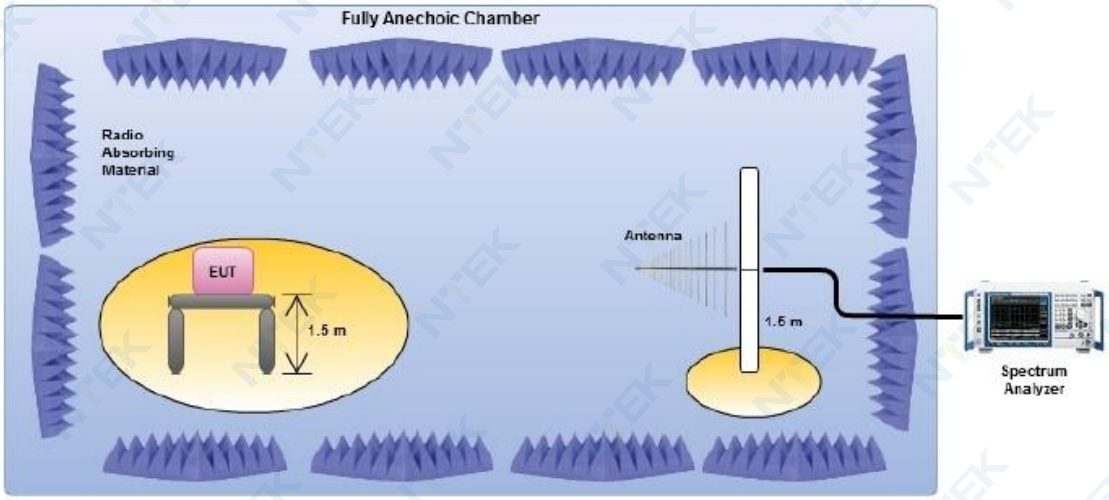
Spectrum Analyzer	Setting
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	40GHz
Detector	Positive Peak
Sweep Time	Auto
RB	For frequency 30MHz~1G:100 kHz~120 kHz For frequency above 1G:1MHz

5.3 TEST PROCEDURES

a. The EUT was placed on the top of the turntable in open test site area.
b. The test shall be made in the transmitting mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
c. This measurement shall be repeated with the transmitter in standby mode where applicable.
d. For 30~1000MHz spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable. For above 1G, using Horn antenna .
e. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
f. Replace the EUT by standard antenna and feed the RF port by signal generator.
g. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
h. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
i. The level of the spurious emission is the power level of (8) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.
j. If the level calculated in (9) is higher than limit by more than 6dB, then lower the RBW of the spectrum analyzer to 30KHz. If the level of this emission does not change by more than 2dB, then it is taken as narrowband emission, otherwise, wideband emission.
k. The measurement shall be repeated at the lowest and the highest channel of the stated frequency range.

5.4 TEST SETUP LAYOUT

Radiated Emission Test Set-Up



5.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

5.6 RESULTS OF STANDBY MODE SPURIOUS EMISSIONS

For the initial investigation on standby mode and receiving mode, no significant differences in spurious emissions were observed between these 2 modes. So test data for standby mode was omitted in this section.

5.7 TEST RESULTS

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Power ：	DC 3.85V (NORMAL)
Test Mode ：	TX-802.11a mode		

Below 1G :

Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	47.714	-68.01	14.47	-53.54	-36	-17.54	peak
V	101.609	-78.8	7.22	-71.58	-54	-17.58	peak
V	150.566	-72.61	12.25	-60.36	-36	-24.36	peak
V	182.254	-78.2	13.31	-64.89	-54	-10.89	peak
V	468.723	-71.69	15.91	-55.78	-36	-19.78	peak
V	652.135	-84.46	21.65	-62.81	-54	-8.81	peak
H	39.852	-74.02	18.31	-55.71	-36	-19.71	peak
H	93.825	-86.7	6.20	-80.50	-54	-26.50	peak
H	149.895	-71.48	10.27	-61.21	-36	-25.21	peak
H	204.587	-78.42	12.05	-66.37	-54	-12.37	peak
H	298.547	-74.15	12.93	-61.22	-36	-25.22	peak
H	673.736	-87.95	17.58	-70.37	-54	-16.37	peak

Remark:

Emission Level= Meter Reading+ Factor, Margin= Emission Level- Limit

Above 1G :

Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
operation frequency:5755 MHz							
V	2375.27	-72.61	2.61	-70.00	-30	-40.00	peak
V	5995.171	-73.5	3.32	-70.18	-30	-40.18	peak
V	2486.108	-67.01	8.34	-58.67	-30	-28.67	peak
V	4983.253	-75.39	8.72	-66.67	-30	-36.67	peak
H	2251.591	-67.57	3.12	-64.45	-30	-34.45	peak
H	5630.775	-67.45	8.53	-58.92	-30	-28.92	peak
H	2065.451	-69.14	9.58	-59.56	-30	-29.56	peak
H	3021.896	-75.36	14.73	-60.63	-30	-30.63	peak
operation frequency:5785 MHz							
V	2144.653	-76.18	2.61	-73.57	-30	-43.57	peak
V	4087.58	-75.99	3.32	-72.67	-30	-42.67	peak
V	2932.361	-73.73	8.34	-65.39	-30	-35.39	peak
V	5159.525	-70.87	8.72	-62.15	-30	-32.15	peak
V	2116.329	-67.17	3.12	-64.05	-30	-34.05	peak
H	3600.697	-76.23	8.53	-67.70	-30	-37.70	peak
H	2716.982	-67.21	9.58	-57.63	-30	-27.63	peak
H	3731.854	-70.83	14.73	-56.10	-30	-26.10	peak
H	3818.56	-67.21	14.73	-52.48	-30	-22.48	peak
operation frequency:5825 MHz							
V	2691.016	-68.69	2.61	-66.08	-30	-36.08	peak
V	3959.867	-72.85	3.32	-69.53	-30	-39.53	peak
V	2967.249	-67.67	8.34	-59.33	-30	-29.33	peak
V	4660.28	-69.03	8.72	-60.31	-30	-30.31	peak
V	2869.075	-70.73	3.12	-67.61	-30	-37.61	peak
H	3693.358	-72.78	8.53	-64.25	-30	-34.25	peak
H	2397.178	-67.29	9.58	-57.71	-30	-27.71	peak
H	5165.565	-69.98	14.73	-55.25	-30	-25.25	peak
H	3807.839	-76.46	14.73	-61.73	-30	-31.73	peak
Remark:							
Emission Level= Meter Reading+ Factor, Margin= Emission Level- Limit							

Note: Only the worst case 802.11a mode recorded in the report.

6. DUTY CYCLE

6.1 APPLICABILITY AND DESCRIPTION

Duty Cycle (DC) shall apply to all transmitting equipment except those which utilize Listen Before Talk (LBT) clause 4.4.2, or Detect And Avoid (DAA), clause 4.4.3. RFID transmitters operating in the 2 446 MHz to 2 454 MHz frequency band that transmit at a maximum radiated peak power level of less than 500 mW e.i.r.p. are also excluded.

Duty cycle is the ratio expressed as a percentage, of the cumulative duration of transmissions T_{on_cum} within an observation interval T_{obs}.

$$DC = \left(\frac{T_{on\_cum}}{T_{obs}}\right) F_{obs}$$ on an observation bandwidth F_{obs}.

Unless otherwise specified, T_{obs} is 1 hour and the observation bandwidth F_{obs} is the operational frequency band
Each transmission consists of an RF emission, or sequence of RF emissions separated by intervals < T_{Dis}.

6.2 LIMITS

Table 4 defines the maximum duty cycle within a 1 hour period.

Table 4: Duty cycle limits

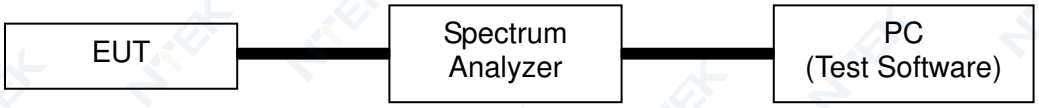
Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in annex D shall apply
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in annex D shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications	Limits shown in annex F shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

For devices with a 100 % duty cycle transmitting an unmodulated carrier most of the time, a time-out shut-off facility shall be implemented in order to improve the efficient use of spectrum. The method of implementation shall be declared by the manufacturer.

6.4 METHOD OF MEASUREMENT

Please refer to EN 300440 V2.2.1 Clause 4.2.5.3.

6.5 TEST SETUP



6.6 TEST RESULTS

EUT:	Smartphone	Model Name:	NOTE 30
Temperature:	26°C	Relative Humidity:	53 %
Pressure:	1012 hPa	Test Voltage:	DC 3.85V (NORMAL)
Test Mode:	Mode 1/2/3		

Test data reference attachment

7. SPURIOUS EMISSIONS – RX

7.1 APPLIED PROCEDURES / LIMIT

Clause	Test Item	Frequency(MHz)	Limit
4.3.5.4	Spurious emissions	30-1000	-57dBm
	(radiated)	Above 1000	-47dBm

7.2 MEASURING INSTRUMENTS AND SETTING

The following table is the setting of the Spectrum Analyzer.

Spectrum Analyzer	Setting
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	40GHz
Detector	Positive Peak
Sweep Time	Auto
RB	For frequency 30MHz~1G:100 kHz~120 kHz For frequency above 1G:1MHz

7.3 TEST PROCEDURES

a. The EUT was placed on the top of the turntable in open test site area.
b. The test shall be made in the receiving mode. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
c. For 30~1000MHz spurious emissions measurement, the broad band bi-log receiving antenna was placed 3 meters far away from the turntable.For above 1G, using Horn antenna .
d. The broadband receiving antenna was fixed on the same height with the EUT to find each suspected emissions of both horizontal and vertical polarization. Each recorded suspected value is indicated as Read Level (Raw).
e. Replace the EUT by standard antenna and feed the RF port by signal generator.
f. Adjust the frequency of the signal generator to the suspected emission and slightly rotate the turntable to locate the position with maximum reading.
g. Adjust the power level of the signal generator to reach the same reading with Read Level (Raw).
h. The level of the spurious emission is the power level of (7) plus the gain of the standard antenna in dBi and minus the loss of the cable used between the signal generator and the standard antenna.
i. The measurement shall be repeated at the lowest and the highest channel of the stated frequency range.

7.5 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 5.4.

7.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously receiving mode.

7.7 TEST RESULTS

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	26°C	Relative Humidity：	53 %
Pressure：	1012 hPa	Test Power ：	DC 3.85V (NORMAL)
Test Mode ：	RX-802.11a mode		

Below 1G :

Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	38.07	-83.63	18.82	-64.81	-57	-7.81	peak
V	96.942	-82.35	11.11	-71.24	-57	-14.24	peak
V	226.729	-80.9	11.41	-69.49	-57	-12.49	peak
V	300.121	-83.03	12.72	-70.31	-57	-13.31	peak
V	631.436	-81.44	12.66	-68.78	-57	-11.78	peak
V	662.28	-81.4	12.62	-68.78	-57	-11.78	peak
H	36.719	-80.38	19.94	-60.44	-57	-3.44	peak
H	88.116	-79.2	10.96	-68.24	-57	-11.24	peak
H	181.93	-82.55	9.42	-73.13	-57	-16.13	peak
H	359.094	-81.72	12.65	-69.07	-57	-12.07	peak
H	688.193	-82.75	11.78	-70.97	-57	-13.97	peak
H	501.481	-77.57	15.38	-62.19	-57	-5.19	peak

Remark:

Emission Level= Meter Reading+ Factor, Margin= Emission Level- Limit

Above 1G :

Polar (H/V)	Frequency (MHz)	Meter Reading (dBm)	Factor (dB)	Emission Level (dBm)	Limits (dBm)	Margin (dB)	Detector Type
V	2310.735	-81.51	11.33	-70.18	-47	-23.18	peak
V	4040.854	-80.63	10.97	-69.66	-47	-22.66	peak
V	2457.989	-82.37	10.14	-72.23	-47	-25.23	peak
V	5676.079	-78.56	16.83	-61.73	-47	-14.73	peak
V	2578.268	-80.13	10.52	-69.61	-47	-22.61	peak
H	5236.936	-80.5	11.70	-68.80	-47	-21.80	peak
H	2574.25	-84.26	6.62	-77.64	-47	-30.64	peak
H	3163.26	-82.6	14.99	-67.61	-47	-20.61	peak
H	3995.293	-69.67	8.25	-61.42	-47	-14.42	peak
H	3040.016	-80.65	14.99	-65.66	-47	-18.66	peak

Remark:

Emission Level= Meter Reading+ Factor, Margin= Emission Level- Limit

8. ADJACENT CHANNEL SELECTIVITY

8.1 APPLICABILITY

This requirement applies to channelized Category 1 receivers..

8.2 LIMITS

The adjacent channel selectivity of the equipment under specified conditions shall not be less than -30 dBm + k.

The correction factor, k, is as follows:

$$k = -20\log f - 10\log BW$$

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

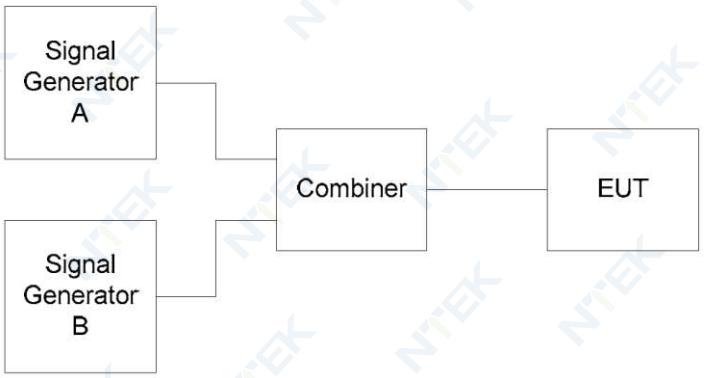
The factor k is limited within the following:

- -40 dB < k < 0 dB.

8.3 METHODS OF MEASUREMENT

This measurement shall be conducted under normal conditions.
Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, either:
a) via a test fixture or a test antenna to the receiver integrated, dedicated or test antenna; or
b) directly to the receiver permanent or temporary antenna connector.
The method of coupling to the receiver shall be stated in the test report.
Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.
Signal generator B shall be unmodulated and shall be adjusted to the adjacent channel centre frequency immediately
above that of the wanted signal.
Initially signal generator B shall be switched off and using signal generator A the level that still gives sufficient
response shall be established. The output level of generator A shall then be increased by 3 dB.
Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.
The measurements shall be repeated with signal generator B unmodulated and adjusted to the adjacent channel centre immediately below the wanted signal.
The adjacent channel selectivity shall be recorded for the upper and lower adjacent channels as the level in dBm of the unwanted signal.
For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres.
In this case, the adjacent selectivity shall be recorded as the level in dBm of lowest level of the unwanted signal
(generator B) resulting in a non-read of the tag.

8.4 TEST SETUP LAYOUT



8.5 TEST RESULTS

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	N/A
Test Mode ：	N/A		

Not applicable.

9. BLOCKING OR DESENSITIZATION

9.1 APPLICABILITY

This requirement applies to all Category 1, 2, and 3 SRD communication media receivers.

9.2 LIMITS

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table 6,except at frequencies on which spurious responses are found.

Table 6: Limits for blocking or desensitization

Receiver category	Limit
1	-30 dBm + k
2	-45 dBm + k
3	-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10log BW

Where:

- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

The factor k is limited within the following:

- -40 dB < k < 0 dB.

9.3 TEST PROCEDURES

This measurement shall be conducted under normal conditions.

Two signal generators A and B shall be connected to the receiver via a combining network to the receiver, either:

a) via a test fixture or a test antenna to the receiver integrated, dedicated or test antenna; or

b) directly to the receiver permanent or temporary antenna connector.

The method of coupling to the receiver shall be stated in the test report.

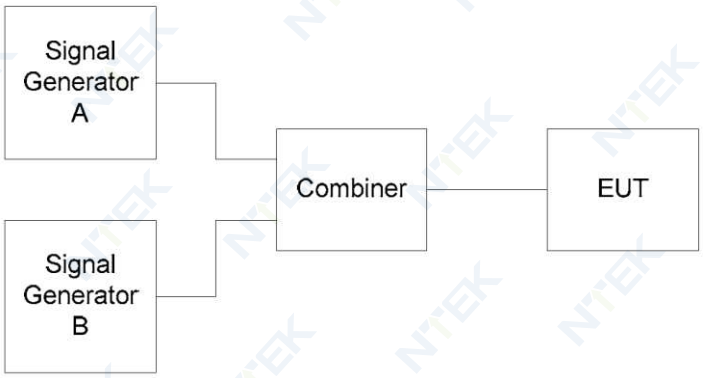
Signal generator A shall be at the nominal frequency of the receiver, with normal modulation of the wanted signal.Signal generator B shall be unmodulated and shall be adjusted to a test frequency at approximately 10 times, 20 times and 50 times of the occupied bandwidth above upper band edge of occupied bandwidth.Initially signal generator B shall be switched off and using signal generator A the level which still gives sufficient response shall be established. The output level of generator A shall then be increased by 3 dB.Signal generator B is then switched on and adjusted until the wanted criteria are met. This level shall be recorded.

The measurement shall be repeated with the test frequency for signal generator B at 10 times, 20 times and 50 times of the occupied bandwidth below the lower band edge of the occupied bandwidth.

The blocking or desensitization shall be recorded as the level in dBm of lowest level of the unwanted signal(generator B).

For tagging systems (e.g. RF identification, anti-theft, access control, location and similar systems) signal generator A may be replaced by a physical tag positioned at 70 % of the measured system range in metres. In this case, the blocking or desensitization shall be recorded as the ratio in dB of lowest level of the unwanted signal (generator B) resulting in a non-read of the tag. to the declared sensitivity of the receiver +3 dB.

8.4 TEST SETUP LAYOUT



9.4 TEST RESULTS

EUT：	Smartphone	Model Name ：	NOTE 30
Temperature：	24 ℃	Relative Humidity：	54%
Pressure：	1010 hPa	Test Voltage ：	DC 3.85V (NORMAL)
Test Mode ：	RX		

802.11a

5745 MHz

Flow= 5736.769MHz; Fhigh= 5753.155MHz, occupied bandwidth=16.386MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5745 MHz	5745	-64.69	-	-
	10 times lower band edge of the occupied bandwidth	5572.909	-	-29.71	-87.33(Note[1])
	20 times lower band edge of the occupied bandwidth	5409.049	-	-35.49	-87.33
	50 times lower band edge of the occupied bandwidth	4917.469	-	-35.53	-87.33
	10 times upper band edge of the occupied bandwidth	5917.015	-	-30.20	-87.33
	20 times upper band edge of the occupied bandwidth	6080.875	-	-35.33	-87.33
	50 times upper band edge of the occupied bandwidth	6572.455	-	-31.00	-87.33

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -27.33

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11a

5825 MHz

Flow= 5816.793MHz; Fhigh= 5833.183MHz, occupied bandwidth=16.39MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5825 MHz	5825	-65.36	-	-
	10 times lower band edge of the occupied bandwidth	5652.893	-	-30.19	-87.45(Note[1])
	20 times lower band edge of the occupied bandwidth	5488.993	-	-34.10	-87.45
	50 times lower band edge of the occupied bandwidth	4997.293	-	-35.25	-87.45
	10 times upper band edge of the occupied bandwidth	5997.083	-	-30.28	-87.45
	20 times upper band edge of the occupied bandwidth	6160.983	-	-34.66	-87.45
	50 times upper band edge of the occupied bandwidth	6652.683	-	-31.09	-87.45

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -27.45

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11n20

5745 MHz

Flow= 5736.173MHz; Fhigh= 5753.751MHz, occupied bandwidth=17.578MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5745 MHz	5745	-65.82	-	-
	10 times lower band edge of the occupied bandwidth	5560.393	-	-28.52	-87.64(Note[1])
	20 times lower band edge of the occupied bandwidth	5384.613	-	-33.65	-87.64
	50 times lower band edge of the occupied bandwidth	4857.273	-	-34.31	-87.64
	10 times upper band edge of the occupied bandwidth	5929.531	-	-29.61	-87.64
	20 times upper band edge of the occupied bandwidth	6105.311	-	-35.42	-87.64
	50 times upper band edge of the occupied bandwidth	6632.651	-	-31.11	-87.64

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -27.64

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11n20

5825 MHz

Flow= 5816.193MHz; Fhigh= 5833.775MHz, occupied bandwidth=17.582MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5825 MHz	5825	-64.60	-	-
	10 times lower band edge of the occupied bandwidth	5640.373	-	-28.34	-87.76(Note[1])
	20 times lower band edge of the occupied bandwidth	5464.553	-	-34.07	-87.76
	50 times lower band edge of the occupied bandwidth	4937.093	-	-35.07	-87.76
	10 times upper band edge of the occupied bandwidth	6009.595	-	-29.13	-87.76
	20 times upper band edge of the occupied bandwidth	6185.415	-	-35.39	-87.76
	50 times upper band edge of the occupied bandwidth	6712.875	-	-30.40	-87.76

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -27.76

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11n40

5755 MHz

Flow= 5736.93MHz; Fhigh= 5772.87MHz, occupied bandwidth=35.94MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5755 MHz	5755	-65.33	-	-
	10 times lower band edge of the occupied bandwidth	5377.53	-	-29.80	-90.76(Note[1])
	20 times lower band edge of the occupied bandwidth	5018.13	-	-35.52	-90.76
	50 times lower band edge of the occupied bandwidth	3939.93	-	-35.01	-90.76
	10 times upper band edge of the occupied bandwidth	6132.27	-	-29.68	-90.76
	20 times upper band edge of the occupied bandwidth	6491.67	-	-34.95	-90.76
	50 times upper band edge of the occupied bandwidth	7569.87	-	-31.63	-90.76

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -30.76

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11n40

5795 MHz

Flow= 5776.986MHz; Fhigh= 5812.982MHz, occupied bandwidth=35.996MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5795 MHz	5795	-64.91	-	-
	10 times lower band edge of the occupied bandwidth	5417.026	-	-29.13	-90.82(Note[1])
	20 times lower band edge of the occupied bandwidth	5057.066	-	-33.70	-90.82
	50 times lower band edge of the occupied bandwidth	3977.186	-	-35.03	-90.82
	10 times upper band edge of the occupied bandwidth	6172.942	-	-29.03	-90.82
	20 times upper band edge of the occupied bandwidth	6532.902	-	-34.98	-90.82
	50 times upper band edge of the occupied bandwidth	7612.782	-	-30.02	-90.82

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -30.82

Where:

- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

802.11ac80

5775 MHz

Flow= 5737.068MHz; Fhigh= 5812.66MHz, occupied bandwidth=75.592MHz

Receiver category	Frequency offset	Test Frequency (MHz)	Measurement Vause(dB) (Generator A)	Measurement Vause(dB) (Generator B)	≧Limit(dB)
3	5795 MHz	5775	-65.30	-	-
	10 times lower band edge of the occupied bandwidth	4981.148	-	-28.95	-94.02(Note[1])
	20 times lower band edge of the occupied bandwidth	4225.228	-	-33.98	-94.02
	50 times lower band edge of the occupied bandwidth	1957.468	-	-34.35	-94.02
	10 times upper band edge of the occupied bandwidth	6568.580	-	-30.11	-94.02
	20 times upper band edge of the occupied bandwidth	7324.500	-	-34.66	-94.02
	50 times upper band edge of the occupied bandwidth	9592.260	-	-30.11	-94.02

Note1 :

The limit :

-60 dBm + k

The correction factor, k, is as follows:

k = -20log f -10logBW

k = -34.02

Where:

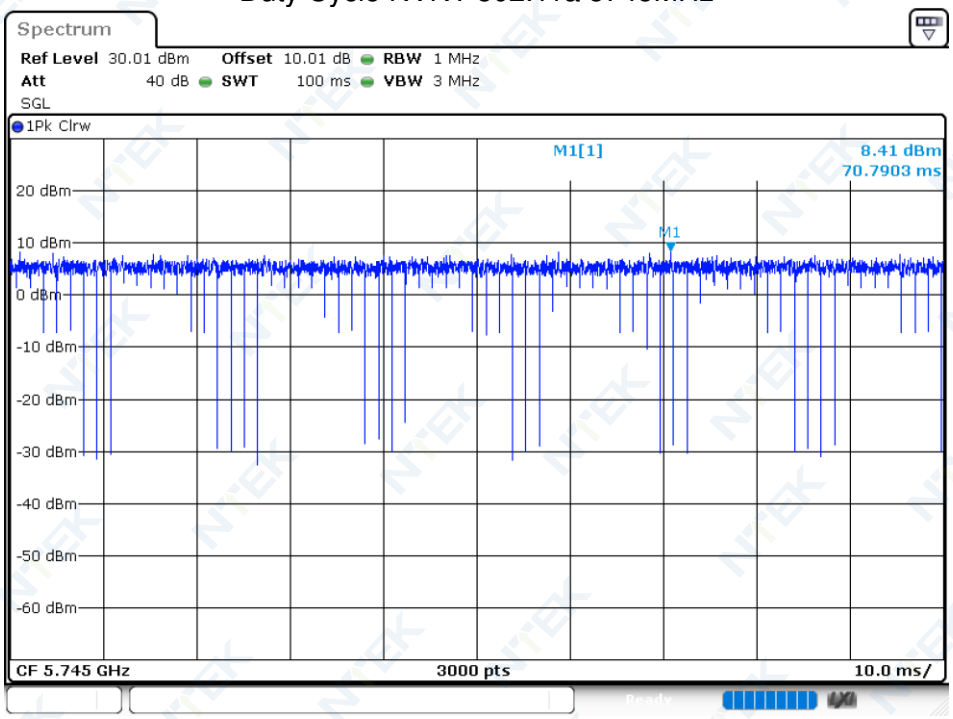
- f is the frequency in GHz;
- BW is the occupied bandwidth in MHz.

10. TEST RESULTS

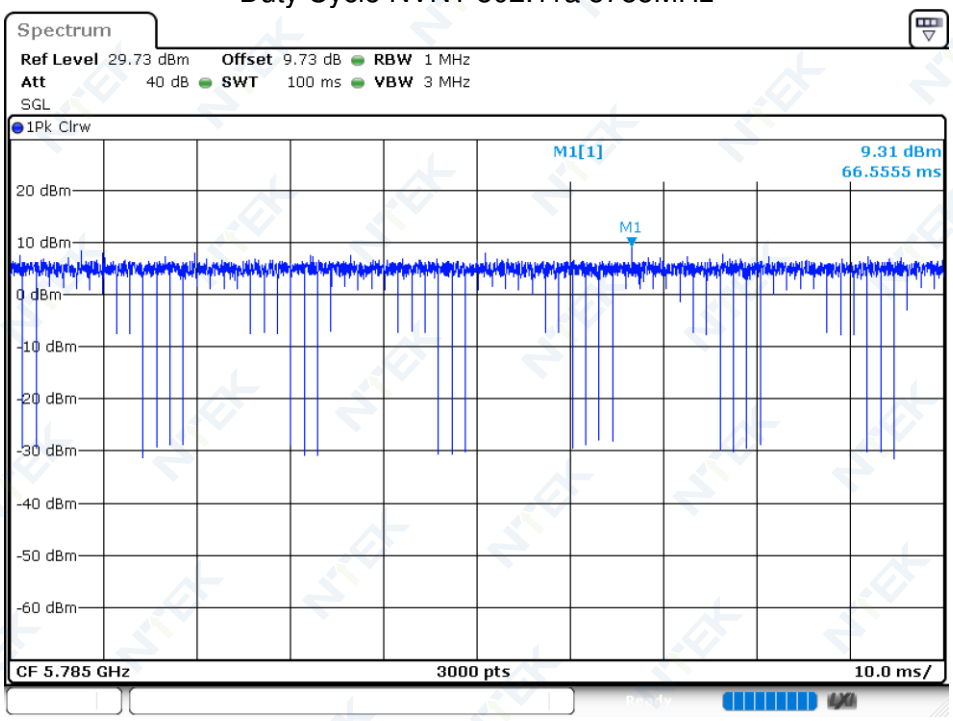
10.1 DUTY CYCLE

Condition	Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor (dB)
NVNT	802.11a	5745	99.23	0.03
NVNT	802.11a	5785	99.23	0.03
NVNT	802.11a	5825	99.2	0.03
NVNT	802.11ac20	5745	99.2	0.03
NVNT	802.11ac20	5785	99.17	0.04
NVNT	802.11ac20	5825	99.17	0.04
NVNT	802.11ac40	5755	95.97	0.18
NVNT	802.11ac40	5795	95.6	0.2
NVNT	802.11ac80	5775	87.57	0.58
NVNT	802.11n(HT20)	5745	97.5	0.11
NVNT	802.11n(HT20)	5785	99.17	0.04
NVNT	802.11n(HT20)	5825	99.17	0.04
NVNT	802.11n(HT40)	5755	96.17	0.17
NVNT	802.11n(HT40)	5795	96.13	0.17

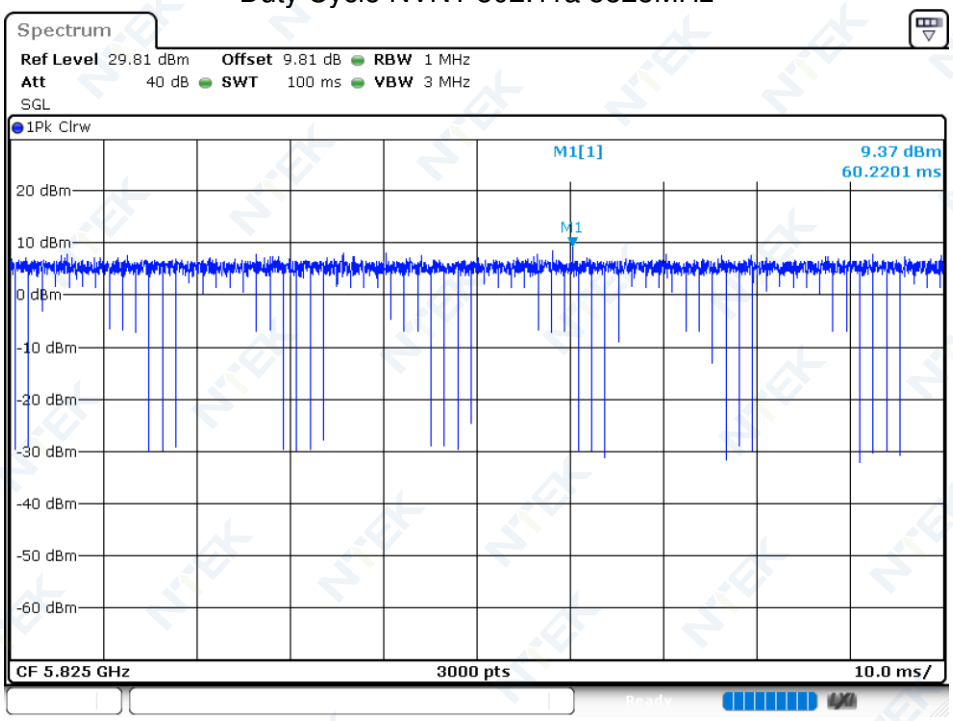
Duty Cycle NVNT 802.11a 5745MHz



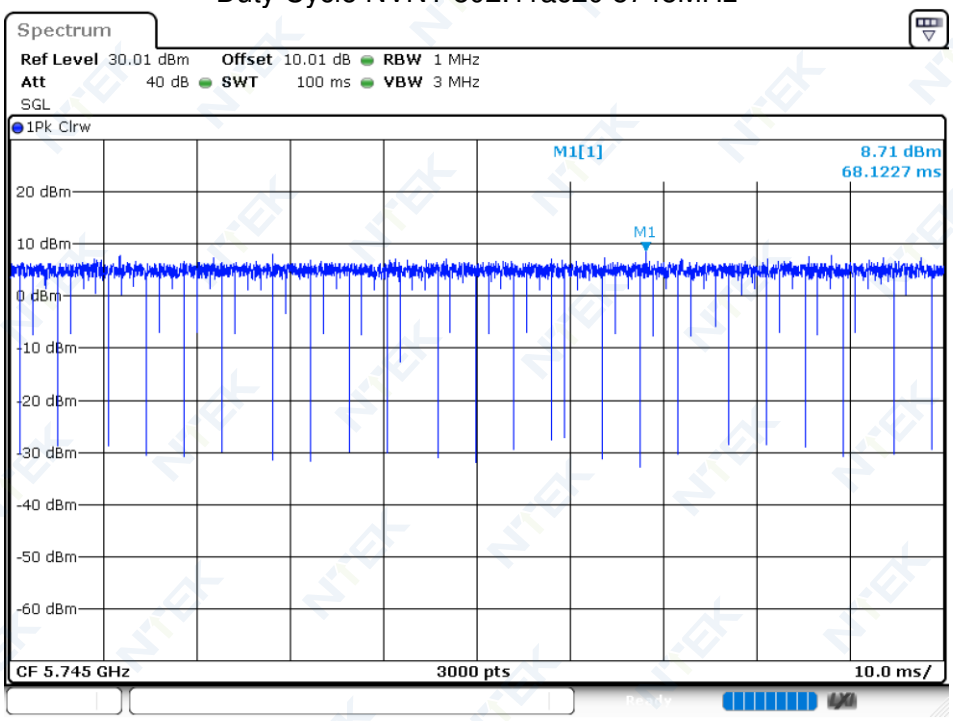
Duty Cycle NVNT 802.11a 5785MHz



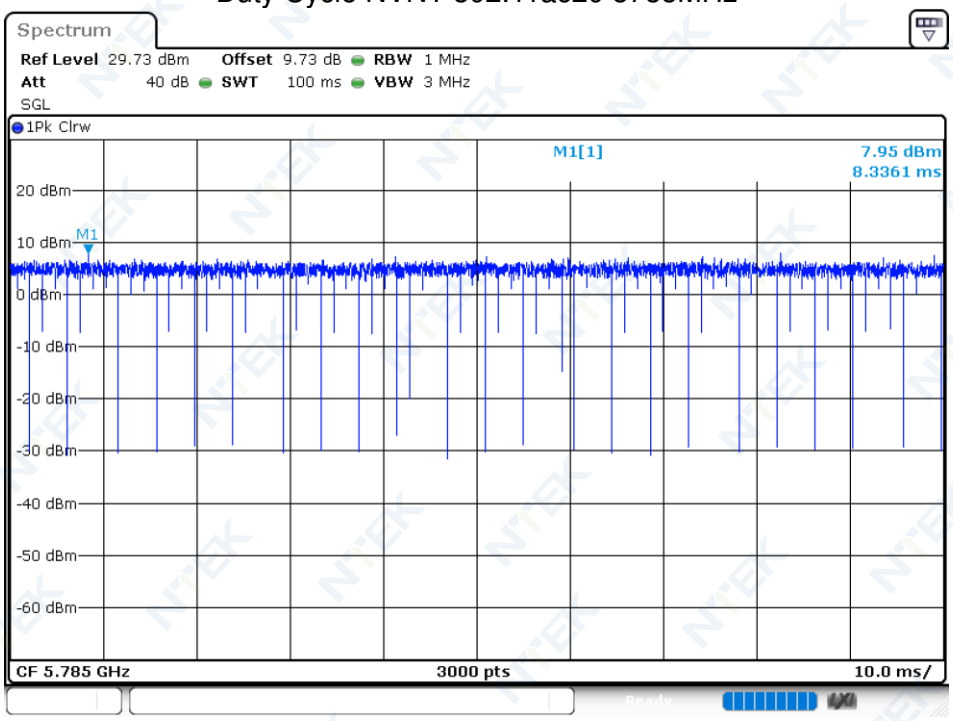
Duty Cycle NVNT 802.11a 5825MHz



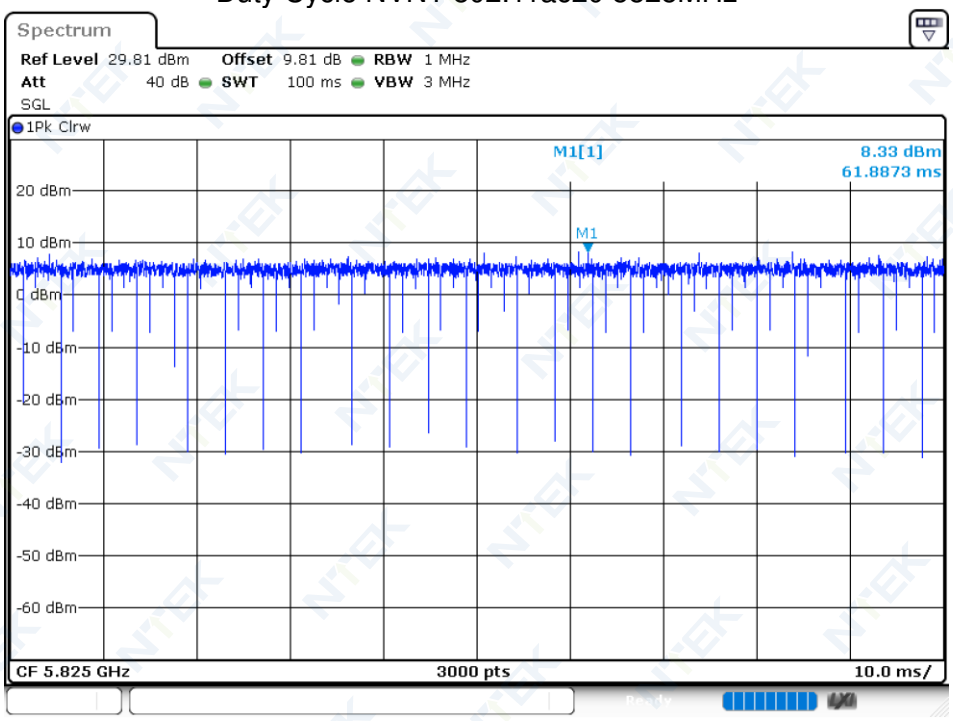
Duty Cycle NVNT 802.11ac20 5745MHz



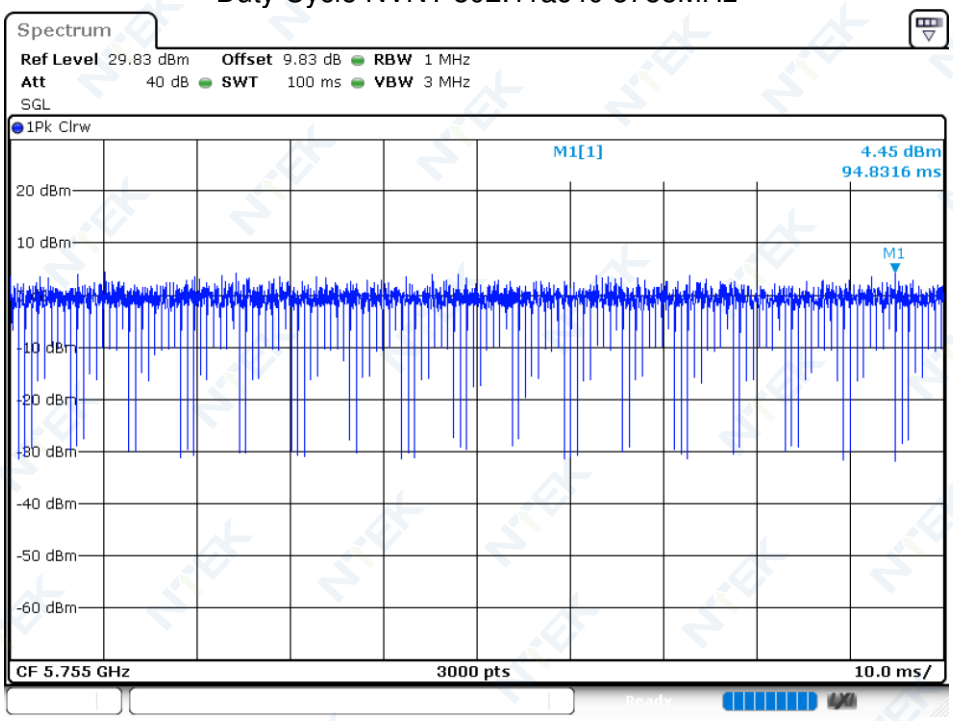
Duty Cycle NVNT 802.11ac20 5785MHz



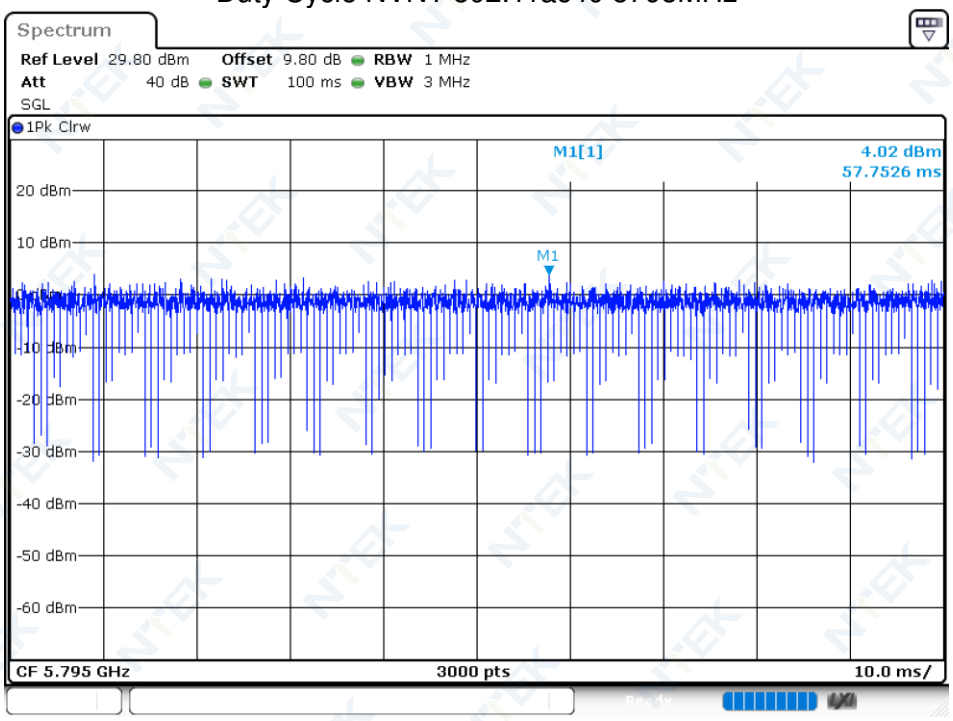
Duty Cycle NVNT 802.11ac20 5825MHz



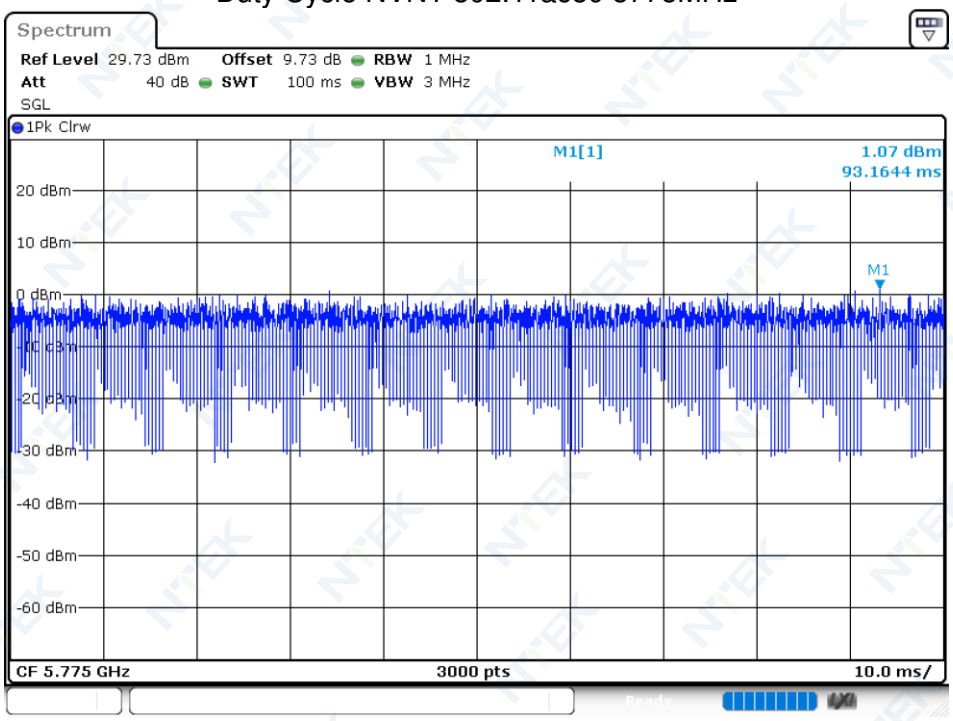
Duty Cycle NVNT 802.11ac40 5755MHz



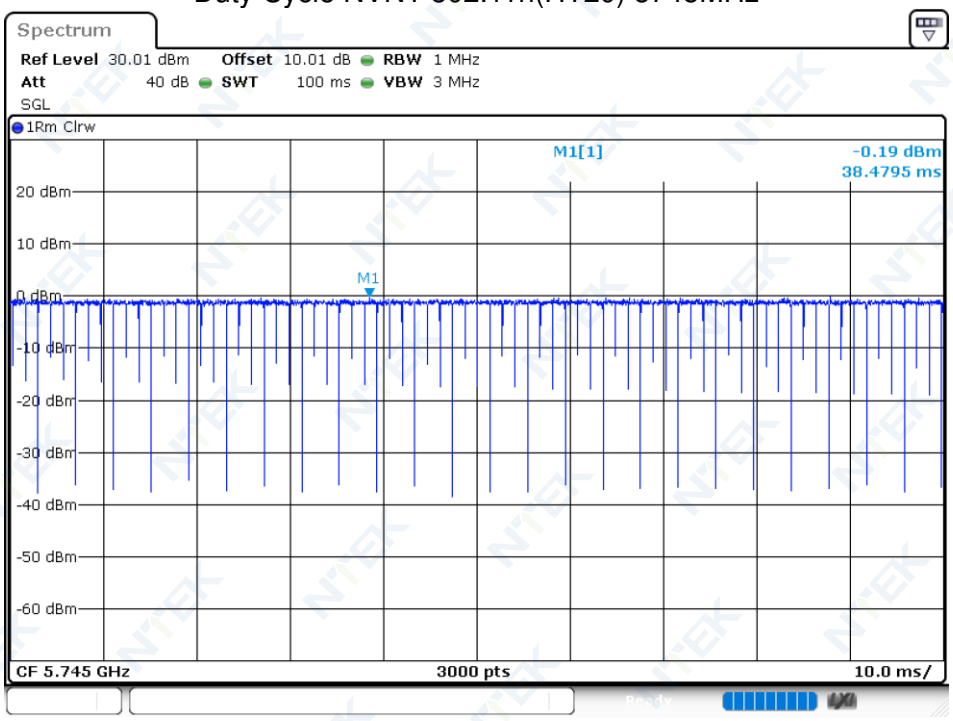
Duty Cycle NVNT 802.11ac40 5795MHz



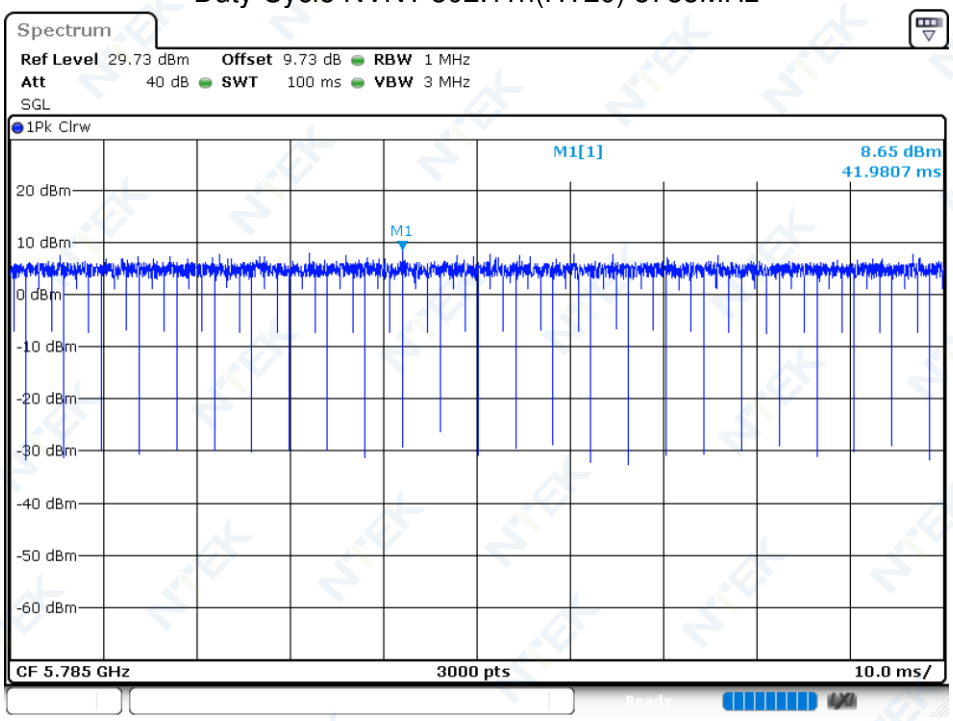
Duty Cycle NVNT 802.11ac80 5775MHz



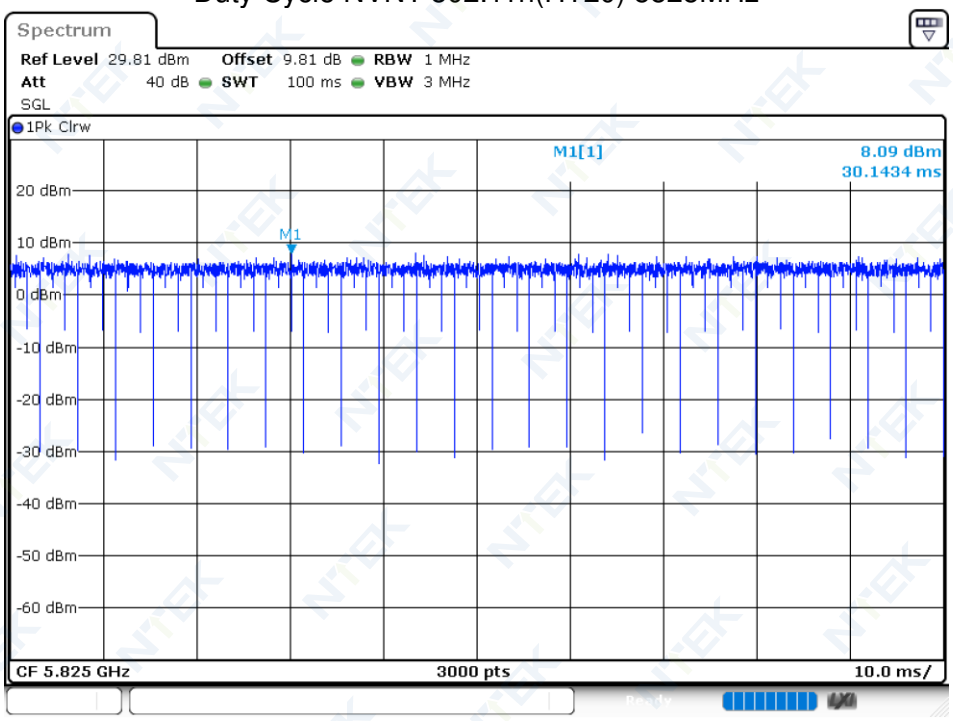
Duty Cycle NVNT 802.11n(HT20) 5745MHz



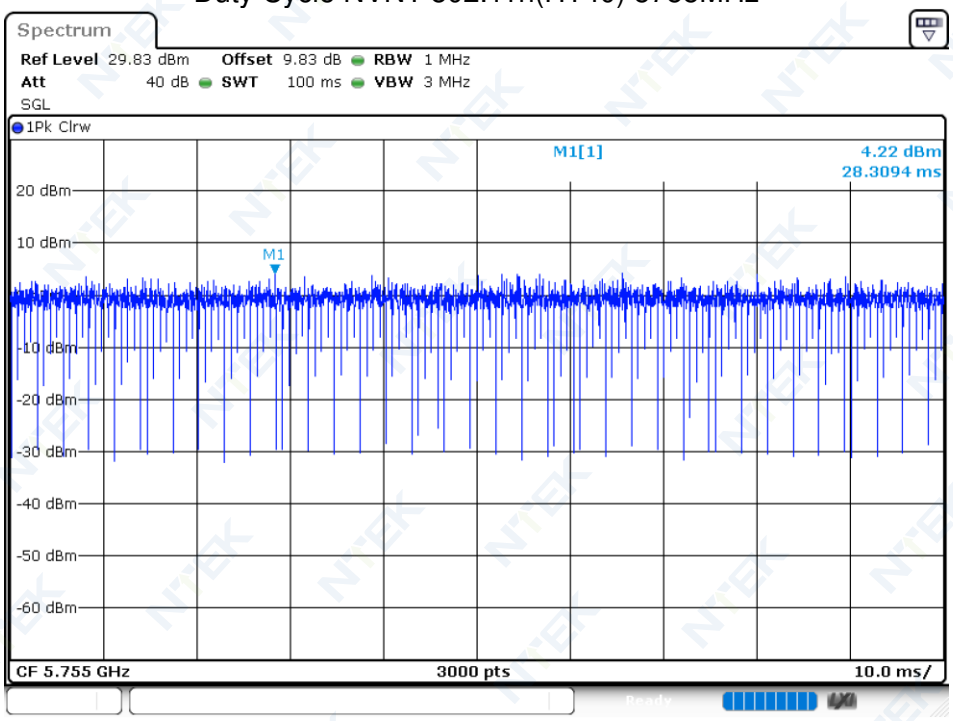
Duty Cycle NVNT 802.11n(HT20) 5785MHz



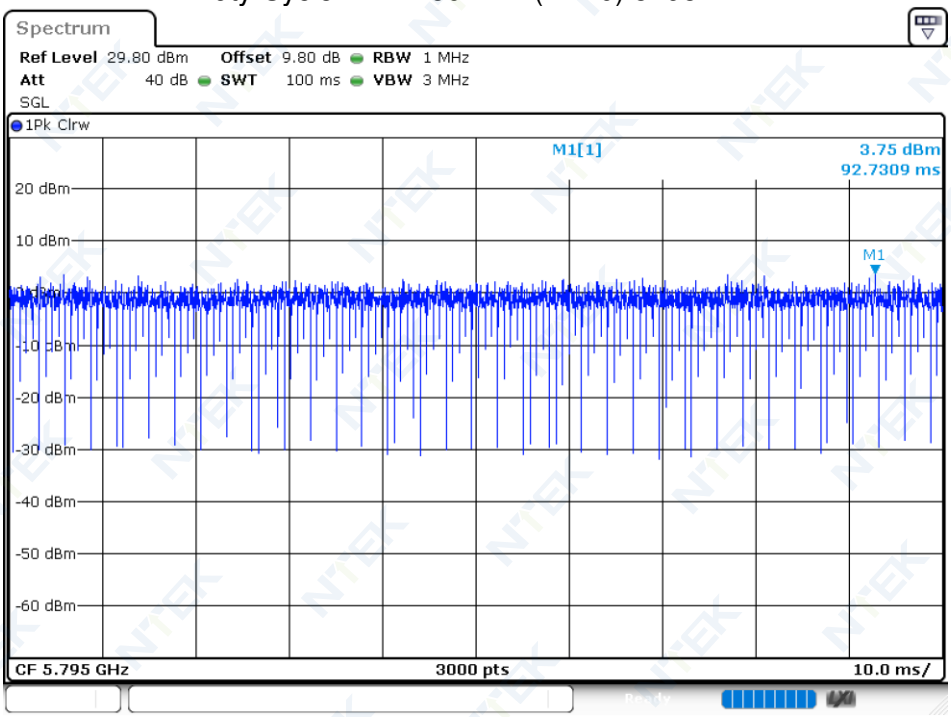
Duty Cycle NVNT 802.11n(HT20) 5825MHz



Duty Cycle NVNT 802.11n(HT40) 5755MHz



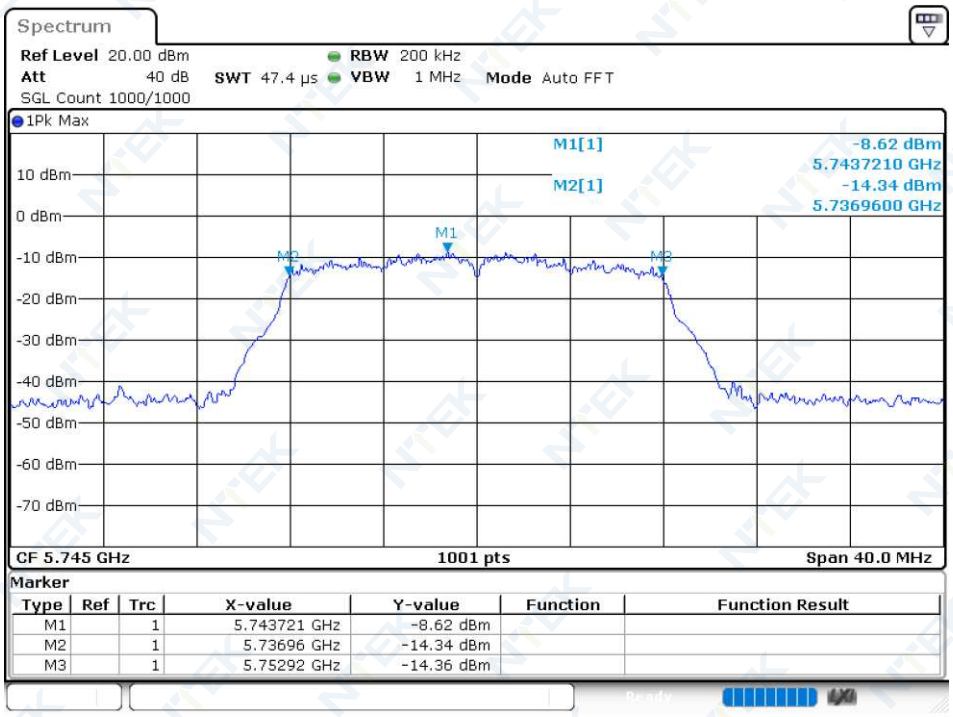
Duty Cycle NVNT 802.11n(HT40) 5795MHz



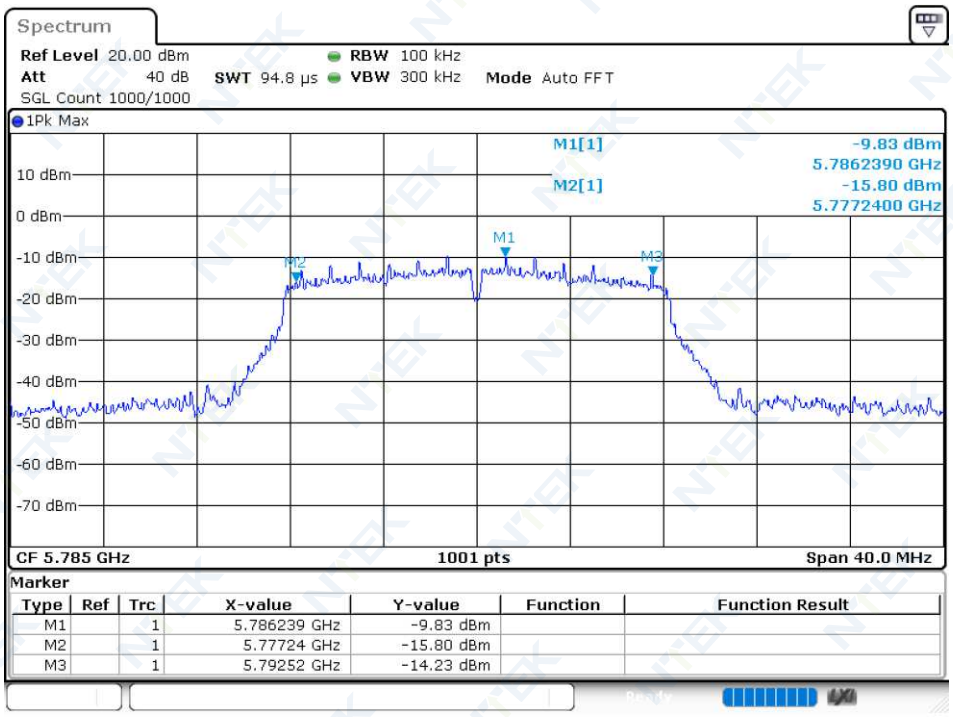
10.2 -6DB EMISSION BANDWIDTH

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	802.11a	5745	Ant 1	15.96	0.5	Pass
NVNT	802.11a	5785	Ant 1	15.28	0.5	Pass
NVNT	802.11a	5825	Ant 1	15.12	0.5	Pass
NVNT	802.11ac20	5745	Ant 1	16.08	0.5	Pass
NVNT	802.11ac20	5785	Ant 1	15.12	0.5	Pass
NVNT	802.11ac20	5825	Ant 1	15.08	0.5	Pass
NVNT	802.11ac40	5755	Ant 1	35.12	0.5	Pass
NVNT	802.11ac40	5795	Ant 1	35.12	0.5	Pass
NVNT	802.11ac80	5775	Ant 1	75.2	0.5	Pass
NVNT	802.11n(HT20)	5745	Ant 1	15.12	0.5	Pass
NVNT	802.11n(HT20)	5785	Ant 1	15.12	0.5	Pass
NVNT	802.11n(HT20)	5825	Ant 1	15.08	0.5	Pass
NVNT	802.11n(HT40)	5755	Ant 1	35.12	0.5	Pass
NVNT	802.11n(HT40)	5795	Ant 1	35.12	0.5	Pass

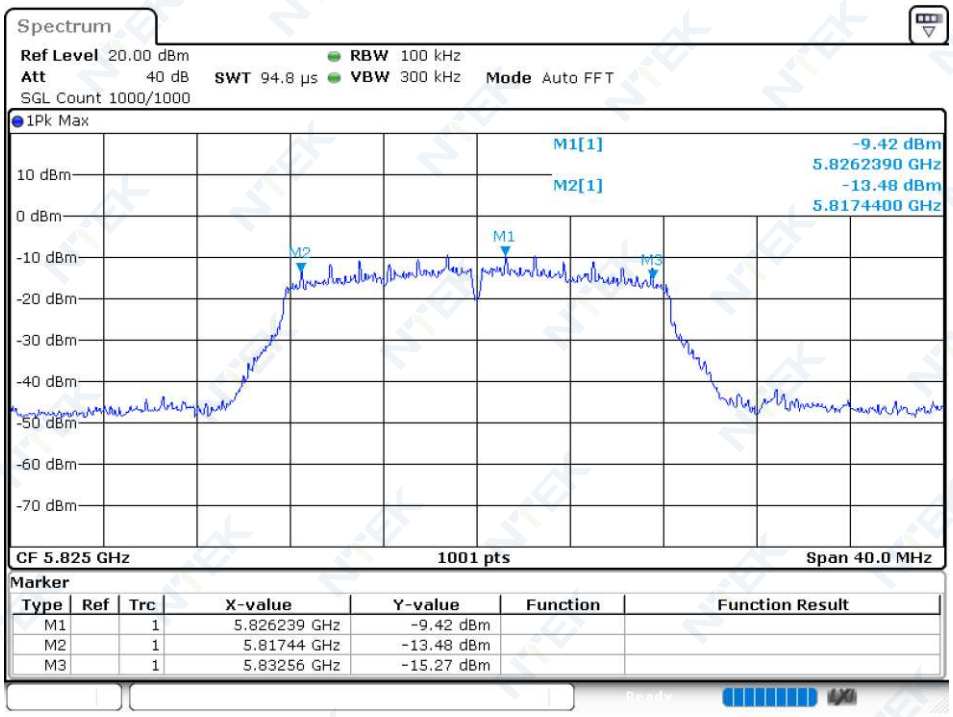
EBW NVNT 802.11a 5745MHz Ant1



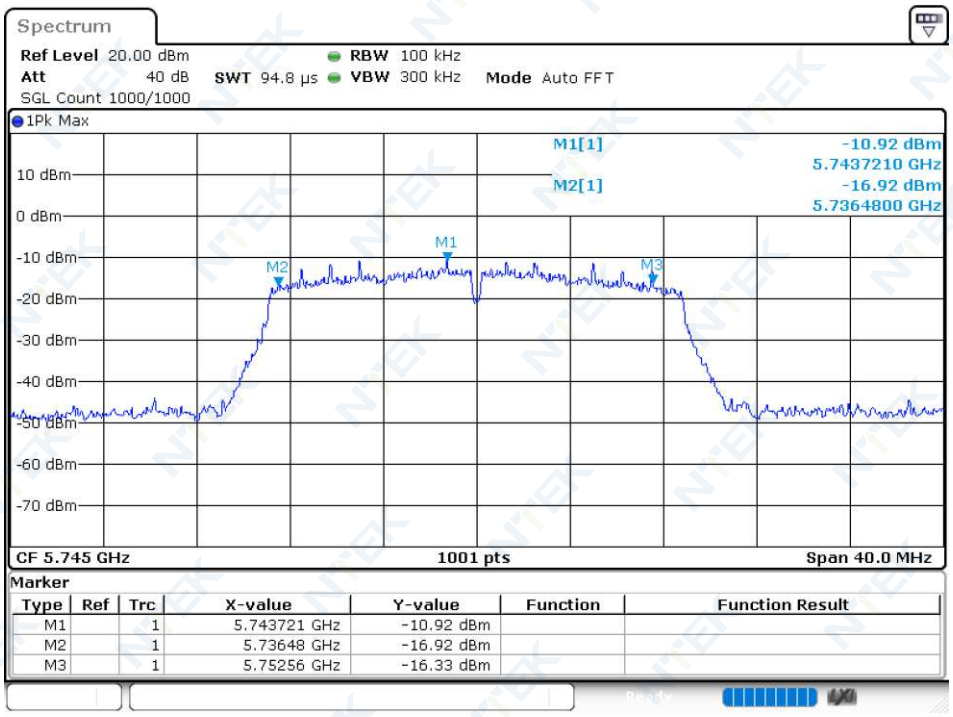
EBW NVNT 802.11a 5785MHz Ant1



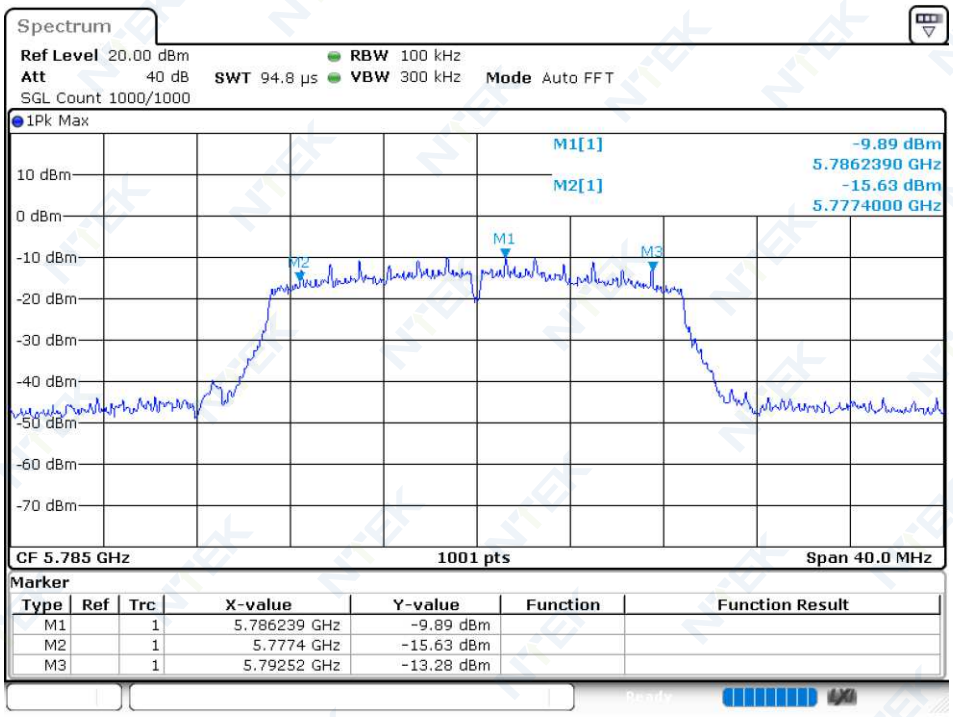
EBW NVNT 802.11a 5825MHz Ant1



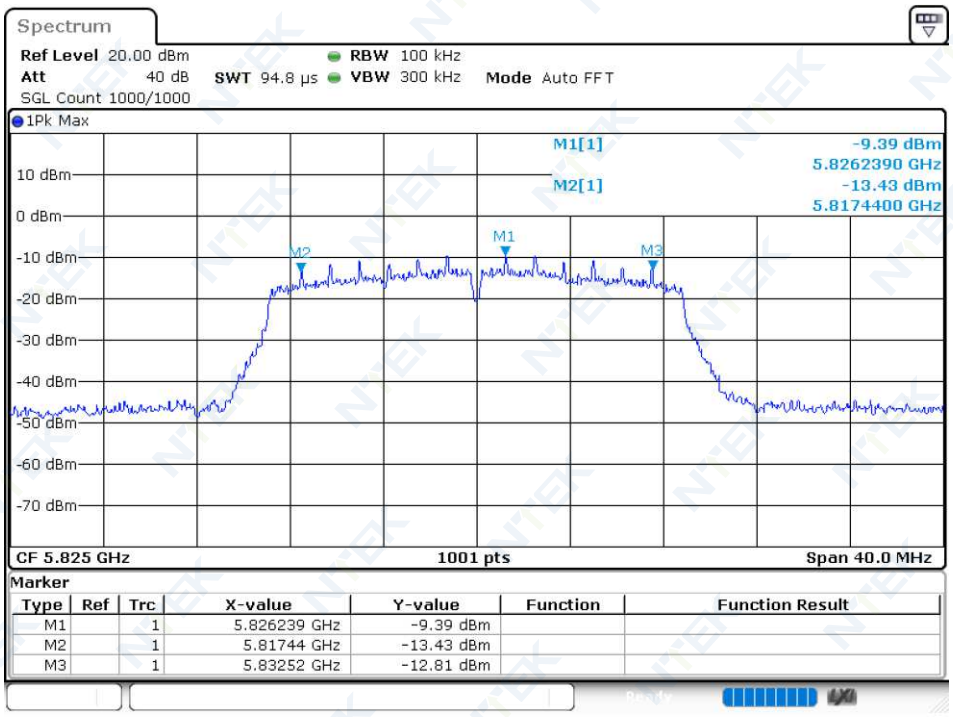
EBW NVNT 802.11ac20 5745MHz Ant1



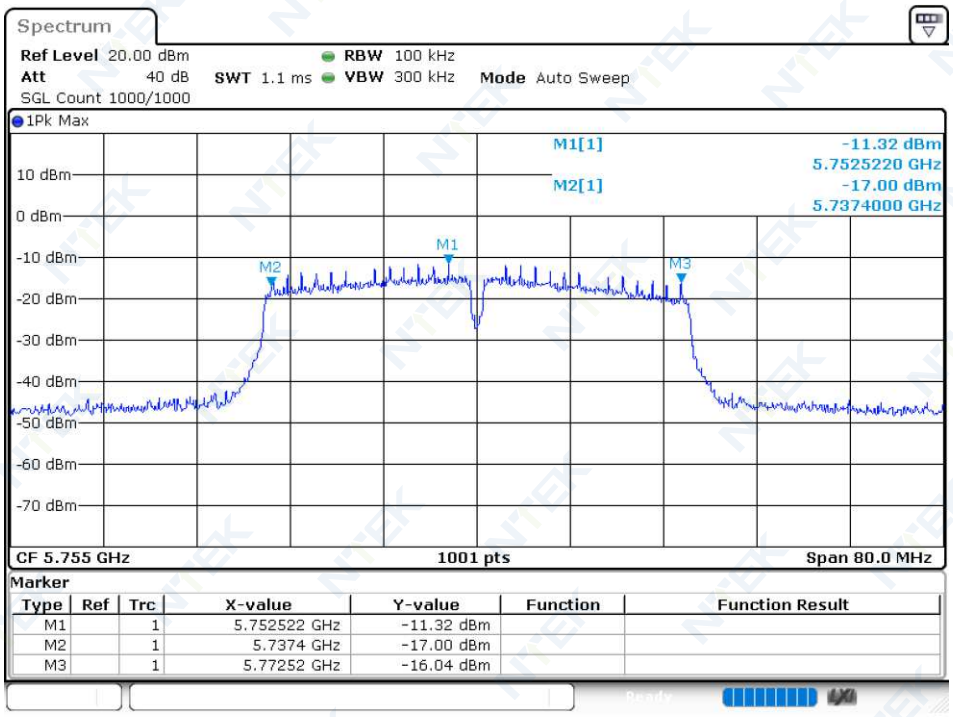
EBW NVNT 802.11ac20 5785MHz Ant1



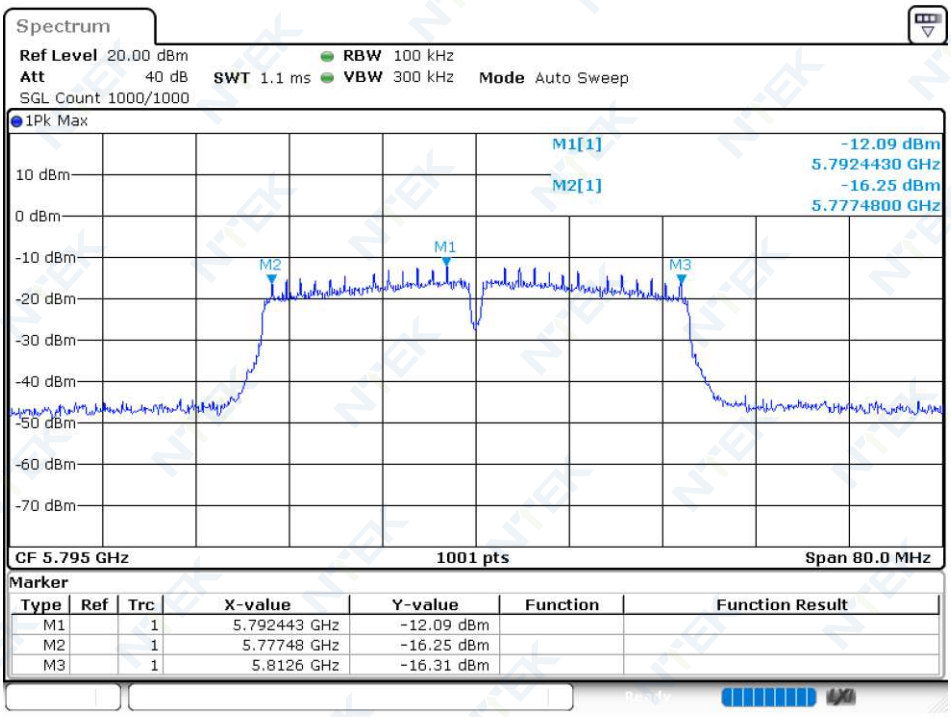
EBW NVNT 802.11ac20 5825MHz Ant1



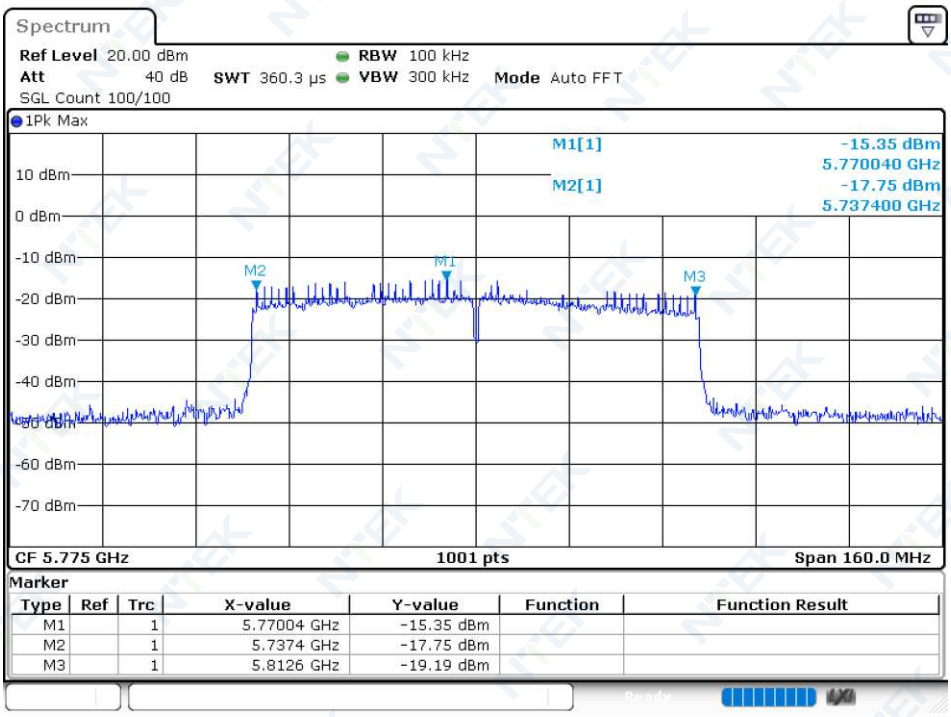
EBW NVNT 802.11ac40 5755MHz Ant1



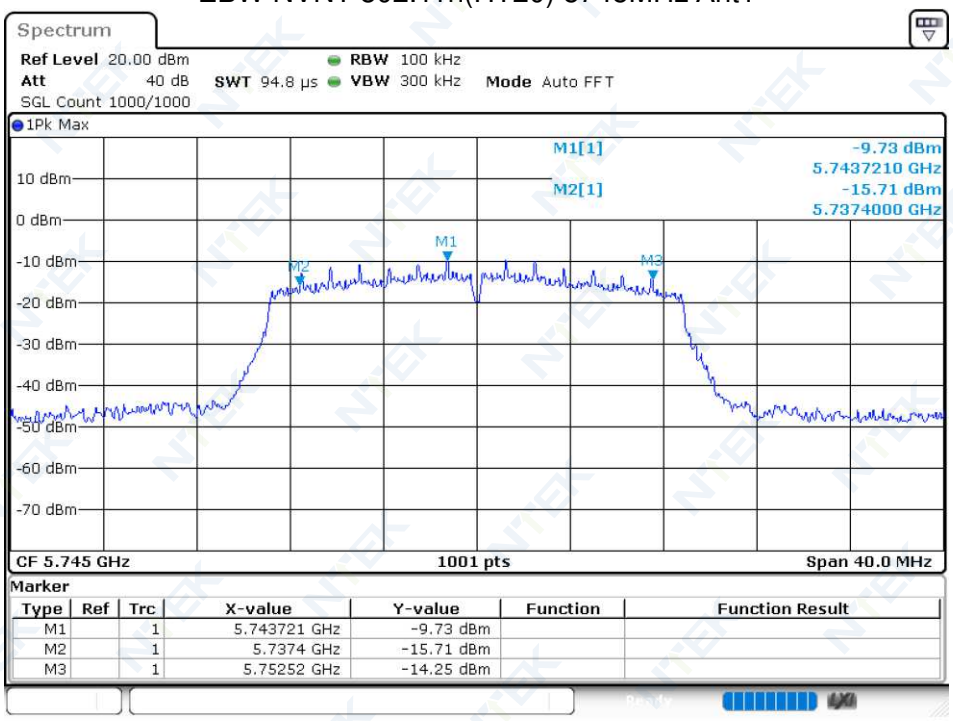
EBW NVNT 802.11ac40 5795MHz Ant1



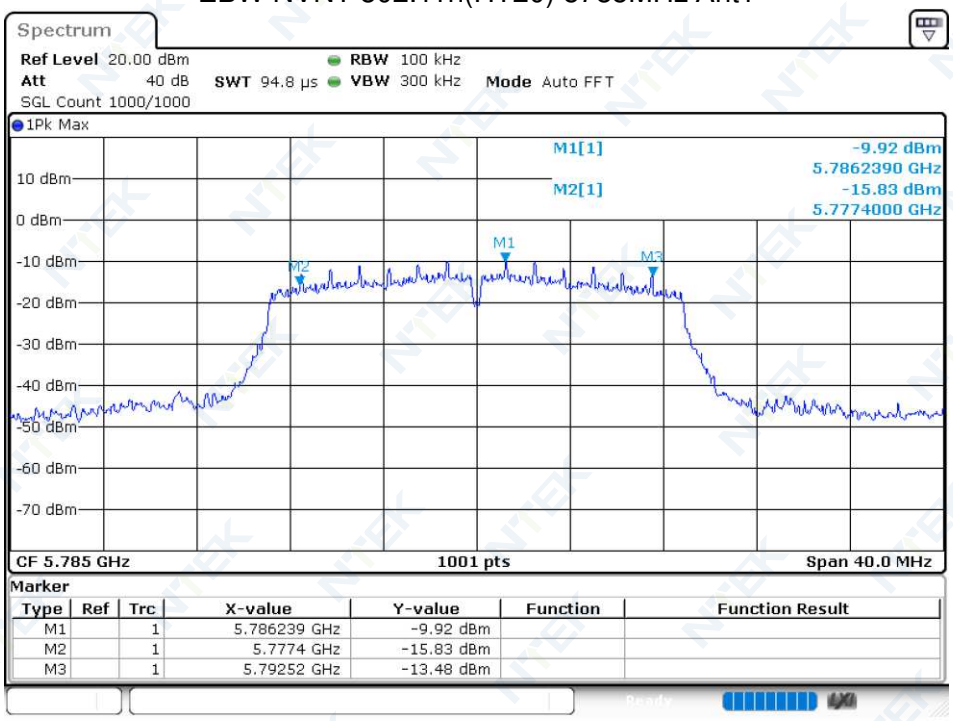
EBW NVNT 802.11ac80 5775MHz Ant1



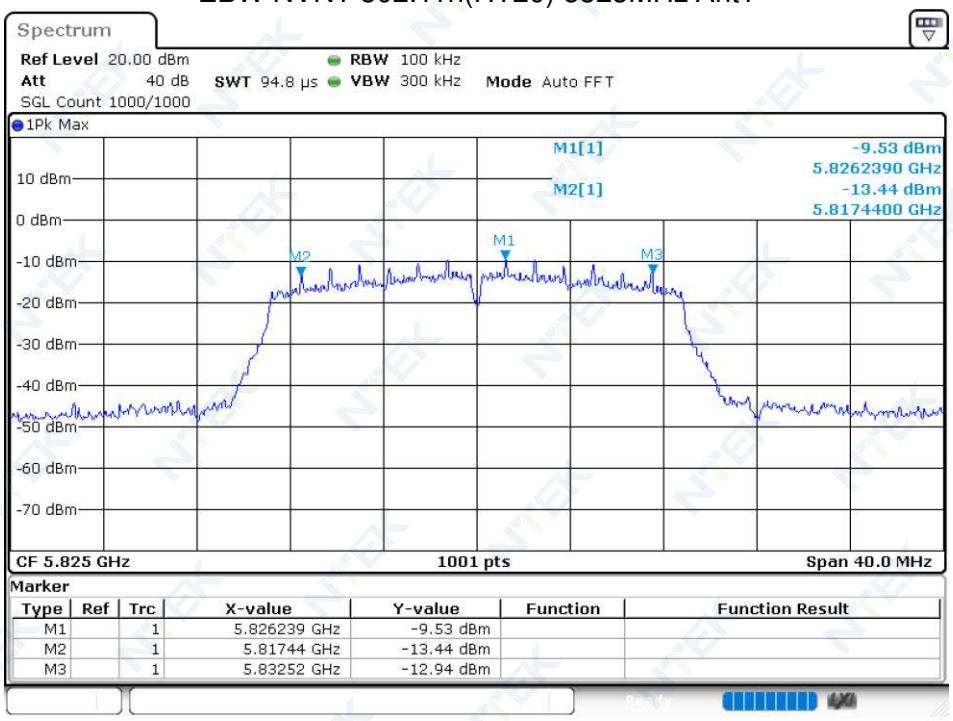
EBW NVNT 802.11n(HT20) 5745MHz Ant1



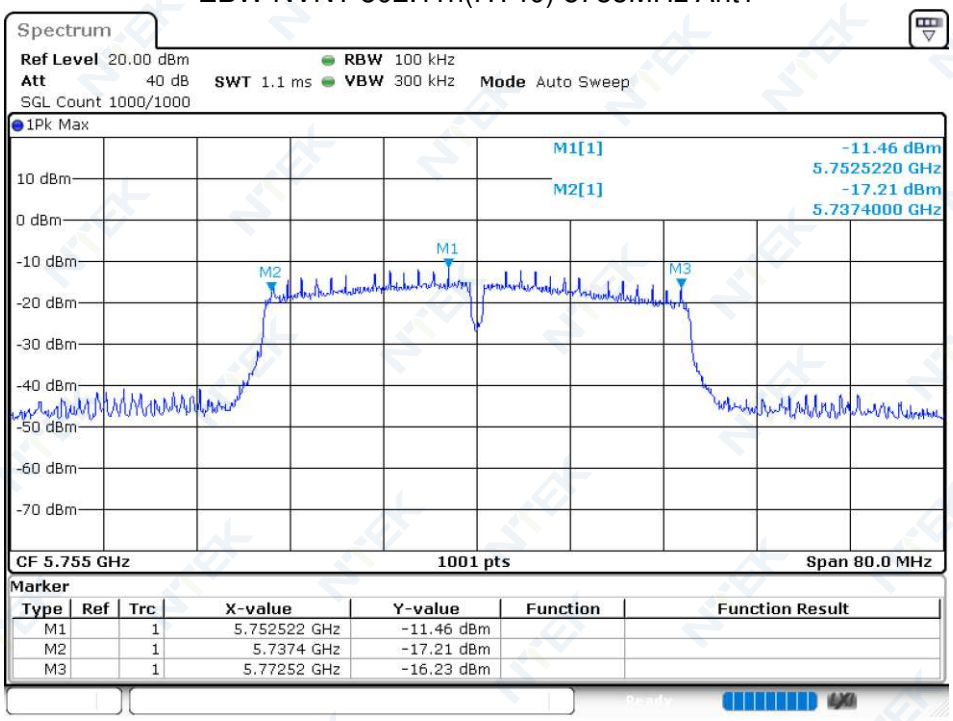
EBW NVNT 802.11n(HT20) 5785MHz Ant1



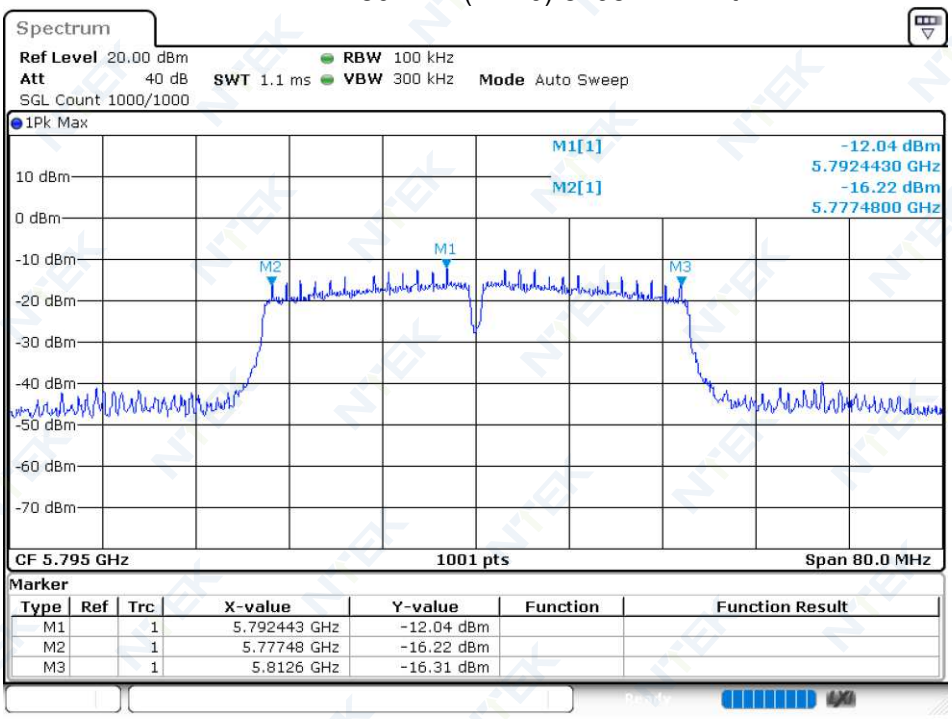
EBW NVNT 802.11n(HT20) 5825MHz Ant1



EBW NVNT 802.11n(HT40) 5755MHz Ant1



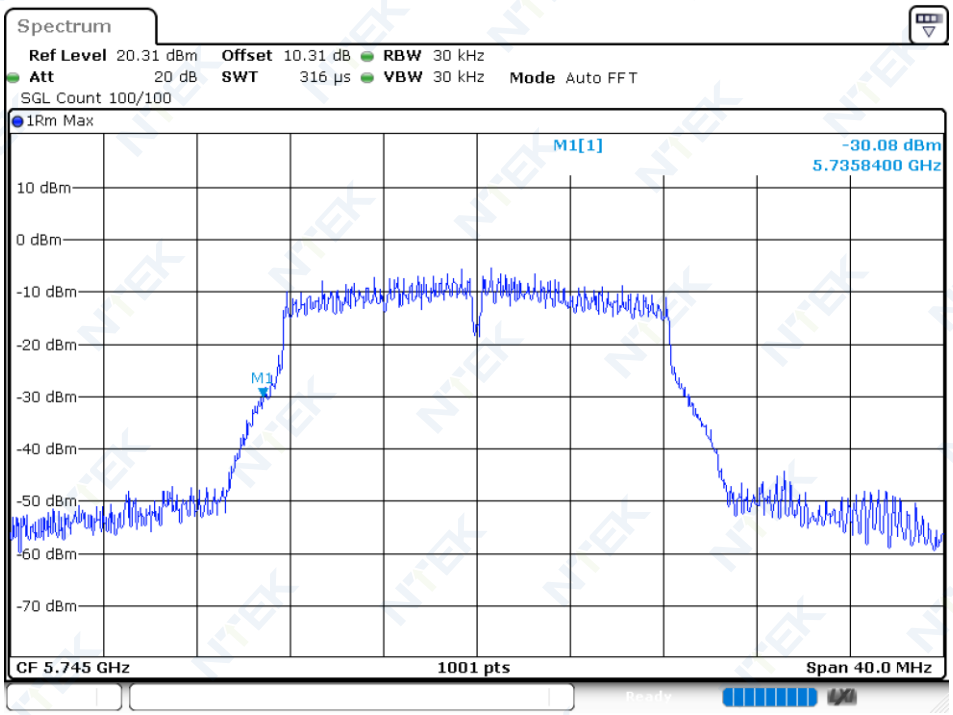
EBW NVNT 802.11n(HT40) 5795MHz Ant1



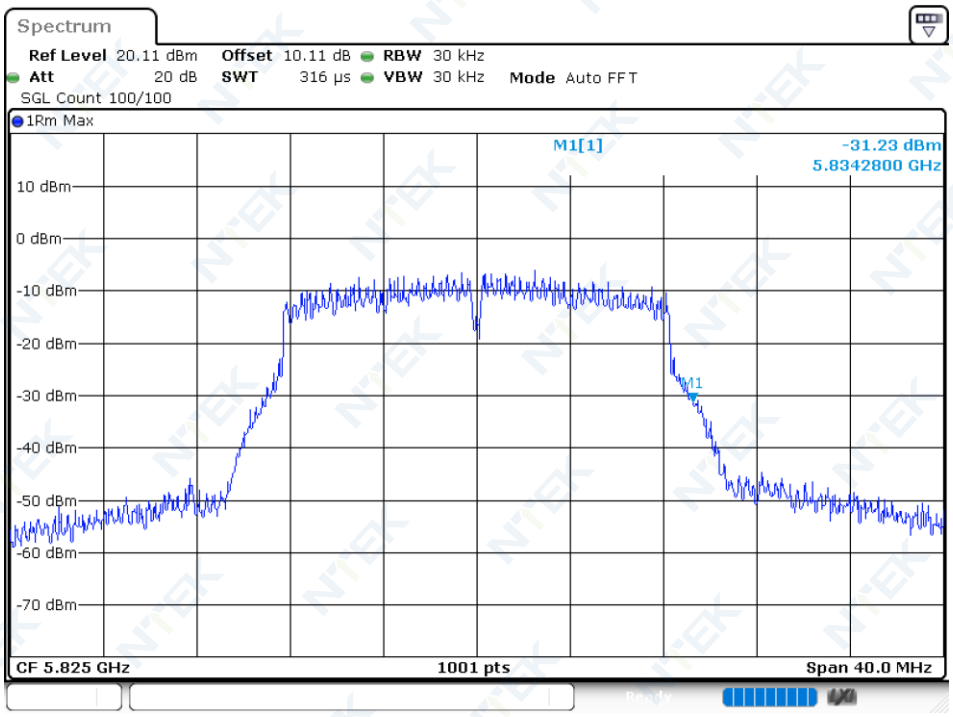
10.3 FREQUENCY RANGE

Condition	Mode	Frequency (MHz)	Antenna	Frequency Range (MHz)	Limit (MHz)	Verdict
NVNT	802.11a	5745	Ant 1	5735.84	>=5725	Pass
NVNT	802.11a	5825	Ant 1	5834.28	<=5875	Pass
NVNT	802.11ac20	5745	Ant 1	5735.32	>=5725	Pass
NVNT	802.11ac20	5825	Ant 1	5834.44	<=5875	Pass
NVNT	802.11ac40	5755	Ant 1	5736.16	>=5725	Pass
NVNT	802.11ac40	5795	Ant 1	5813.6	<=5875	Pass
NVNT	802.11ac80	5775	Ant 1	5813.4	<=5875	Pass
NVNT	802.11n(HT20)	5745	Ant 1	5735.4	>=5725	Pass
NVNT	802.11n(HT20)	5825	Ant 1	5834.64	<=5875	Pass
NVNT	802.11n(HT40)	5755	Ant 1	5736.22	>=5725	Pass
NVNT	802.11n(HT40)	5795	Ant 1	5813.54	<=5875	Pass

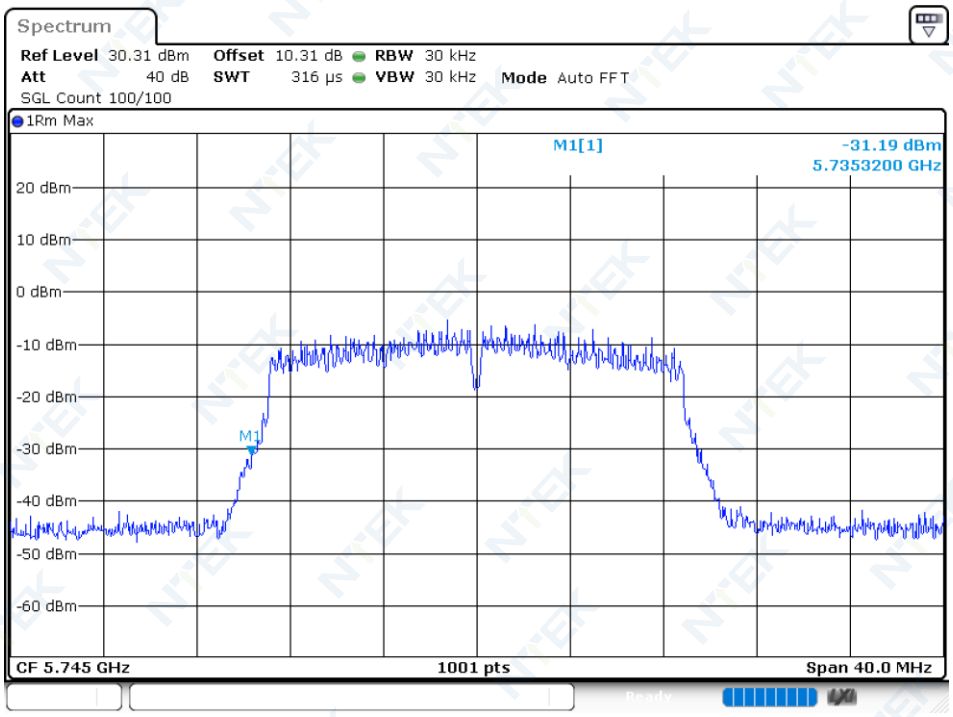
5745MHz 802.11a Antenna1



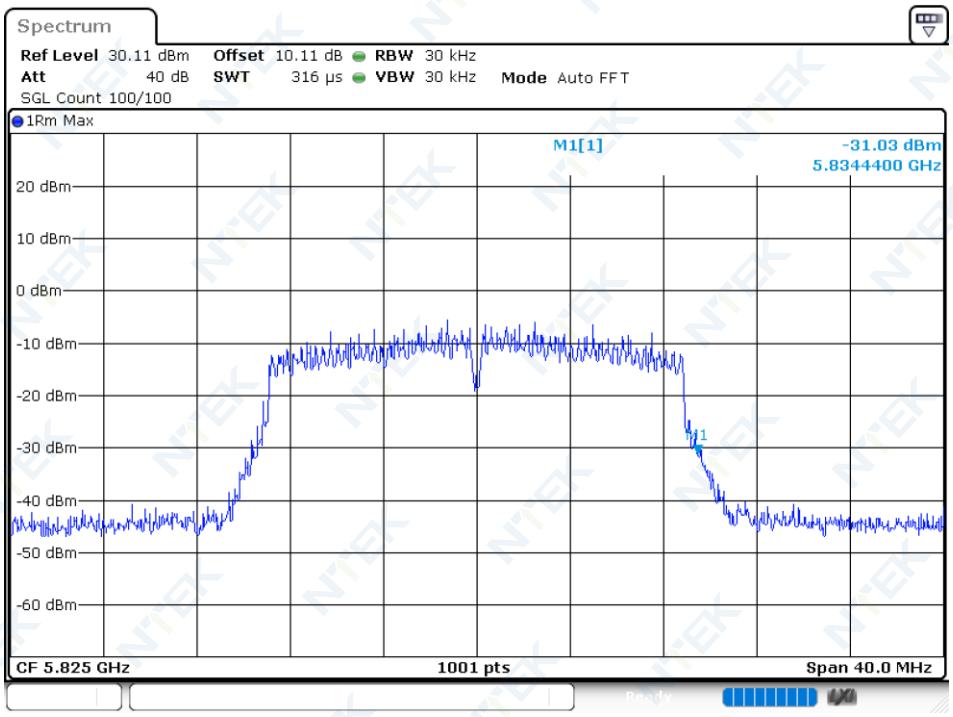
5825MHz 802.11a Antenna1



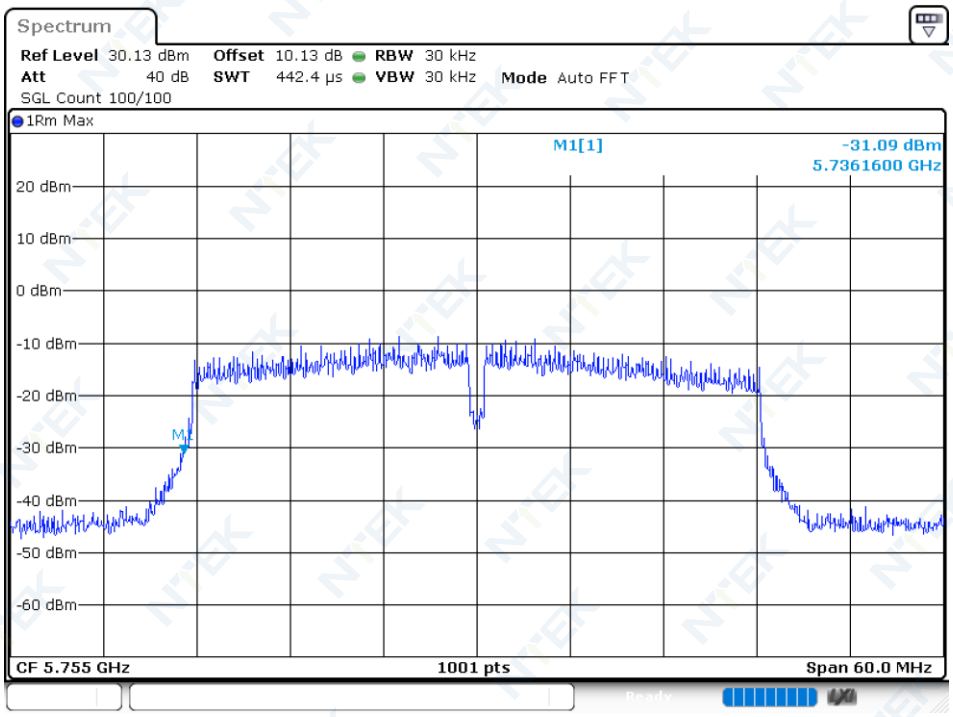
5745MHz 802.11ac20 Antenna1



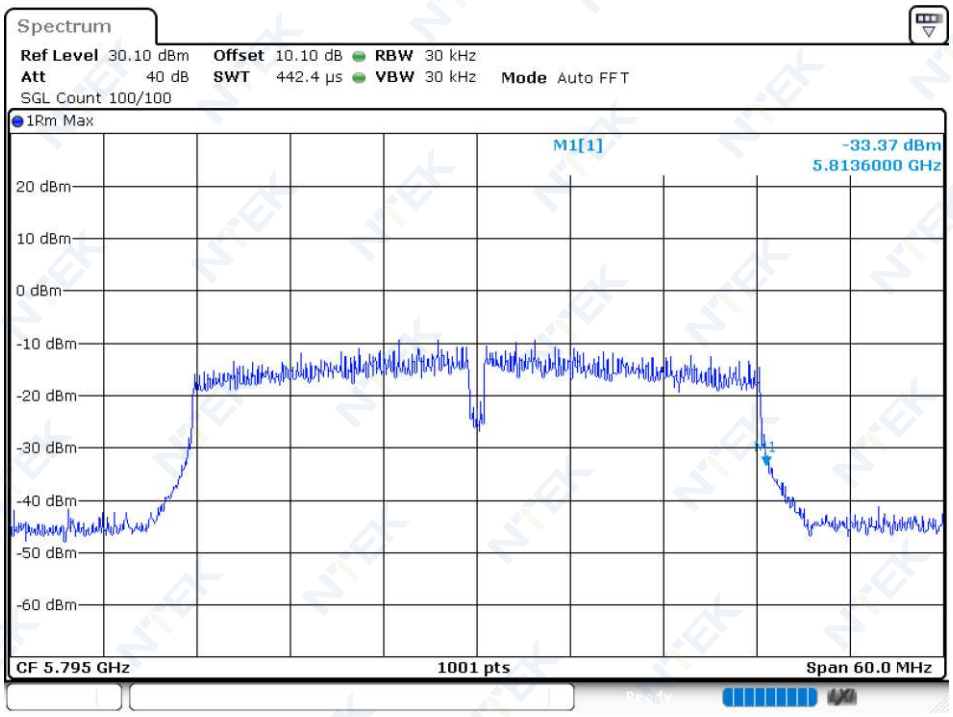
5825MHz 802.11ac20 Antenna1



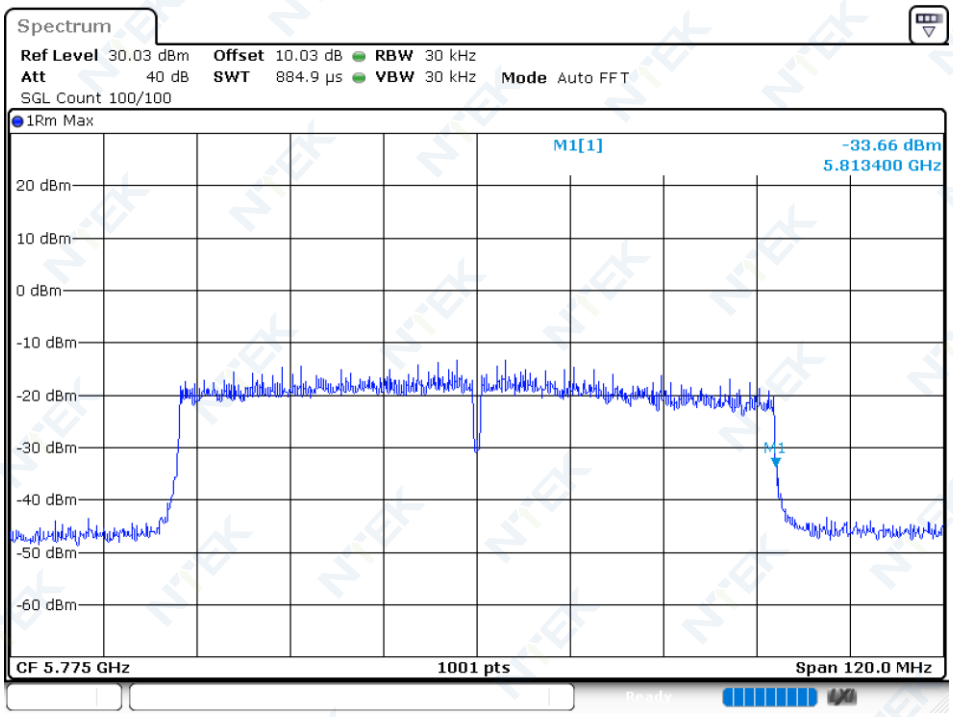
5755MHz 802.11ac40 Antenna1



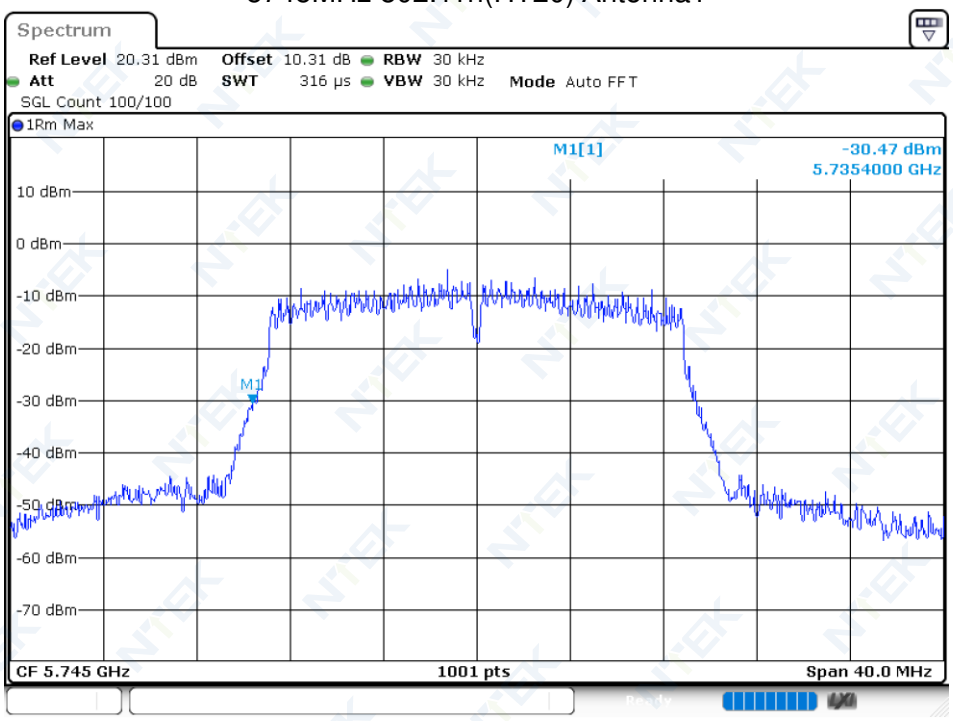
5795MHz 802.11ac40 Antenna1



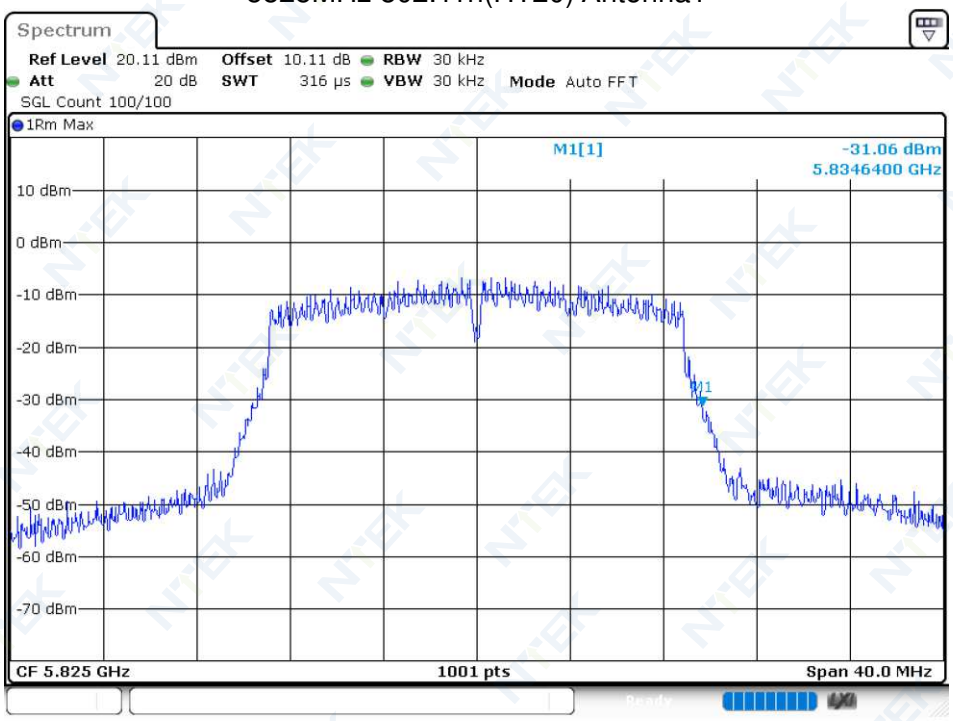
5775MHz 802.11ac80 Antenna1



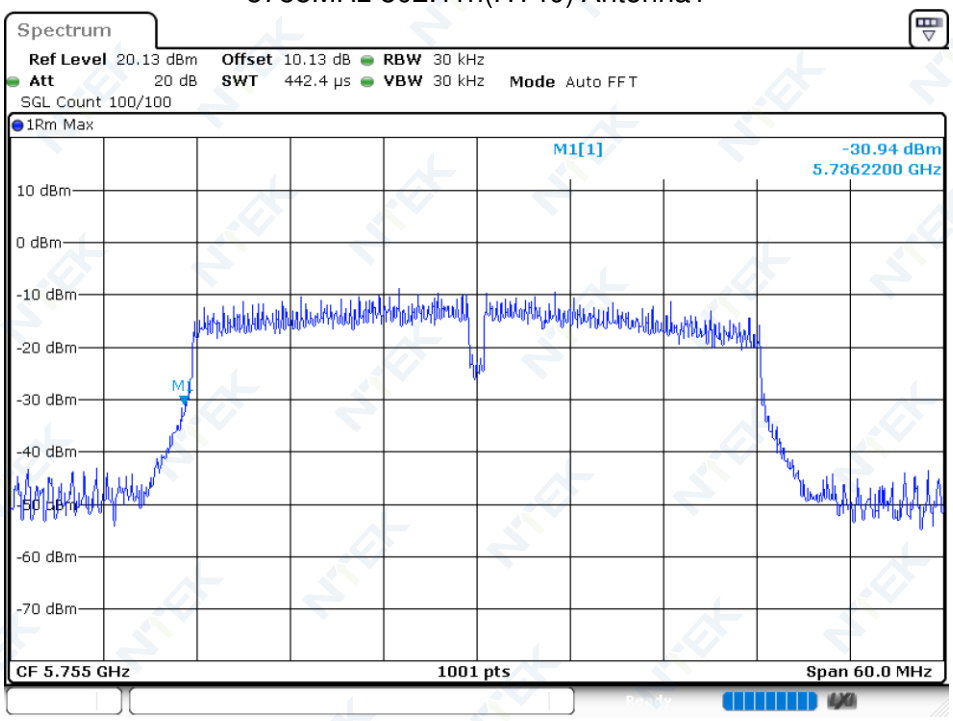
5745MHz 802.11n(HT20) Antenna1



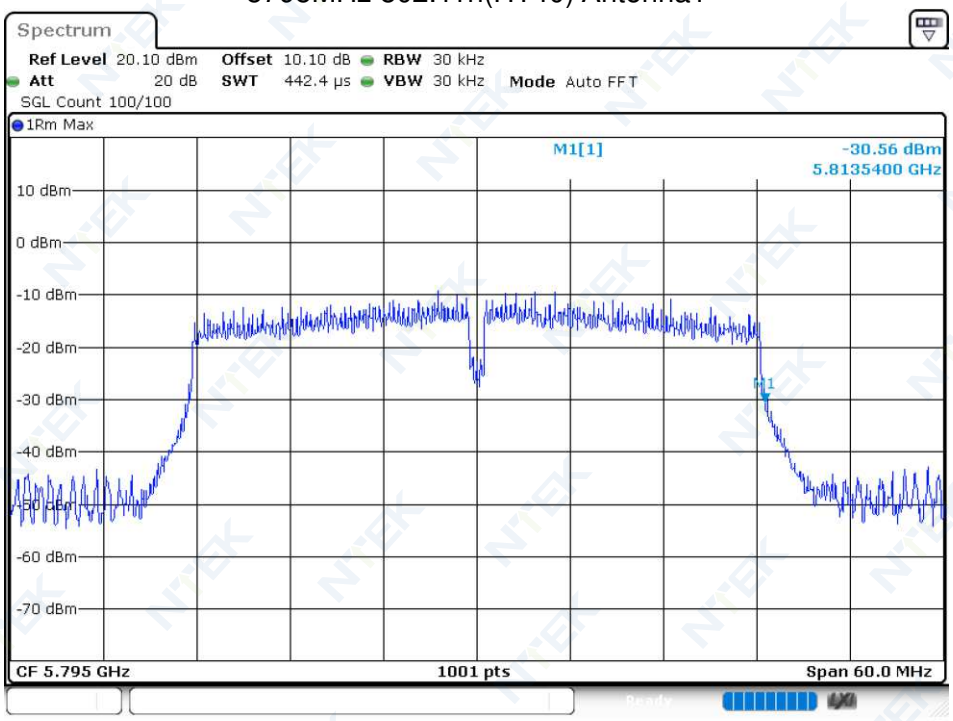
5825MHz 802.11n(HT20) Antenna1



5755MHz 802.11n(HT40) Antenna1



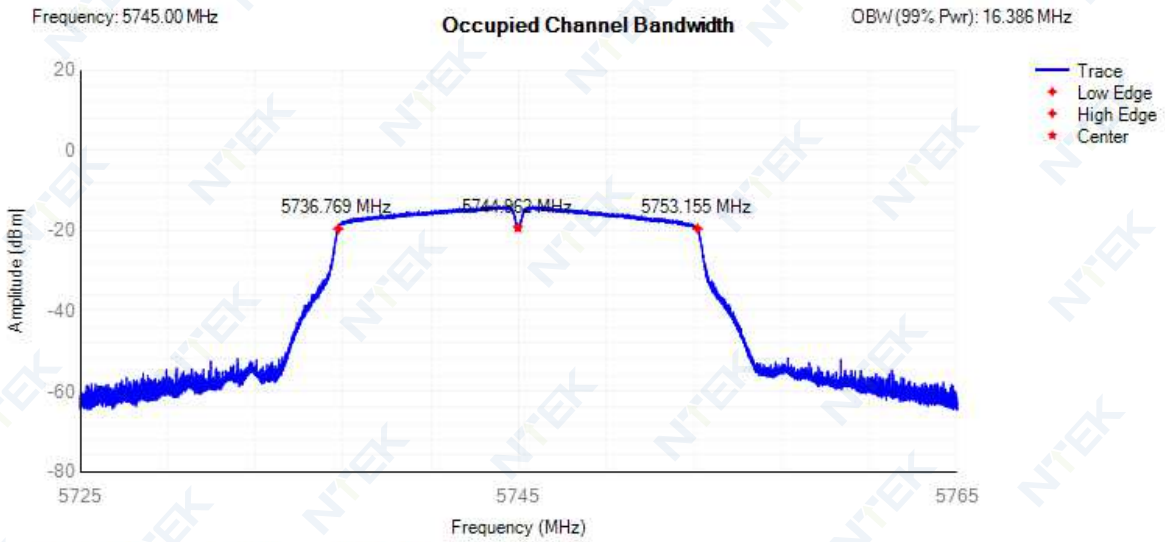
5795MHz 802.11n(HT40) Antenna1



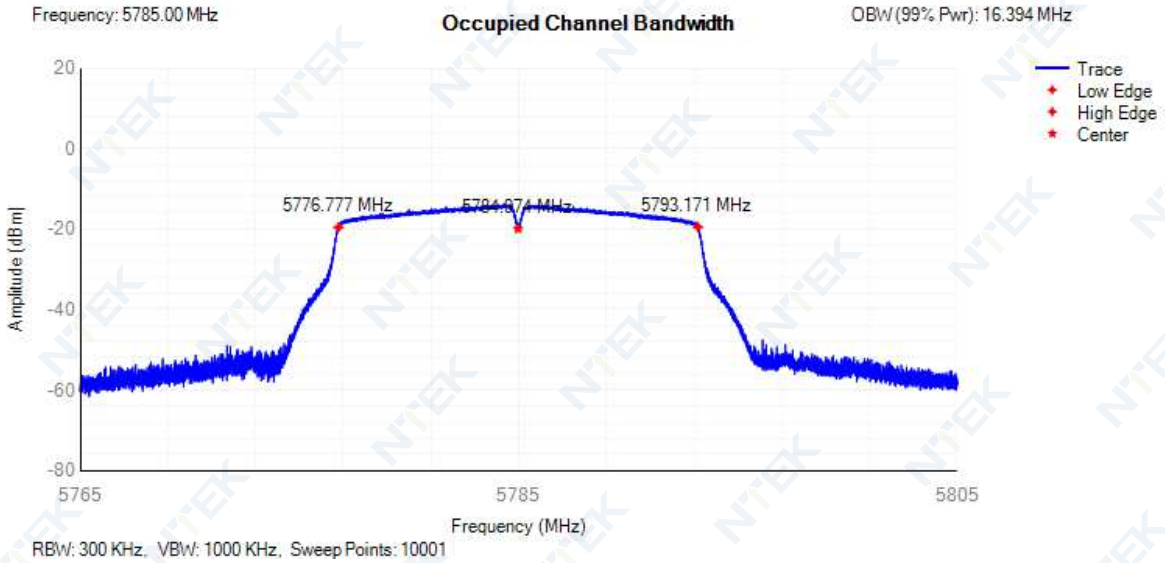
10.4 OCCUPIED CHANNEL BANDWIDTH

Condition	Mode	Frequency (MHz)	Center Frequency (MHz)	OBW (MHz)	Lower Limit (MHz)	Upper Limit(MHz)	Verdict
NVNT	802.11a	5745	5744.962	16.386	16	20	Pass
NVNT	802.11a	5785	5784.974	16.394	16	20	Pass
NVNT	802.11a	5825	5824.988	16.39	16	20	Pass
NVNT	802.11ac20	5745	5744.958	17.578	16	20	Pass
NVNT	802.11ac20	5785	5784.97	17.594	16	20	Pass
NVNT	802.11ac20	5825	5824.984	17.59	16	20	Pass
NVNT	802.11ac40	5755	5754.9	35.94	32	40	Pass
NVNT	802.11ac40	5795	5794.988	35.988	32	40	Pass
NVNT	802.11ac80	5775	5774.864	75.592	64	80	Pass
NVNT	802.11n(HT20)	5745	5744.962	17.578	16	20	Pass
NVNT	802.11n(HT20)	5785	5784.97	17.594	16	20	Pass
NVNT	802.11n(HT20)	5825	5824.984	17.582	16	20	Pass
NVNT	802.11n(HT40)	5755	5754.9	35.94	32	40	Pass
NVNT	802.11n(HT40)	5795	5794.984	35.996	32	40	Pass

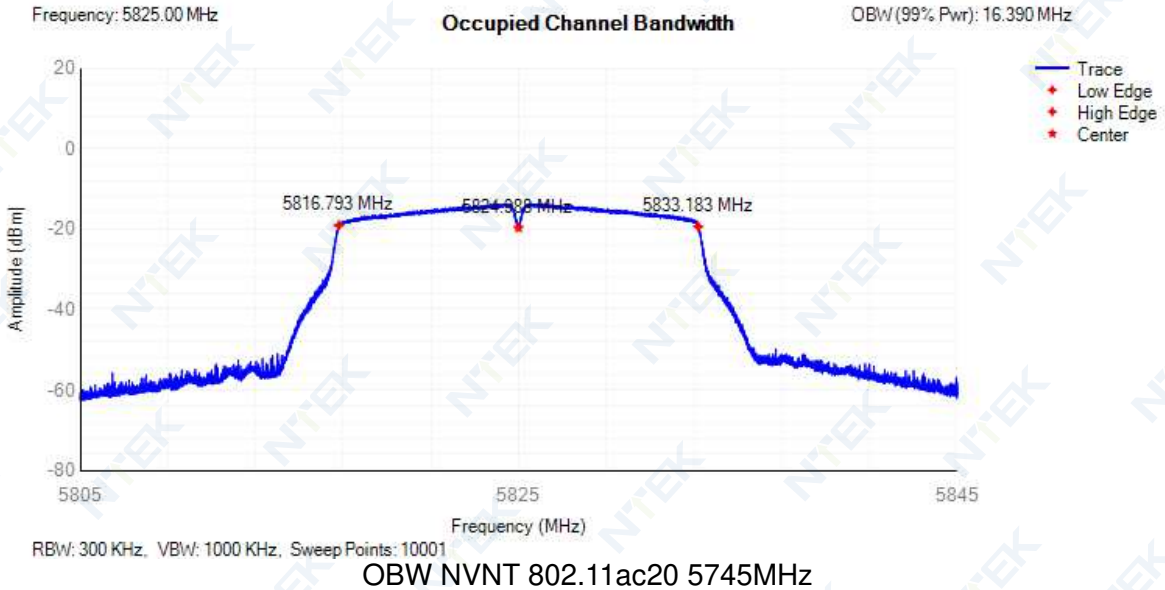
OBW NVNT 802.11a 5745MHz



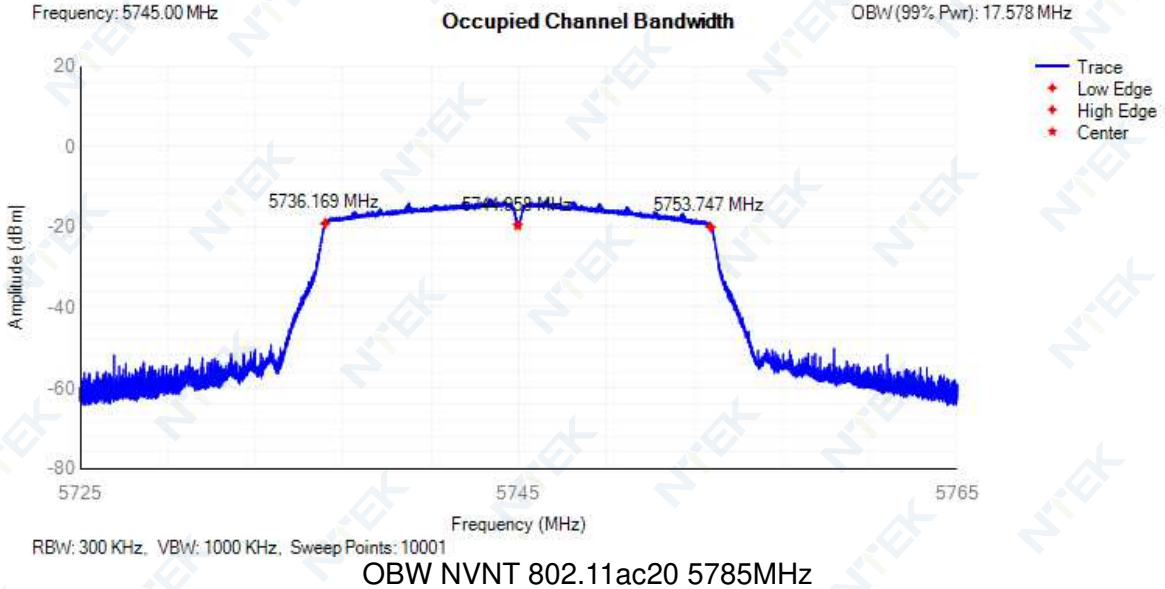
OBW NVNT 802.11a 5785MHz



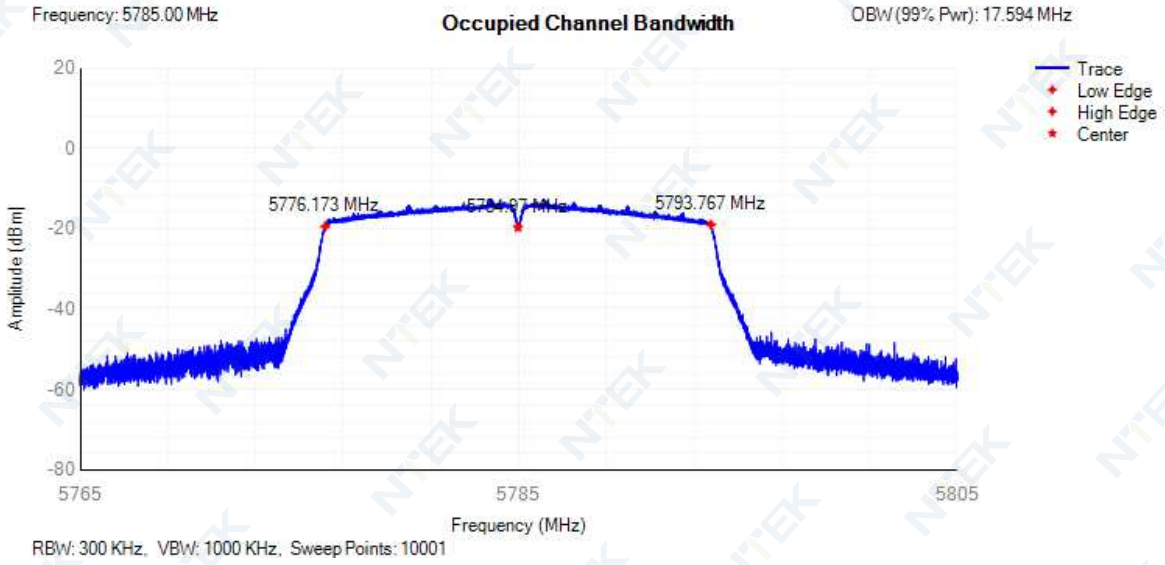
OBW NVNT 802.11a 5825MHz



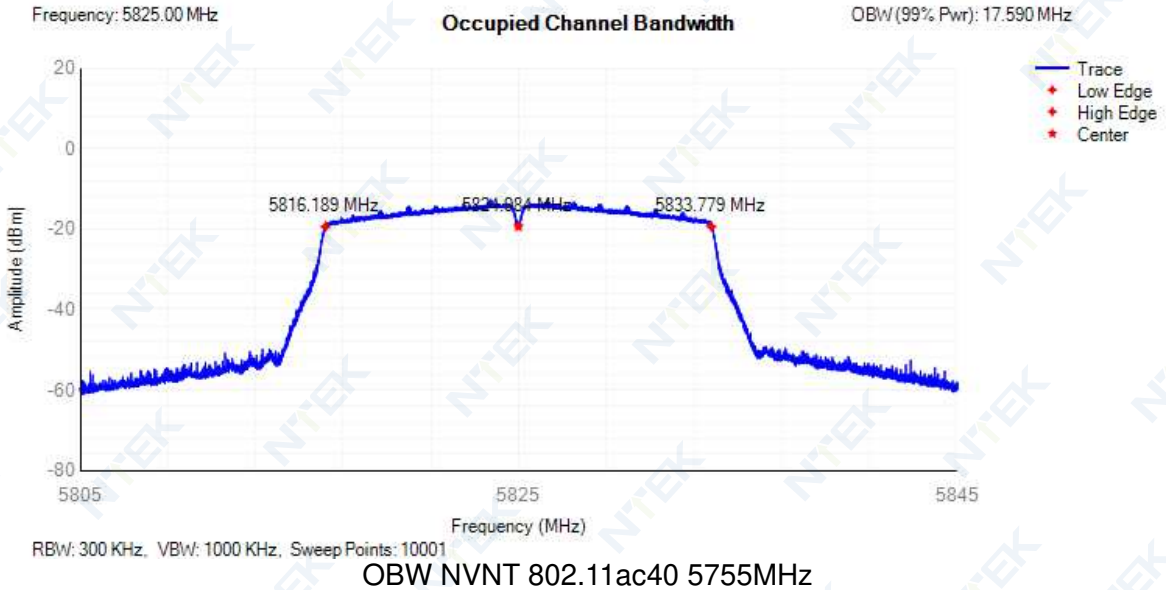
OBW NVNT 802.11ac20 5745MHz



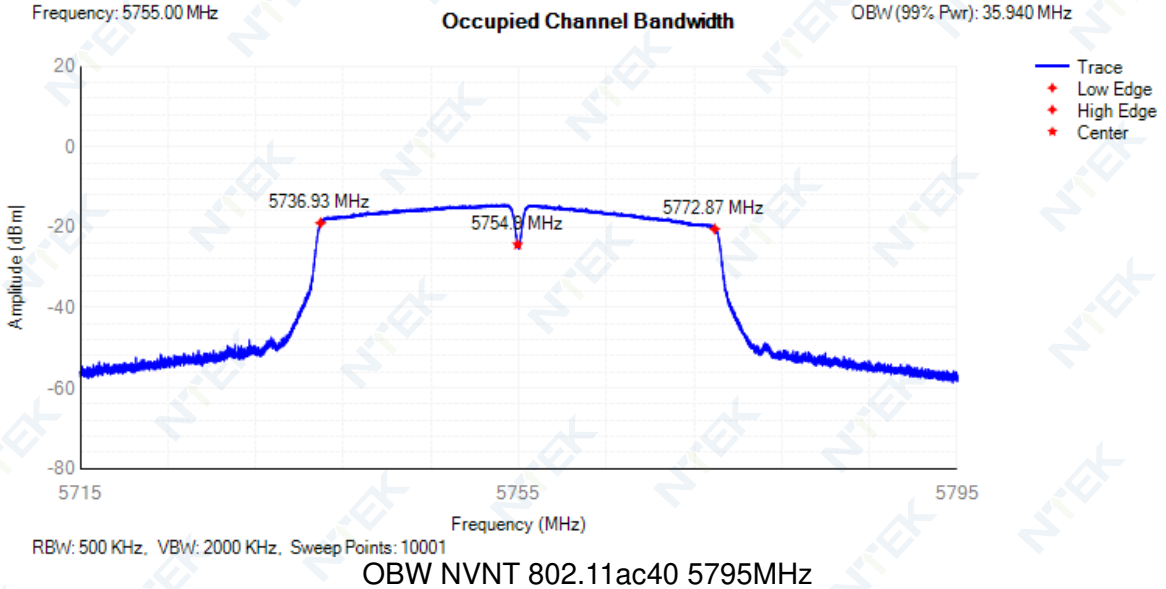
OBW NVNT 802.11ac20 5785MHz



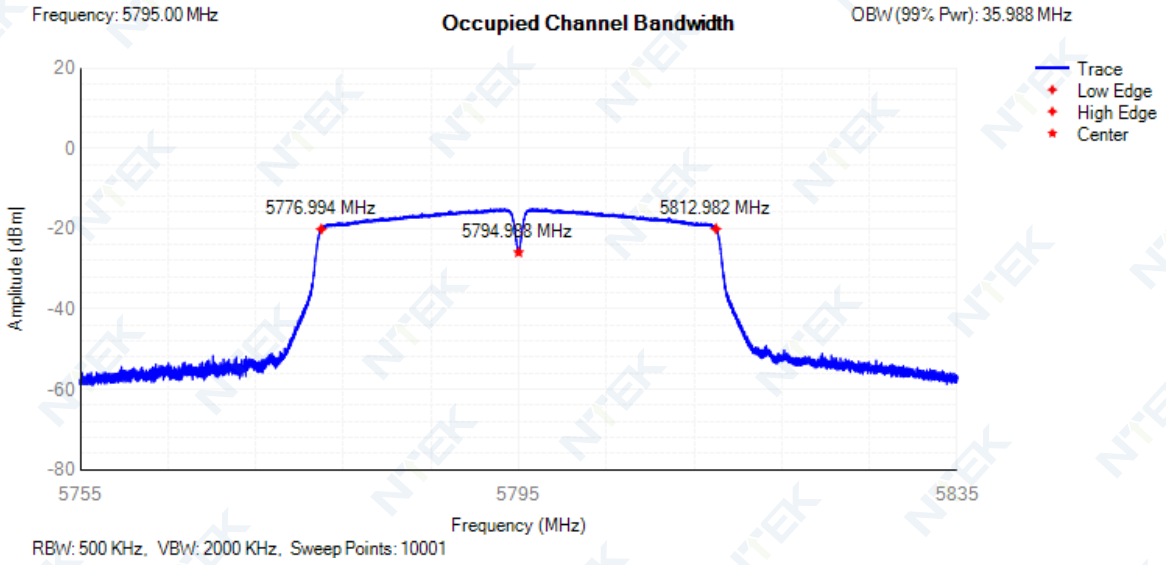
OBW NVNT 802.11ac20 5825MHz



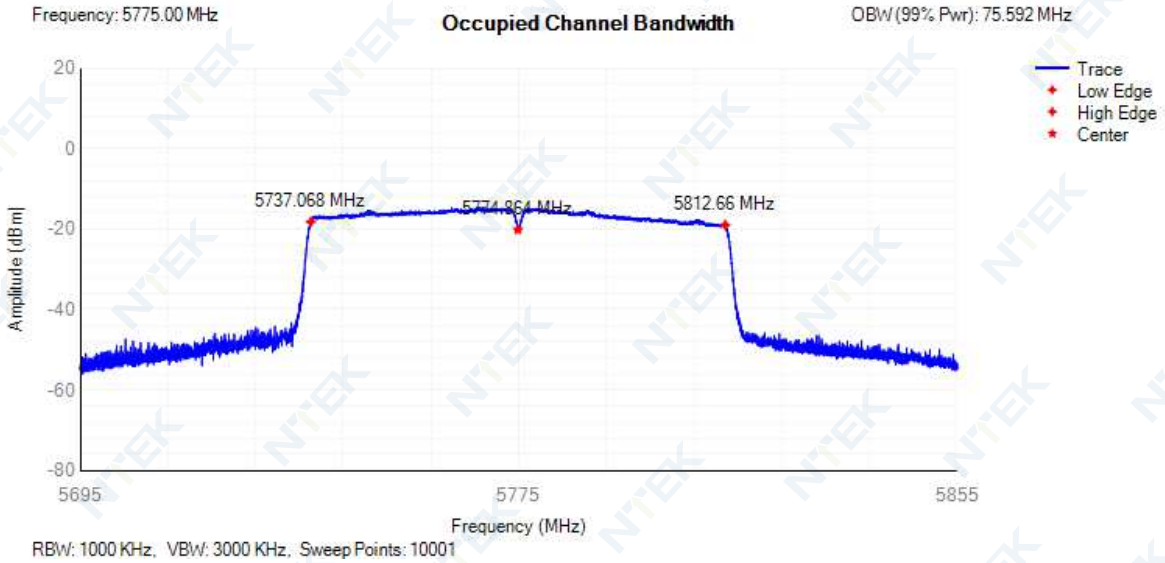
OBW NVNT 802.11ac40 5755MHz



OBW NVNT 802.11ac40 5795MHz

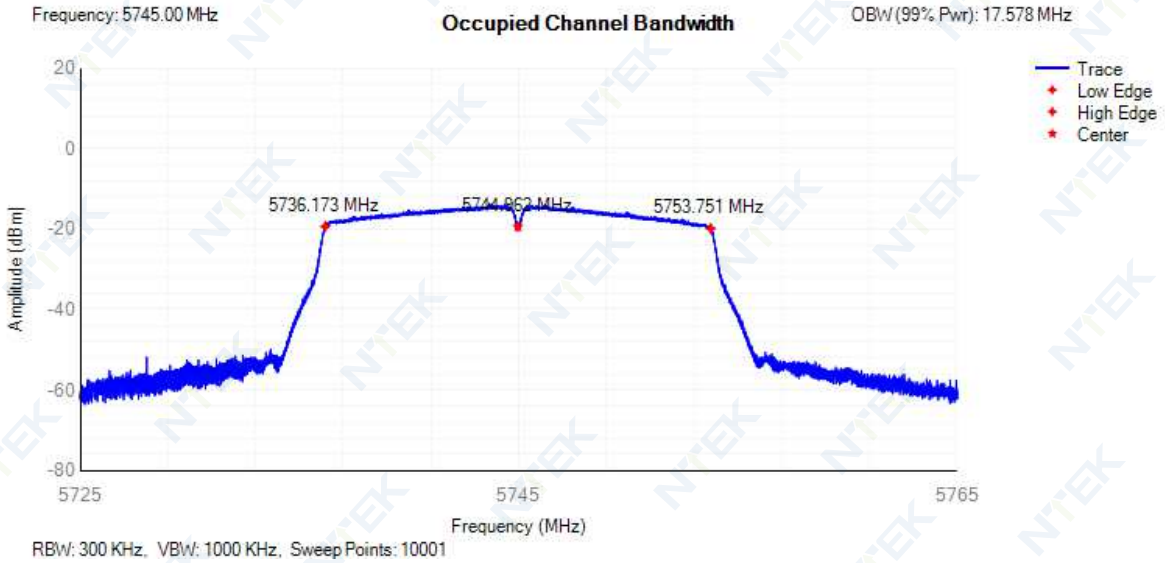


OBW NVNT 802.11ac80 5775MHz



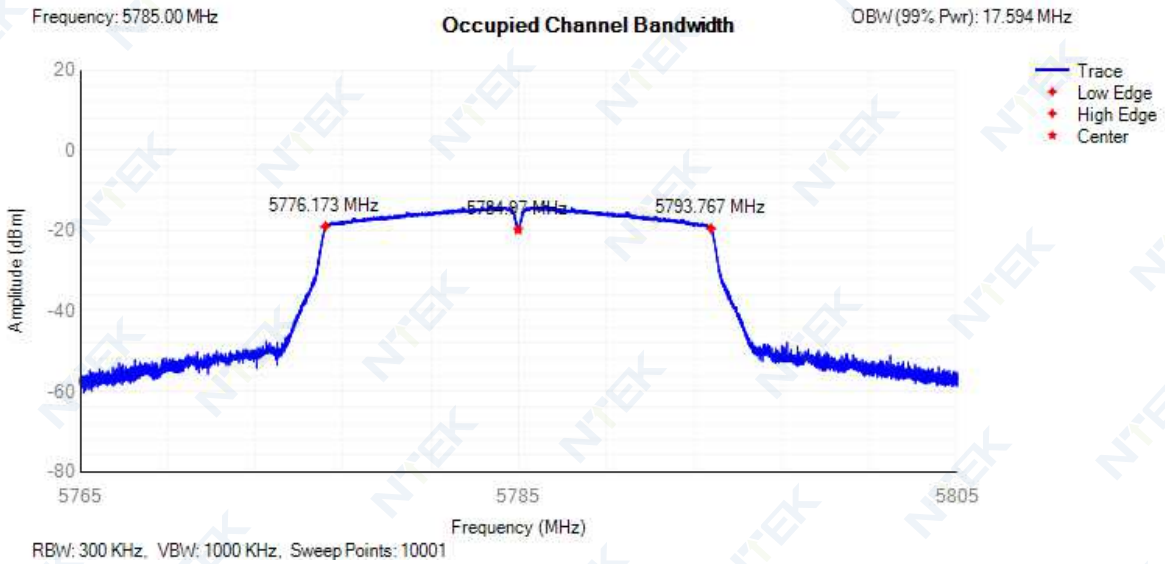
RBW: 1000 KHz, VBW: 3000 KHz, Sweep Points: 10001

OBW NVNT 802.11n(HT20) 5745MHz



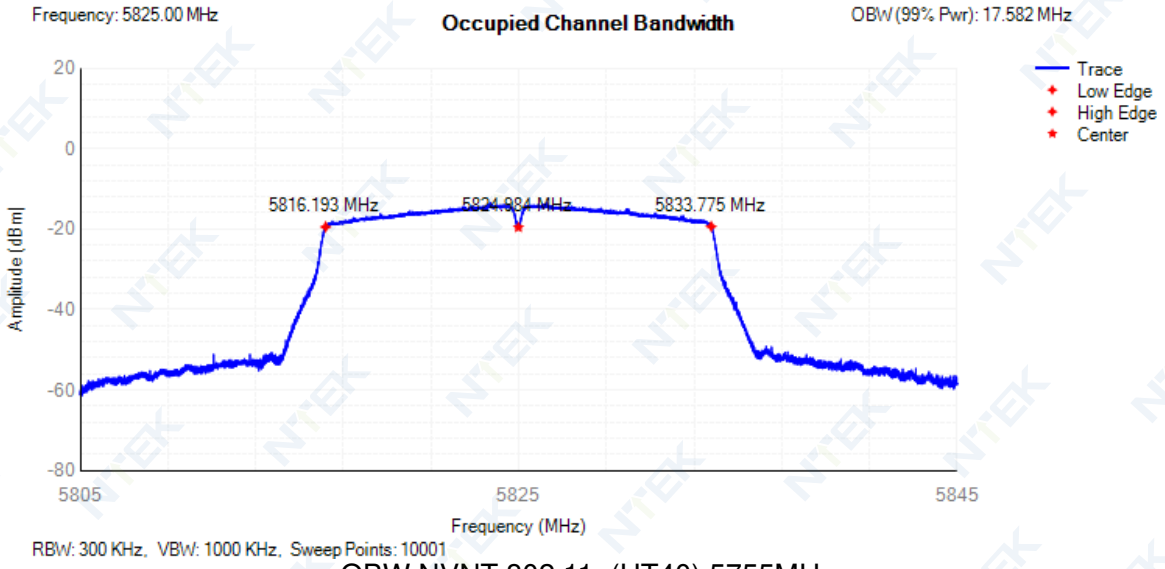
RBW: 300 KHz, VBW: 1000 KHz, Sweep Points: 10001

OBW NVNT 802.11n(HT20) 5785MHz

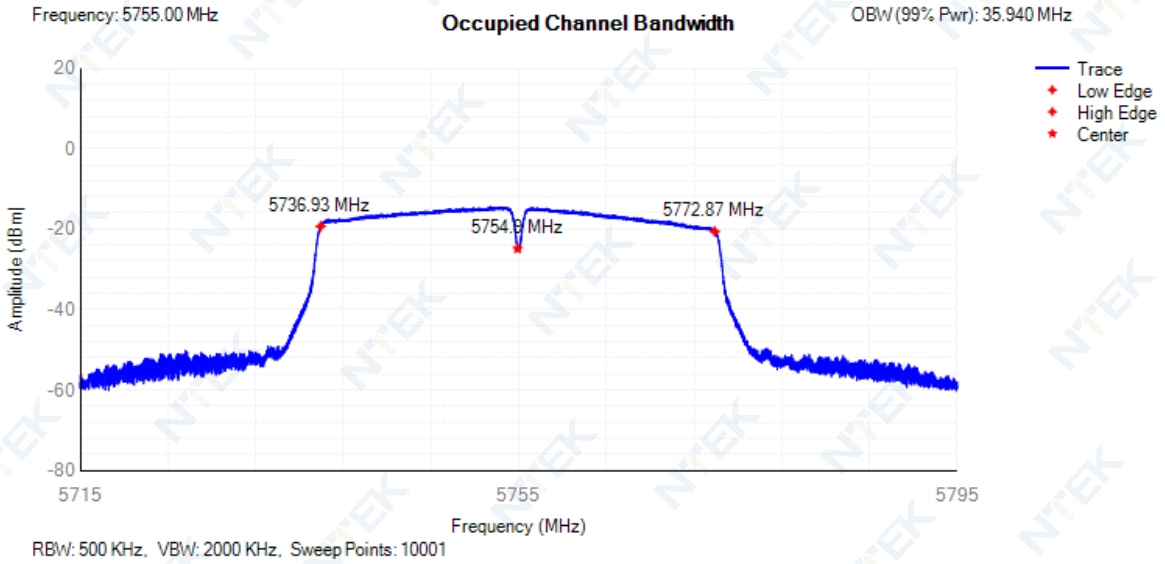


RBW: 300 KHz, VBW: 1000 KHz, Sweep Points: 10001

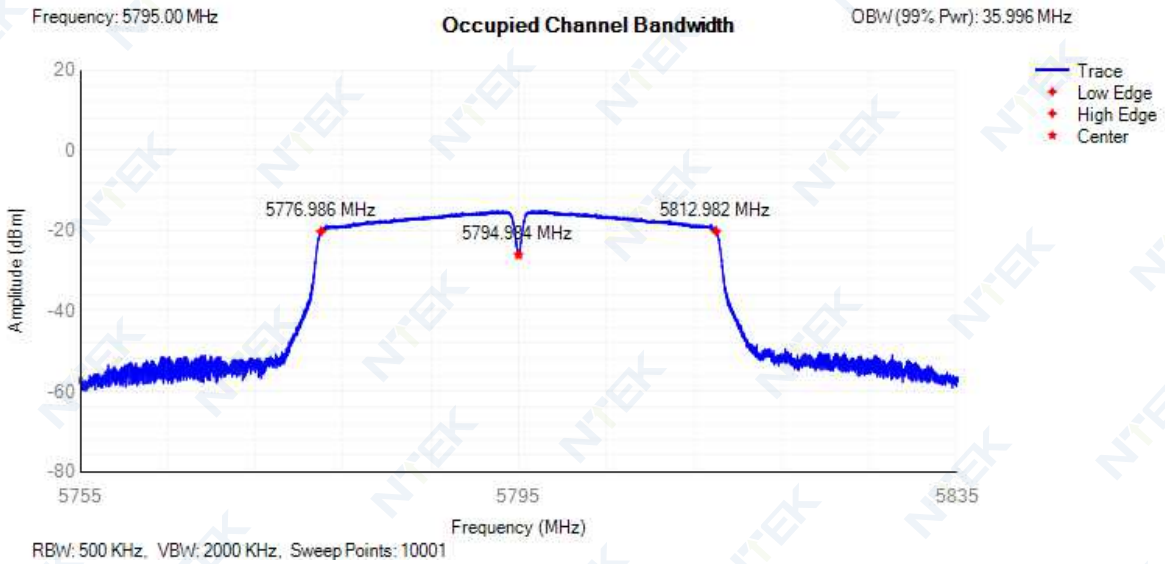
OBW NVNT 802.11n(HT20) 5825MHz



OBW NVNT 802.11n(HT40) 5755MHz



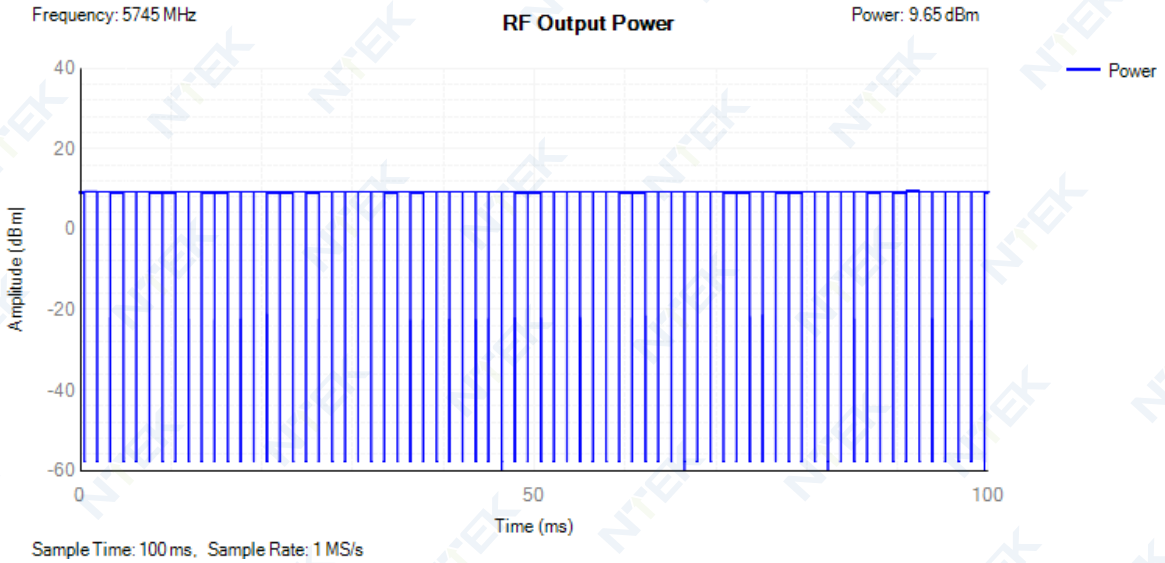
OBW NVNT 802.11n(HT40) 5795MHz



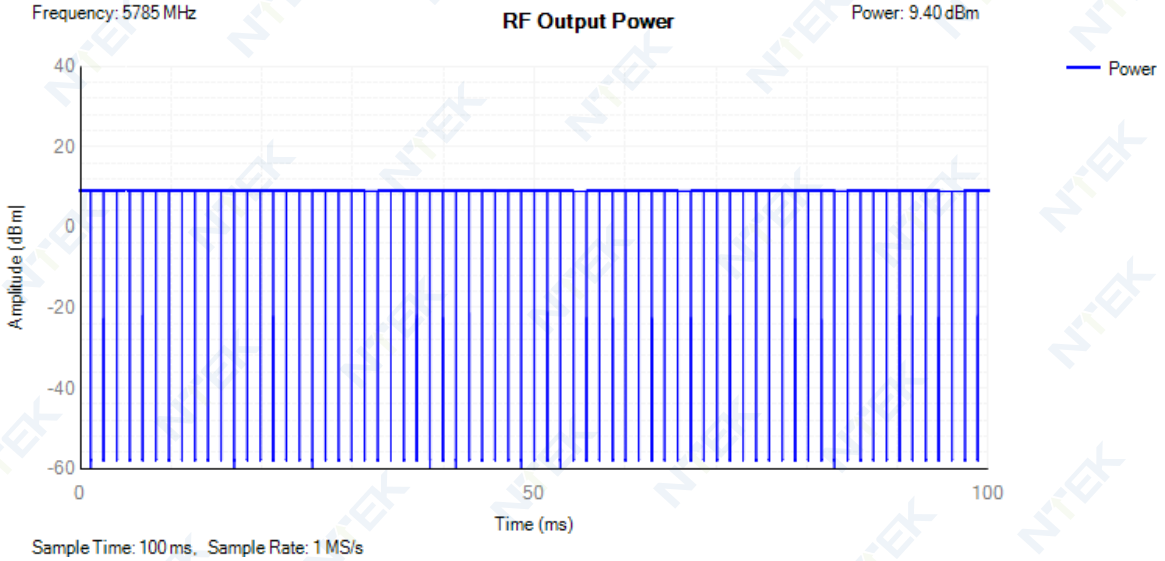
10.5 RF OUTPUT POWER

Condition	Mode	Frequency (MHz)	Max Burst RMS Power (dBm)	Burst Number	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	802.11a	5745	9.35	71	9.65	13.98	Pass
NVNT	802.11a	5785	9.1	70	9.4	13.98	Pass
NVNT	802.11a	5825	9.34	68	9.64	13.98	Pass
NVNT	802.11ac20	5745	9.13	73	9.43	13.98	Pass
NVNT	802.11ac20	5785	8.82	73	9.12	13.98	Pass
NVNT	802.11ac20	5825	9.33	70	9.63	13.98	Pass
NVNT	802.11ac40	5755	9.67	142	9.97	13.98	Pass
NVNT	802.11ac40	5795	9.02	144	9.32	13.98	Pass
NVNT	802.11ac80	5775	9.29	270	9.59	13.98	Pass
NVNT	802.11n(HT20)	5745	9.26	74	9.56	13.98	Pass
NVNT	802.11n(HT20)	5785	8.77	74	9.07	13.98	Pass
NVNT	802.11n(HT20)	5825	9.39	74	9.69	13.98	Pass
NVNT	802.11n(HT40)	5755	9.67	146	9.97	16.98	Pass
NVNT	802.11n(HT40)	5795	9.01	144	9.31	13.98	Pass
HVLT	802.11a	5745	8.90	43	9.2	13.98	Pass
HVLT	802.11a	5785	8.93	43	9.23	13.98	Pass
HVLT	802.11a	5825	8.90	43	9.2	13.98	Pass
HVLT	802.11ac20	5745	8.85	45	9.15	13.98	Pass
HVLT	802.11ac20	5785	8.17	44	8.47	13.98	Pass
HVLT	802.11ac20	5725	8.20	44	8.5	13.98	Pass
HVLT	802.11ac40	5755	8.17	61	8.47	13.98	Pass
HVLT	802.11ac40	5795	8.12	62	8.42	13.98	Pass
HVLT	802.11ac80	5775	8.09	76	8.39	13.98	Pass
HVLT	802.11n(HT20)	5745	8.04	44	8.34	13.98	Pass
HVLT	802.11n(HT20)	5785	8.01	44	8.31	13.98	Pass
HVLT	802.11n(HT20)	5825	7.96	45	8.26	13.98	Pass
HVLT	802.11n(HT40)	5755	7.93	62	8.23	13.98	Pass
HVLT	802.11n(HT40)	5795	7.90	62	8.2	13.98	Pass
LVHT	802.11a	5745	7.79	43	8.09	13.98	Pass
LVHT	802.11a	5785	7.82	43	8.12	13.98	Pass
LVHT	802.11a	5825	7.79	43	8.09	13.98	Pass
LVHT	802.11ac20	5745	7.74	45	8.04	13.98	Pass
LVHT	802.11ac20	5785	8.17	44	8.47	13.98	Pass
LVHT	802.11ac20	5825	8.20		8.5	13.98	Pass
LVHT	802.11ac40	5755	8.17	61	8.47	13.98	Pass
LVHT	802.11ac40	5795	8.12	62	8.42	13.98	Pass
LVHT	802.11ac80	5775	8.09	76	8.39	13.98	Pass
LVHT	802.11n(HT20)	5745	8.04	44	8.34	13.98	Pass
LVHT	802.11n(HT20)	5785	8.01	44	8.31	13.98	Pass
LVHT	802.11n(HT20)	5825	7.96	45	8.26	13.98	Pass
LVHT	802.11n(HT40)	5755	7.93	62	8.23	13.98	Pass
LVHT	802.11n(HT40)	5795	7.90	62	8.2	13.98	Pass
HVHT	802.11a	5745	7.79	43	8.09	13.98	Pass
HVHT	802.11a	5785	7.82	43	8.12	13.98	Pass
HVHT	802.11a	5825	7.79	43	8.09	13.98	Pass
HVHT	802.11ac20	5745	7.74	45	8.04	13.98	Pass
HVHT	802.11ac20	5785	8.17	44	8.47	13.98	Pass
HVHT	802.11ac20	5825	8.20		8.5	13.98	Pass
HVHT	802.11ac40	5755	8.17	61	8.47	13.98	Pass
HVHT	802.11ac40	5795	8.12	62	8.42	13.98	Pass
HVHT	802.11ac80	5775	8.09	76	8.39	13.98	Pass
HVHT	802.11n(HT20)	5745	8.04	44	8.34	13.98	Pass
HVHT	802.11n(HT20)	5785	8.01	44	8.31	13.98	Pass
HVHT	802.11n(HT20)	5825	7.96	45	8.26	13.98	Pass
HVHT	802.11n(HT40)	5755	7.93	62	8.23	13.98	Pass
HVHT	802.11n(HT40)	5795	7.90	62	8.2	13.98	Pass
LVLT	802.11a	5745	7.79	43	8.09	13.98	Pass
LVHT	802.11a	5785	7.82	43	8.12	13.98	Pass
LVHT	802.11a	5825	7.79	43	8.09	13.98	Pass
LVHT	802.11ac20	5745	7.74	45	8.04	13.98	Pass
LVHT	802.11ac20	5785	8.17	44	8.47	13.98	Pass
LVHT	802.11ac20	5825	8.20		8.5	13.98	Pass
LVHT	802.11ac40	5755	8.17	61	8.47	13.98	Pass
LVHT	802.11ac40	5795	8.12	62	8.42	13.98	Pass
LVHT	802.11ac80	5775	8.09	76	8.39	13.98	Pass
LVHT	802.11n(HT20)	5745	8.04	44	8.34	13.98	Pass
LVHT	802.11n(HT20)	5785	8.01	44	8.31	13.98	Pass
LVHT	802.11n(HT20)	5825	7.96	45	8.26	13.98	Pass
LVHT	802.11n(HT40)	5755	7.93	62	8.23	13.98	Pass
LVHT	802.11n(HT40)	5795	7.92	62	8.22	13.98	Pass

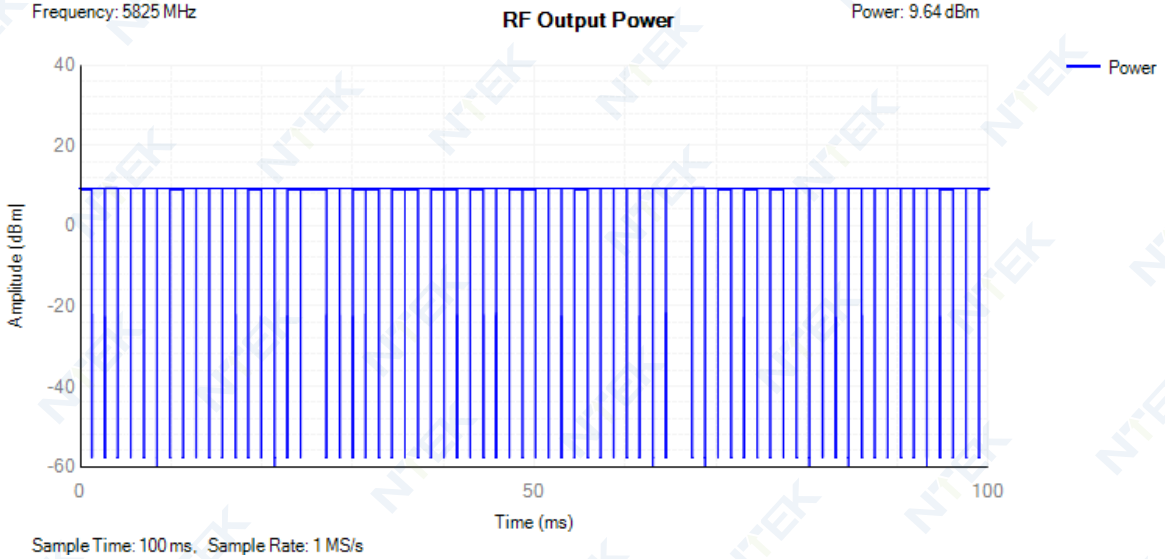
Power NVNT 802.11a 5745MHz



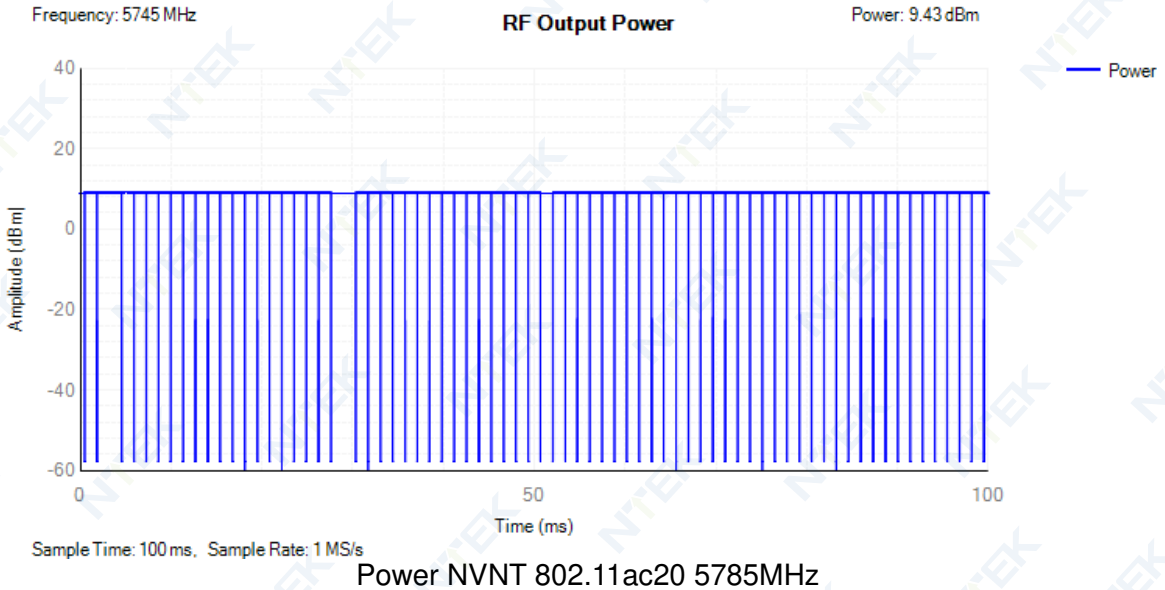
Power NVNT 802.11a 5785MHz



Power NVNT 802.11a 5825MHz

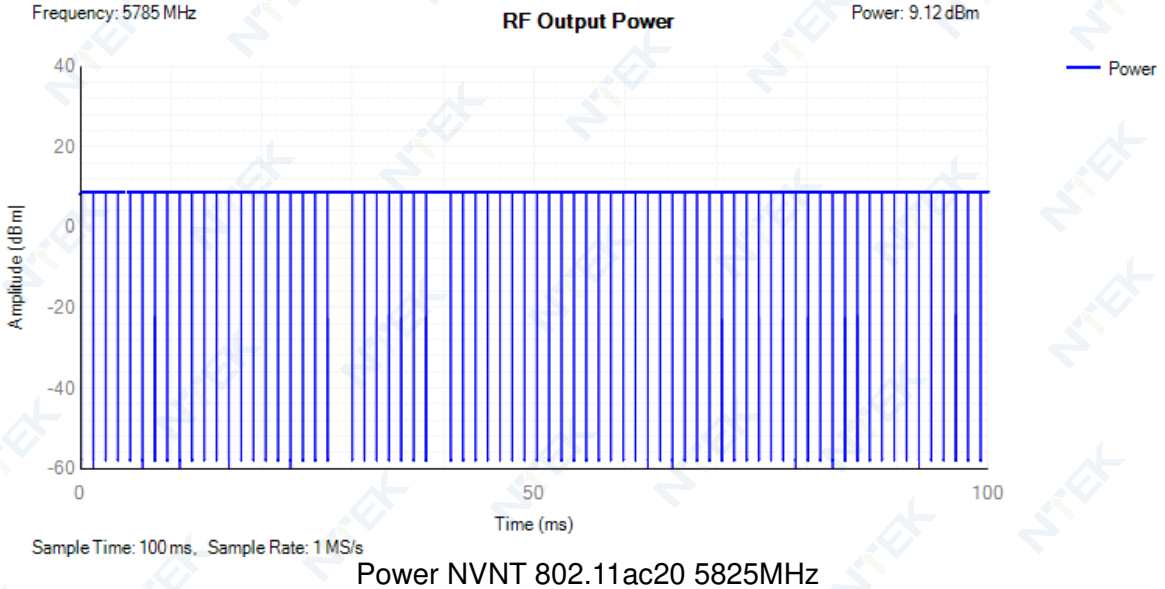


Power NVNT 802.11ac20 5745MHz



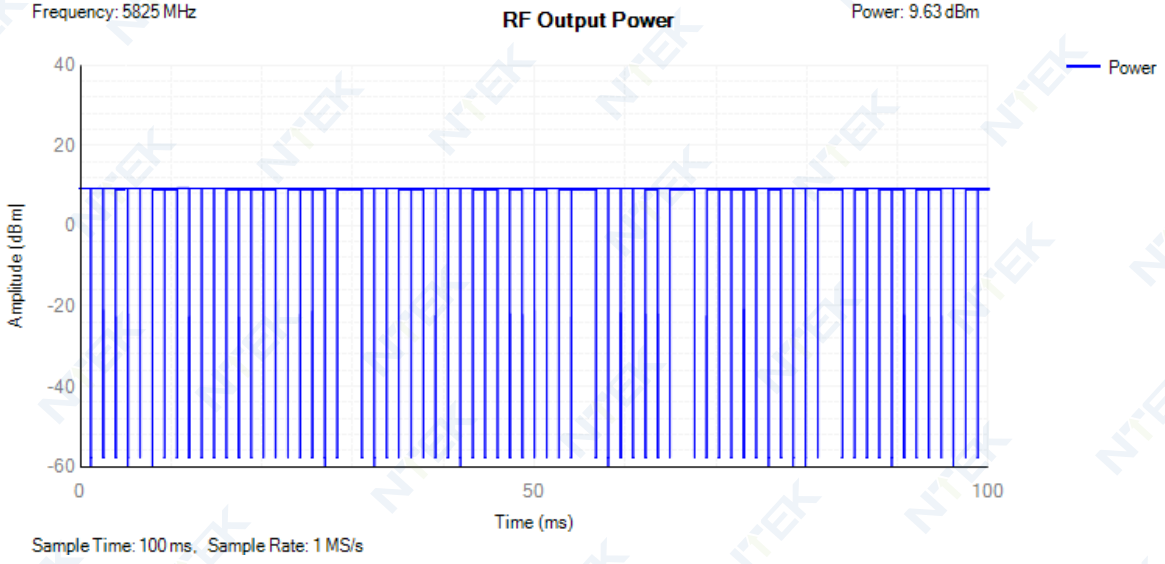
Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.11ac20 5785MHz



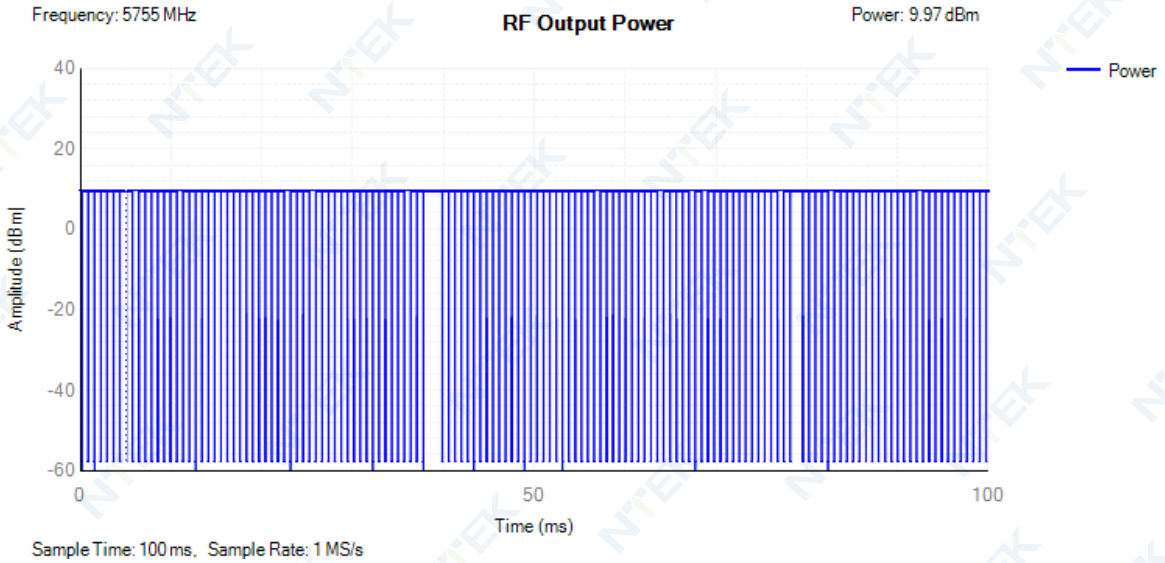
Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.11ac20 5825MHz

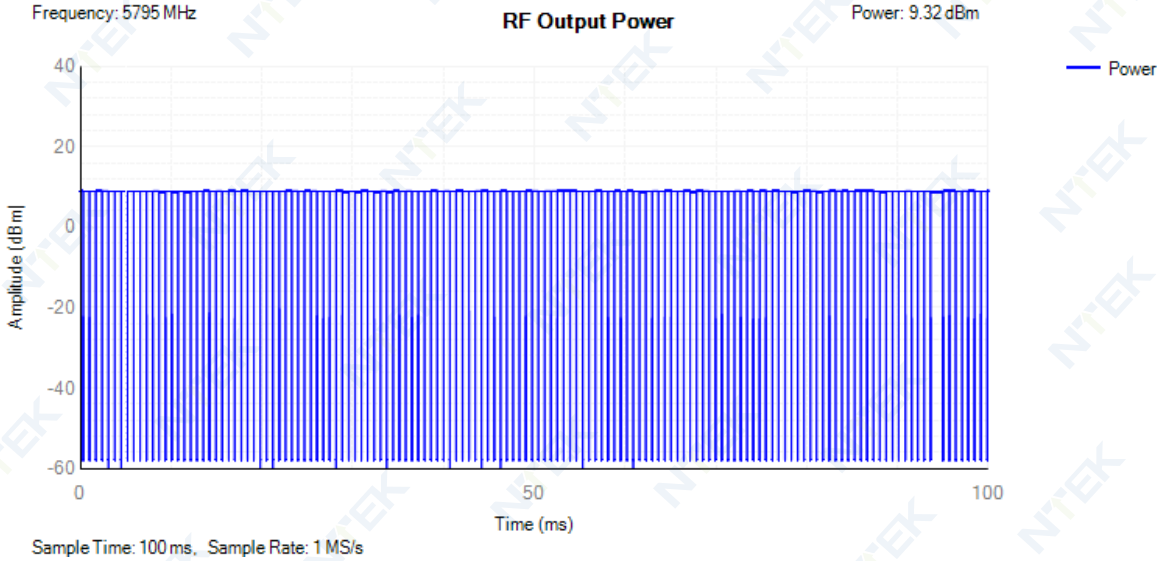


Sample Time: 100 ms, Sample Rate: 1 MS/s

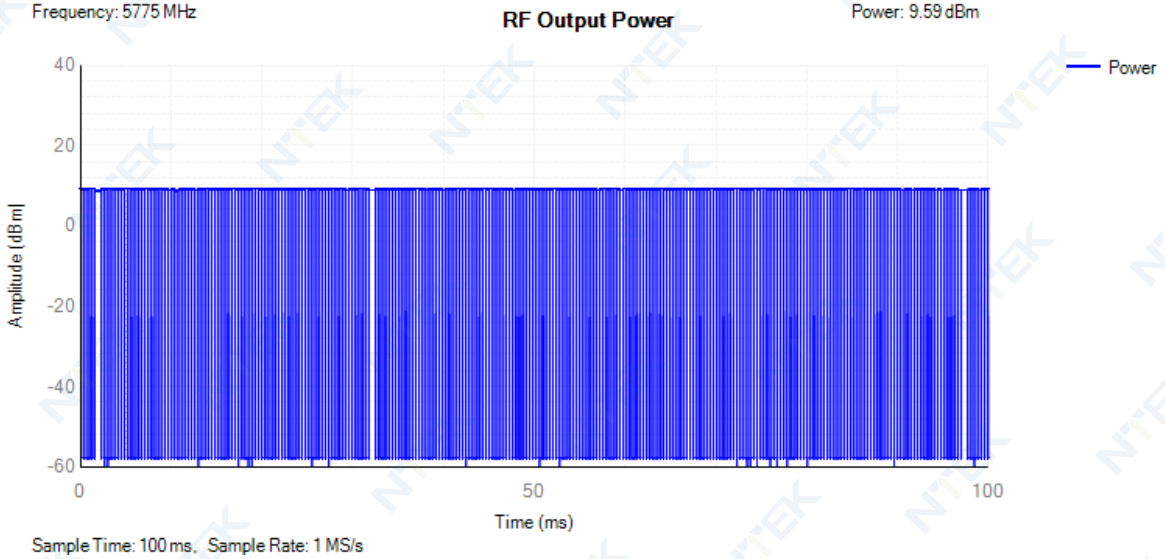
Power NVNT 802.11ac40 5755MHz



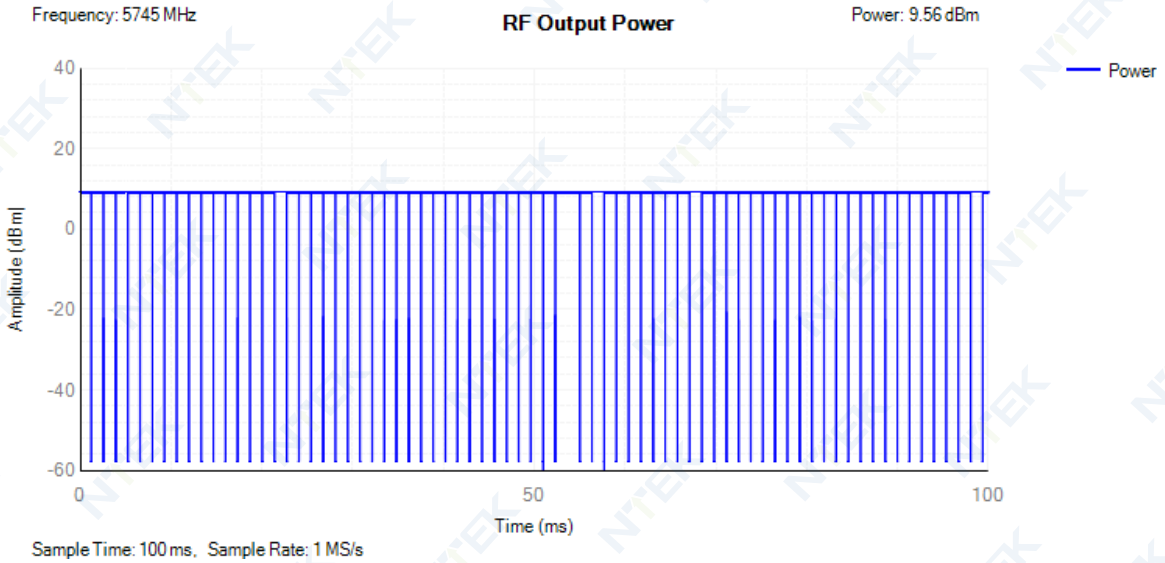
Power NVNT 802.11ac40 5795MHz



Power NVNT 802.11ac80 5775MHz

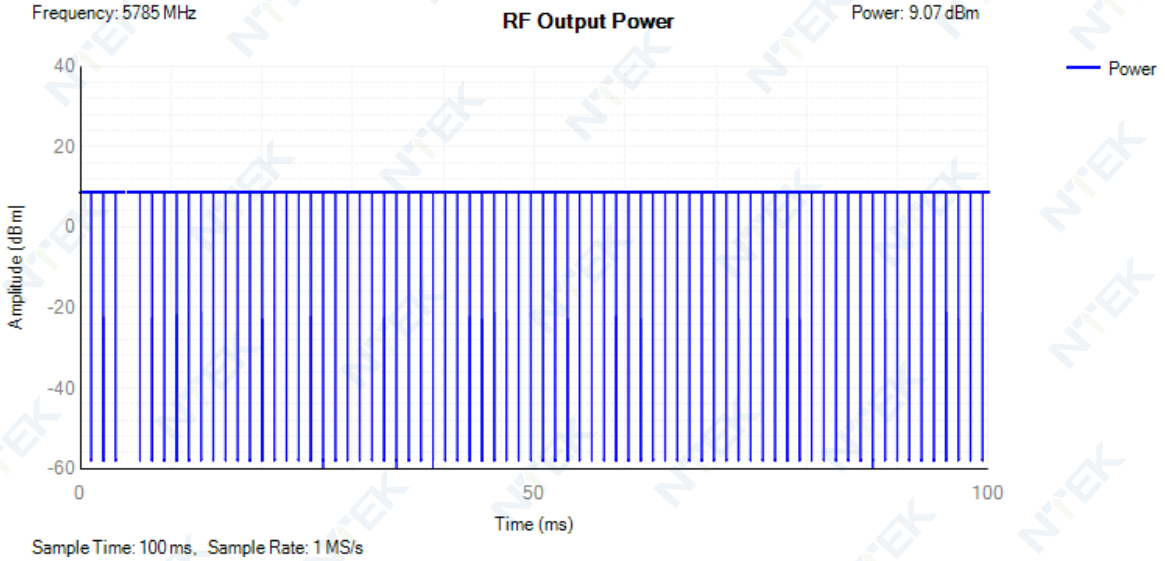


Power NVNT 802.11n(HT20) 5745MHz



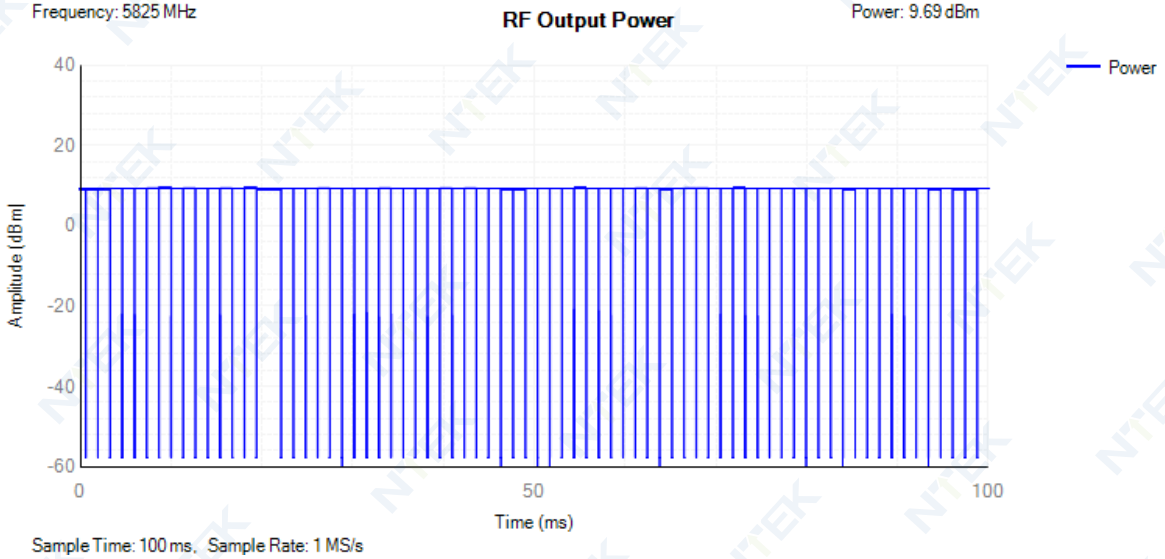
Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.11n(HT20) 5785MHz



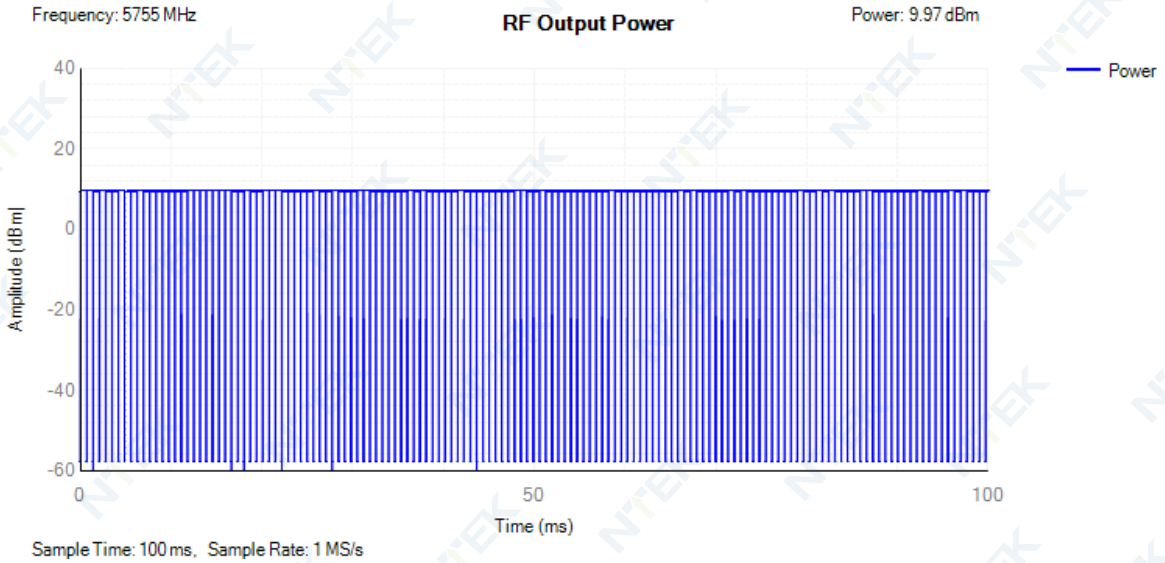
Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.11n(HT20) 5825MHz

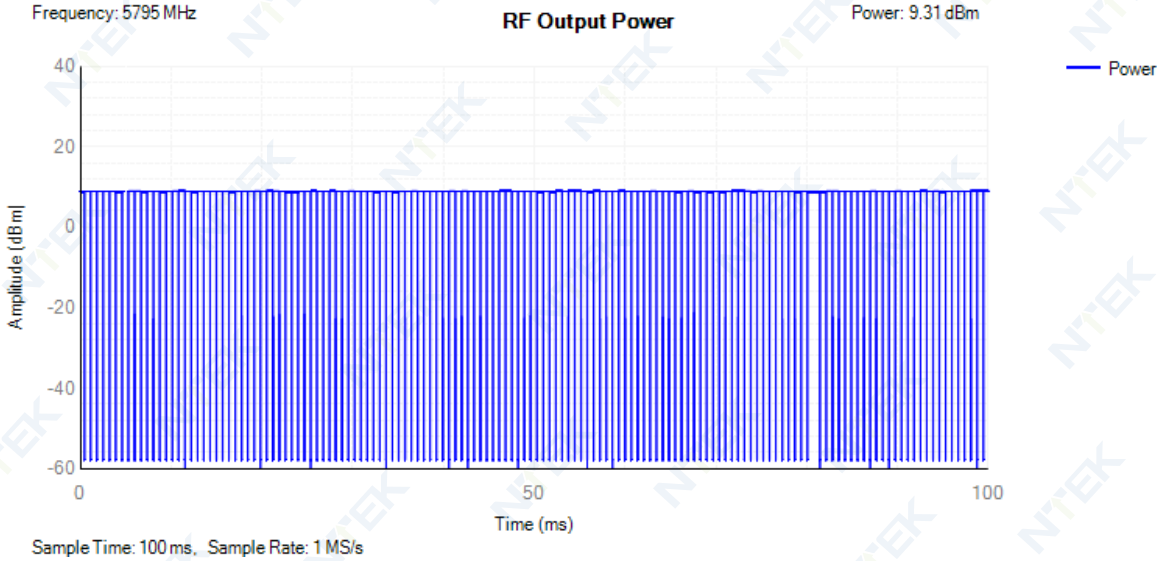


Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.11n(HT40) 5755MHz

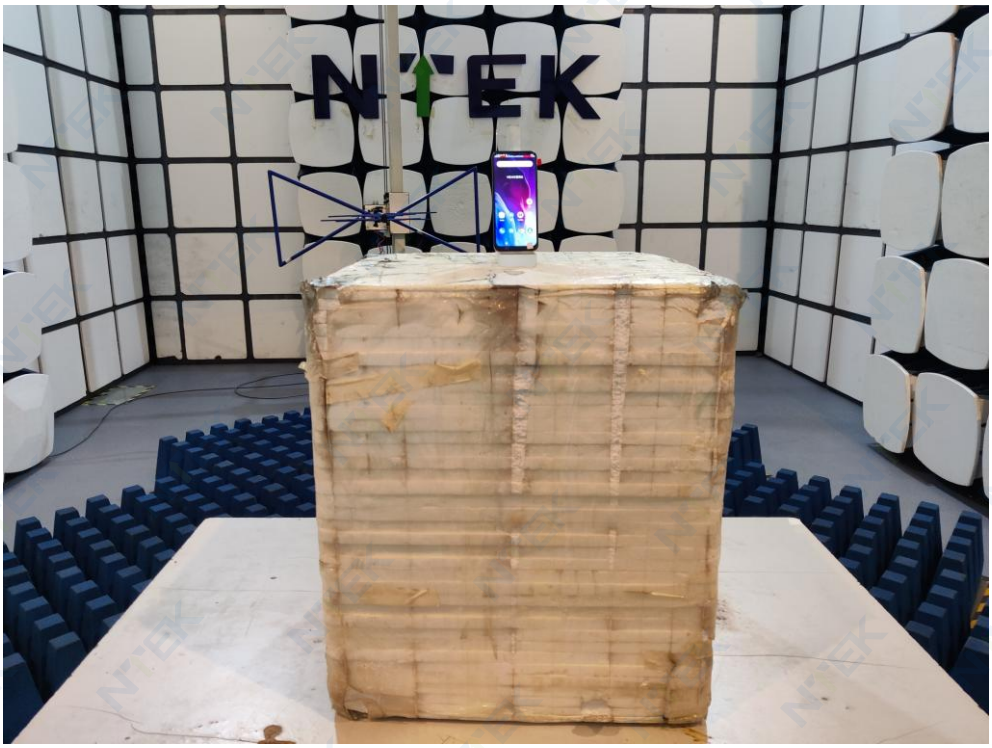


Power NVNT 802.11n(HT40) 5795MHz



11. EUT TEST PHOTO

SPURIOUS EMISSIONS MEASUREMENT PHOTOS



END OF REPORT