



# TEST REPORT

**APPLICANT** : Reliance Communications LLC

**PRODUCT NAME** : Orbic AirSurf 5G UW

**MODEL NAME** : R141TL5

**BRAND NAME** : Orbic

**FCC ID** : 2ABGH-R141TL5

**STANDARD(S)** : 47 CFR Part 24, Subpart E  
47 CFR Part 27, Subpart L&O

**RECEIPT DATE** : 2021-10-18

**TEST DATE** : 2021-10-18 to 2021-11-30

**ISSUE DATE** : 2021-12-07

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Tang Jinde (Rapporteur)

Approved by: Shen Junsheng  
Shen Junsheng ( Supervisor )

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Change History		
Version	Date	Reason for change
1.0	2021-12-07	First edition



# 1. Technical Information

Note: Provide by applicant.

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	Reliance Communications LLC
<b>Applicant Address:</b>	91 Colin Drive, Unit 1, HOLBROOK, New York 11741, United States
<b>Manufacturer:</b>	Unimaxcomm
<b>Manufacturer Address:</b>	35F,HBC HuiLong Center Building-II Minzhi Street, Longhua, Shenzhen, P.R. China 518110

## 1.2. Equipment Under Test (EUT) Description

<b>Product Name:</b>	Orbic AirSurf 5G UW	
<b>Hardware Version:</b>	R141-REV12	
<b>Software Version:</b>	ORB141TL5_V1.1.9_SVZ	
<b>IMEI:</b>	N/A	
<b>Serial No.:</b>	(N/A, marked #1 by test site)	
<b>Modulation Type:</b>	DFT-s-OFDM	PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
	CP-OFDM	QPSK, 16QAM, 64QAM, 256QAM
<b>Operation Band:</b>	N2, N66, N78	
<b>Frequency Range:</b>	N2	Tx: 1850MHz-1910MHz
		Rx: 1930MHz-1990MHz
	N66	Tx: 1710MHz-1780MHz
		Rx: 2110MHz-2200MHz
	N78	Tx: 3700MHz-3800MHz
		Rx: 3700MHz-3800MHz
<b>Channel Bandwidth</b>	N2	5MHz, 10MHz, 15MHz, 20MHz
	N66	5MHz, 10MHz, 15MHz, 20MHz
	N78	100MHz
<b>Antenna Type:</b>	Fixed Internal antenna	
<b>Antenna Gain:</b>	N2	4.54dBi
	N66	4.37dBi
	N78	4.63dBi



<b>Accessory Information:</b>	<b>AC Adapter</b>	
	Brand Name:	Orbic
	Model No.:	JHD-AP065U-190342BA-A
	Serial No.:	(N/A, marked #2 by test site)
	Rated Input:	100-240V~ 50/60HZ, 1.5A
	Rated Output:	19V=3420mA
	Manufacturer:	Shenzhen Jihongda Power Co., Ltd
	<b>Battery</b>	
	Brand Name:	Orbic
	Model No.:	BTE-6002
	Serial No.:	(N/A, marked #3 by test site)
	Capacity:	6000mAh
	Rated Voltage:	7.60V
	Charge Limit:	8.70V
Manufacturer:	GANZHOU NOVEL BATTERY TECHNOLOGY CO.LTD	

**Note 1:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



### 1.3. Maximum ERP/EIRP and Emission Designator

N2	Maximum ERP/EIRP (W)					
	DFT-s-OFDM					CP-OFDM
BW(MHz)	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	QPSK
20	0.728	0.746	0.596	0.526	0.346	0.631
15	0.673	/	/	/	/	/
10	0.681	/	/	/	/	/
5	0.634	/	/	/	/	/

N66	Maximum ERP/EIRP (W)					
	DFT-s-OFDM					CP-OFDM
BW(MHz)	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	QPSK
20	0.728	0.745	0.605	0.505	0.327	0.596
15	0.740	/	/	/	/	/
10	0.728	/	/	/	/	/
5	0.719	/	/	/	/	/

N78	Maximum ERP/EIRP (W)					
	DFT-s-OFDM					CP-OFDM
BW(MHz)	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	QPSK
100	0.408	0.415	0.335	0.218	0.143	0.301

**Note:** The test results of Maximum Emission Designator please refer to Report No.:SZ21010262W05.



## 1.4. Test Standards and Results

The objective of the report is to perform testing according to Part 2, Part 24 and Part 27 for the EUT FCC ID Certification:

No	Identity	Document Title
1	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	47 CFR Part 24	Personal Communications Services
3	47 CFR Part 27	Miscellaneous Wireless Communications Services



Test detailed items/section required by FCC rules and results are as below:

Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
2.1046 24.232(c) 27.50(d)(4)	Transmitter Conducted Output Power and ERP/EIRP	Nov 30,2021	Yi Xiaogang	PASS	No deviation
2.1049	Occupied Bandwidth	May 16 to Jun 23, 2021	Chen Haiju	PASS	No deviation
2.1055 24.235 27.54	Frequency Stability	May 29 to 31, 2021	Chen Haiju	PASS	No deviation
24.232(d) 27.50(d)(5) 27.50(j)(4)	Peak to Average Radio	Jun 8 to 22, 2021	Chen Haiju	PASS	No deviation
2.1051 24.238(a) 27.53(h) 27.53(l)	Conducted Spurious Emissions	May 02 to Jun 04, 2021	Chen Haiju	PASS	No deviation
2.1051 24.238(a) 27.53(h) 27.53(l)	Band Edge	May 02, to Jun 23, 2021	Chen Haiju	PASS	No deviation
2.1051 24.238(a) 27.53(h) 27.53(l)	Radiated Spurious Emissions	Oct 18 to Nov 23, 2021	Gao Jianrou	PASS	No deviation

**Note 1:** The tests were performed according to the method of measurements prescribed in KDB971168 D01 v03 and ANSI/TIA-603-E-2016.

**Note 2:** The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The ref offset 26.5dB contains two parts that cable loss 16.5dB and Attenuator 10dB.

**Note 3:** These items except ERP/EIRP&RSE please refer to the 5G module report SZ21010262W05(SA) which The FCC ID is 2ABGH-R100ML5 and the 5G module has been certified by Shenzhen Morlab Communications Technology Co., Ltd. on 07/02/2021.



## 1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106



## 2.47 CFR Part 2, Part 24E, Part 27L&O Requirements

### 2.1. Transmitter Conducted Output Power And ERP/EIRP

#### 2.1.1. Requirement

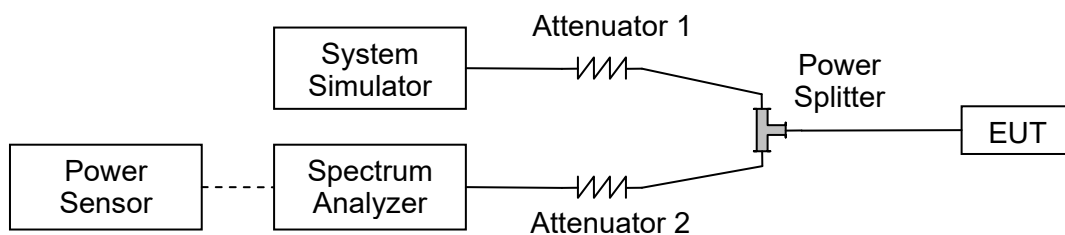
According to FCC section 2.1046(a), for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

According to FCC section 24.232 (c) for N2, Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to FCC section 27.50 (d)(4) for N66, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to FCC section 27.50 (i)(3) for N78, Mobile and portable stations are limited to 1 Watt EIRP.

#### 2.1.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.



**2.1.3. Test procedure**

KDB 971168 D01v03 Section 5.2 and ANSI/TIA-603-E-2016.

EIRP (dBm) = Conducted Output Power (dBm) + Antenna Gain (dBi)

ERP (dBm) = EIPR (dBm) - 2.15

**2.1.4. Result**

**Effective Radiated Power and Effective Isotropic Radiated Power:**

N2				Measured EIRP					
BW [MHz]	Modulation	RB Size	RB Offset	LowCh./ Freq.	MiddleC h./Freq.	HighCh. / Freq.	LowCh. / EIRP	MiddleC h./EIRP	HighCh. / EIRP
Channel				372000	376000	380000	372000	376000	380000
Frequency (MHz)				1860	1880	1900	1860	1880	1900
				dBm			W		
20	DFT-s-OFDM PI/2 BPSK	1	1	28.43	28.50	28.47	0.697	0.708	0.703
20		1	39	28.62	28.55	28.59	0.728	0.716	0.723
20		1	77	28.59	28.52	28.45	0.723	0.711	0.700
20		36	1	28.14	28.04	27.95	0.652	0.637	0.624
20		36	18	28.22	28.07	28.20	0.664	0.641	0.661
20		36	36	27.93	28.12	28.05	0.621	0.649	0.638
20		75	0	28.05	28.15	28.02	0.638	0.653	0.634
20	DFT-s-OFDM QPSK	1	1	28.70	28.73	28.70	0.741	0.746	0.741
20		1	39	28.45	28.49	28.44	0.700	0.706	0.698
20		1	77	28.68	28.55	28.56	0.738	0.716	0.718
20		36	1	28.16	28.15	27.99	0.655	0.653	0.630
20		36	18	28.21	28.22	28.21	0.662	0.664	0.662
20		36	36	28.06	28.09	28.13	0.640	0.644	0.650
20		75	0	28.36	28.39	28.58	0.685	0.690	0.721
20	DFT-s-OFDM 16QAM	1	1	27.52	27.71	27.75	0.565	0.590	0.596
20	DFT-s-OFDM 64QAM	1	1	27.06	27.21	27.07	0.508	0.526	0.509
20	DFT-s-OFDM 256QAM	1	1	25.31	25.25	25.39	0.340	0.335	0.346
Channel				371500	376000	380500	371500	376000	380500
Frequency (MHz)				1857.5	1880	1902.5	1857.5	1880	1902.5



15	DFT-s-OFDM PI/2 BPSK	1	1	28.28	28.18	28.24	0.673	0.658	0.667
Channel				371000	376000	381000	371000	376000	381000
Frequency (MHz)				1855	1880	1905	1855	1880	1905
10	DFT-s-OFDM PI/2 BPSK	1	1	28.19	28.18	28.33	0.659	0.658	0.681
Channel				370500	376000	381500	370500	376000	381500
Frequency (MHz)				1852.5	1880	1907.5	1852.5	1880	1907.5
5	DFT-s-OFDM PI/2 BPSK	1	1	28.02	28.00	26.91	0.634	0.631	0.491
Channel				372000	376000	380000	372000	376000	380000
Frequency (MHz)				1860	1880	1900	1860	1880	1900
20	CP-OFDM QPSK	1	1	27.77	27.74	28.00	0.598	0.594	0.631
20	CP-OFDM 16QAM	1	1	27.69	27.40	27.33	0.587	0.550	0.541
20	CP-OFDM 64QAM	1	1	25.13	25.13	25.00	0.326	0.326	0.316
20	CP-OFDM 256QAM	1	1	23.07	23.19	23.07	0.203	0.208	0.203



N66				Measured EIRP					
BW [MHz]	Modulation	RB Size	RB Offset	LowCh./ Freq.	MiddlCh ./Freq.	HighCh. / Freq.	LowCh. / EIRP	MiddleCh ./EIRP	HighCh. / EIRP
Channel				344000	349000	354000	344000	349000	354000
Frequency (MHz)				1720	1745	1770	1720	1745	1770
				dBm			W		
20	DFT-s-OFDM PI/2 BPSK	1	1	28.57	28.39	28.56	0.719	0.690	0.718
20		1	39	28.58	28.43	28.40	0.721	0.697	0.692
20		1	77	28.38	28.50	28.62	0.689	0.708	0.728
20		36	1	28.08	27.80	28.02	0.643	0.603	0.634
20		36	18	27.95	27.89	27.84	0.624	0.615	0.608
20		36	36	27.80	27.87	27.83	0.603	0.612	0.607
20		75	0	27.82	27.76	27.91	0.605	0.597	0.618
20	DFT-s-OFDM QPSK	1	1	28.46	28.72	28.37	0.701	0.745	0.687
20		1	39	28.67	28.47	28.60	0.736	0.703	0.724
20		1	77	28.41	28.46	28.36	0.693	0.701	0.685
20		36	1	27.81	28.01	27.90	0.604	0.632	0.617
20		36	18	27.98	27.78	27.97	0.628	0.600	0.627
20		36	36	27.94	27.90	27.96	0.622	0.617	0.625
20		75	0	27.73	28.03	27.83	0.593	0.635	0.607
20	DFT-s-OFDM 16QAM	1	1	27.82	27.70	27.52	0.605	0.589	0.565
20	DFT-s-OFDM 64QAM	1	1	26.89	26.79	27.03	0.489	0.478	0.505
20	DFT-s-OFDM 256QAM	1	1	25.02	24.85	25.15	0.318	0.305	0.327
Channel				343500	349000	354500	343500	349000	354500
Frequency (MHz)				1717.5	1745	1772.5	1717.5	1745	1772.5
15	DFT-s-OFDM PI/2 BPSK	1	1	28.64	28.59	28.69	0.731	0.723	0.740
Channel				343000	349000	355000	343000	349000	355000
Frequency (MHz)				1715	1745	1775	1715	1745	1775
10	DFT-s-OFDM PI/2 BPSK	1	1	28.32	28.35	28.62	0.679	0.684	0.728
Channel				342500	349000	355500	342500	349000	355500
Frequency (MHz)				1712.5	1745	1777.5	1712.5	1745	1777.5
5	DFT-s-OFDM PI/2 BPSK	1	1	28.57	28.47	28.53	0.719	0.703	0.713



Channel				344000	349000	354000	344000	349000	354000
Frequency (MHz)				1710	1745	1780	1710	1745	1780
20	CP-OFDM QPSK	1	1	27.75	27.54	27.71	0.596	0.568	0.590
20	CP-OFDM 16QAM	1	1	27.25	27.28	27.36	0.531	0.535	0.545
20	CP-OFDM 64QAM	1	1	24.79	24.89	24.98	0.301	0.308	0.315
20	CP-OFDM 256QAM	1	1	23.05	22.95	22.92	0.202	0.197	0.196



N78				Measured EIRP					
BW [MHz]	Modulation	RB Size	RB Offset	LowCh./ Freq.	MiddleCh ./Freq.	HighCh. / Freq.	LowCh. / EIRP	MiddleCh ./EIRP	HighCh. / EIRP
Channel				/	650000	/	/	650000	/
Frequency (MHz)				/	3750	/	/	3750	/
				dBm			W		
100	DFT-s-OFDM PI/2 BPSK	1	1	/	26.11	/	/	0.408	/
100		1	136	/	25.91	/	/	0.390	/
100		1	272	/	25.85	/	/	0.385	/
100		135	1	/	25.23	/	/	0.333	/
100		135	67	/	25.26	/	/	0.336	/
100		135	136	/	24.95	/	/	0.313	/
100		270	0	/	25.16	/	/	0.328	/
100	DFT-s-OFDM QPSK	1	1	/	26.18	/	/	0.415	/
100		1	136	/	25.73	/	/	0.374	/
100		1	272	/	24.84	/	/	0.305	/
100		135	1	/	25.28	/	/	0.337	/
100		135	67	/	24.85	/	/	0.305	/
100		135	136	/	24.80	/	/	0.302	/
100		270	0	/	24.95	/	/	0.313	/
100	DFT-s-OFDM 16QAM	1	1	/	25.25	/	/	0.335	/
100	DFT-s-OFDM 64QAM	1	1	/	23.38	/	/	0.218	/
100	DFT-s-OFDM 256QAM	1	1	/	21.54	/	/	0.143	/
Channel				/	650000	/	/	650000	/
Frequency (MHz)				/	3750	/	/	3750	/
100	CP-OFDM QPSK	1	1	/	24.78	/	/	0.301	/
100	CP-OFDM 16QAM	1	1	/	24.43	/	/	0.277	/
100	CP-OFDM 64QAM	1	1	/	22.31	/	/	0.170	/
100	CP-OFDM 256QAM	1	1	/	19.48	/	/	0.089	/

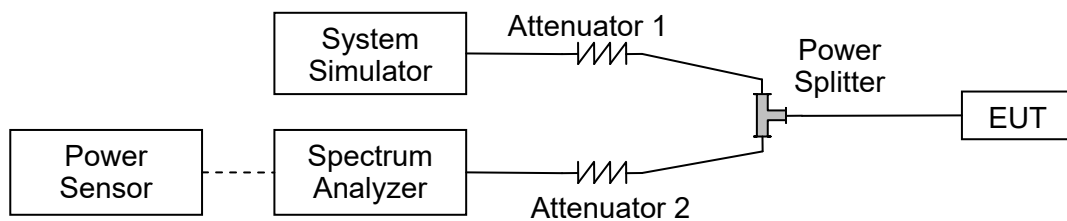
**Note:** The test results of output power please refer to Report No.:SZ21010262W05.

## 2.2. Occupied Bandwidth

### 2.2.1. Requirement

According to FCC section 2.1049, the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission. Occupied bandwidth is also known as the 99% emission bandwidth.

### 2.2.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50 Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.2.3. Test procedure

KDB 971168 D01v03 Section 4.1 and ANSI/TIA-603-E-2016.

### 2.2.4. Test Result

**Note:** The test results please refer to Report No.:SZ21010262W05.

## 2.3. Frequency Stability

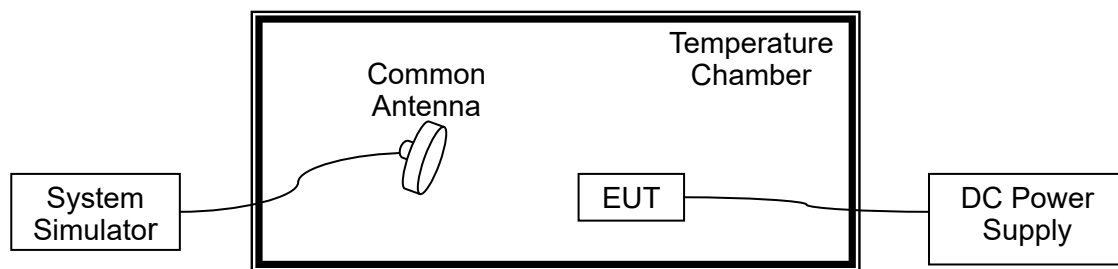
### 2.3.1. Requirement

According to FCC section 2.1055, 24.235& 27.54, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

- (a) The temperature is varied from  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at intervals of not more than  $10^{\circ}\text{C}$ .
- (b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

**Note:** The operating temperature of EUT is from  $0^{\circ}\text{C}$  to  $45^{\circ}\text{C}$ , which are specified by the applicant.

### 2.3.2. Test Description



The EUT which is powered by the DC Power Supply directly, is located in the Temperature Chamber. The EUT is commanded by the System Simulator (SS) to operate at the maximum output power. A call is established between the EUT and the SS via a Common Antenna.

### 2.3.3. Test procedure

KDB 971168 D01v03 Section 9.0 and ANSI/TIA-603-E-2016.

### 2.3.4. Test Result

**Note:** The test results please refer to Report No.:SZ21010262W05.



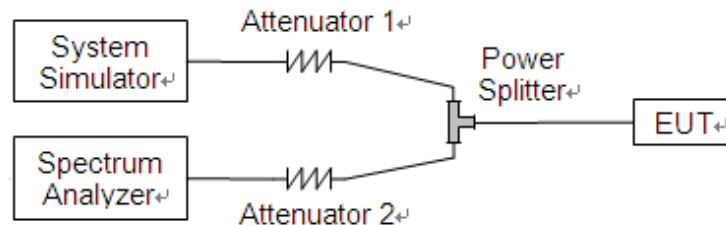
## 2.4. Peak to Average Ratio

### 2.4.1. Requirement

According to FCC section 24.232(d), 27.50(d) (5) & 27.50(j) (4), the peak to average ratio (PAR) of the transmission may not exceed 13dB.

### 2.4.2. Test Description

#### Test Set:



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.4.3. Test procedure

KDB 971168 D01v03 Section 5.7 and ANSI/TIA-603-E-2016.

### 2.4.4. Test Result

**Note:** The test results please refer to Report No.:SZ21010262W05.

## 2.5. Conducted Spurious Emissions

### 2.5.1. Requirement

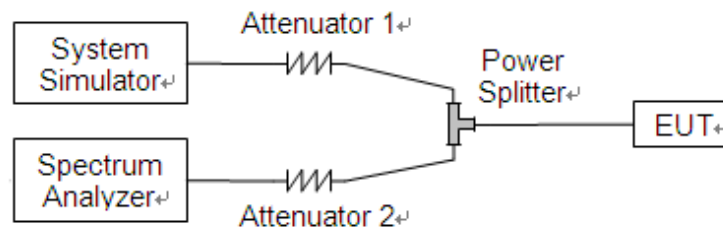
According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43+10*\log(P)$ dB. This calculated to be -13dBm.

According to FCC section 24.238(a) for N2, The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC section 27.53(h) for N66, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

According to FCC section 27.53(l) for N78, for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

### 2.5.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.



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### 2.5.3. Test procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

### 2.5.4. Test Result

**Note:** The test results please refer to Report No.:SZ21010262W05.



## 2.6. Band Edge

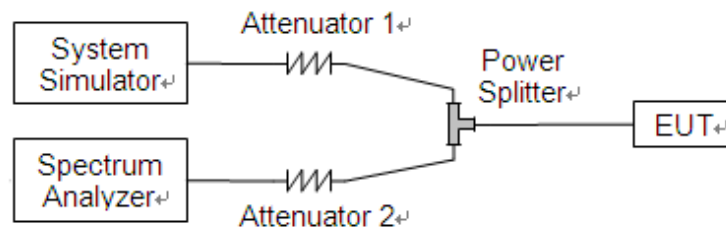
### 2.6.1. Requirement

According to FCC section 24.238(a) for N2, The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power ( $P$ ) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC section 27.53(h) for N66, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power ( $P$ ) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

According to FCC section 27.53(l) for N78, for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed  $-13$  dBm/MHz.

### 2.6.2. Test Description



The EUT is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power. A call is established between the EUT and the SS.

### 2.6.3. Test procedure

KDB 971168 D01v03 Section 6.0 and ANSI/TIA-603-E-2016.

### 2.6.4. Test Result

**Note:** The test results please refer to Report No.:SZ21010262W05.

## 2.7. Radiated Spurious Emissions

### 2.7.1. Requirement

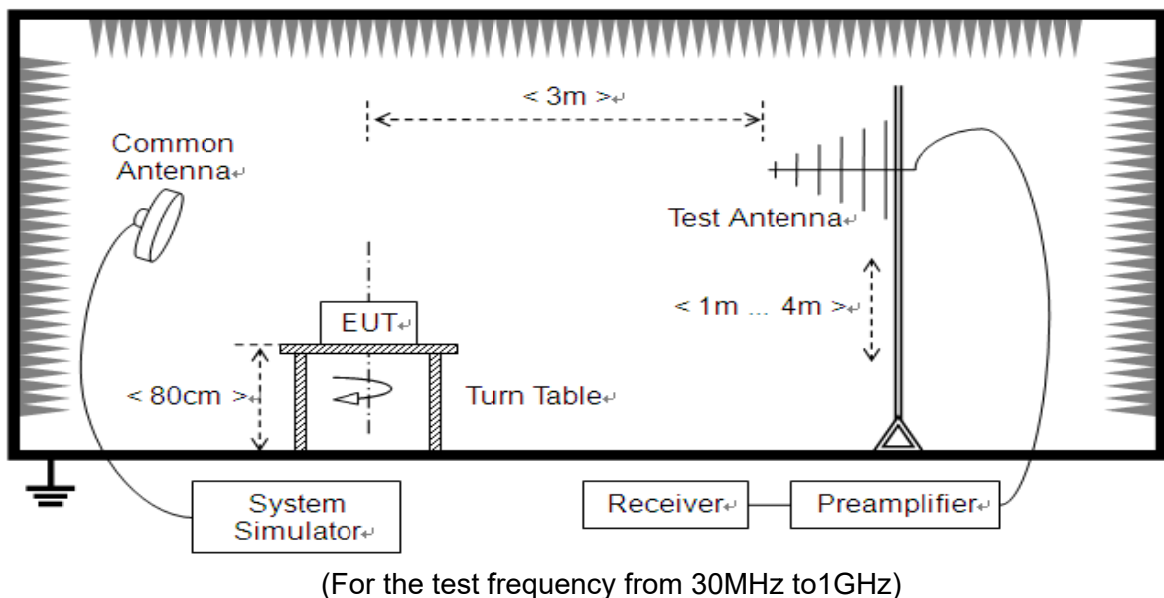
According to FCC section 2.1051, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. This calculated to be -13dBm.

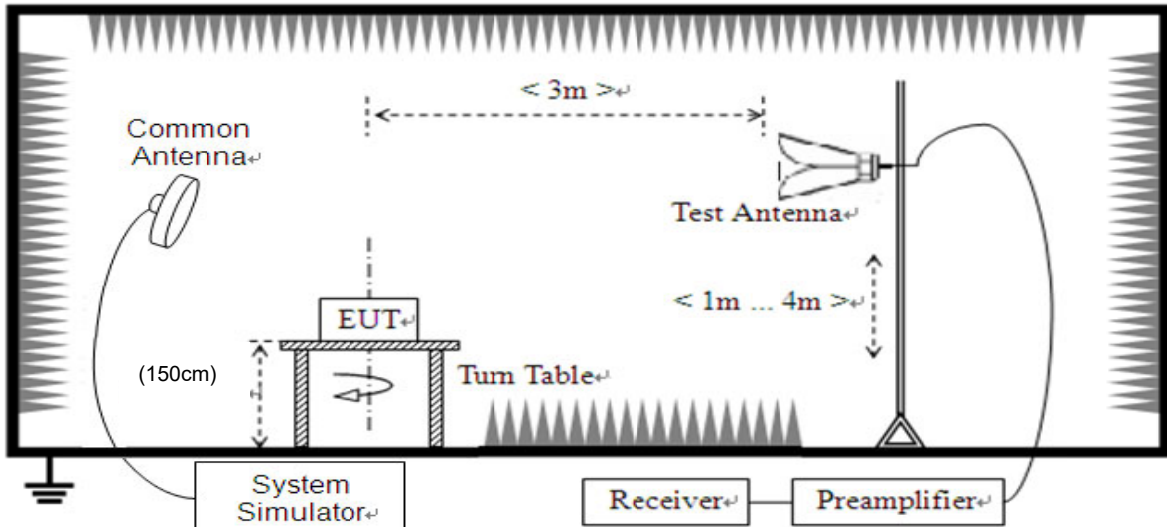
According to FCC section 24.238(a) for N2, The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC section 27.53(h) for N66, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

According to FCC section 27.53(l) for N78, for mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz.

### 2.7.2. Test Description





(For the test frequency above 1GHz)

The EUT is located in a 3m Full-Anechoic Chamber, the cable loss, air loss and so on of the site as factors are pre-calibrated using the "Substitution" method, and calculated to correct the reading. A call is established between the EUT and the SS via a Common Antenna. The EUT is commanded by the SS to operate at the maximum and minimum output power, and only the test result of the maximum output power was recorded.

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground and the Turn Table is actuated to turn from 0° to 360° to determine the maximum value of the radiated power. The emission levels at both horizontal and vertical polarizations should be tested. The Filters consists of Notch Filters and High Pass Filter.

**Note:** when doing measurements above 1GHz, the EUT has been within the 3dB cone width of the horn antenna during horizontal antenna.

### 2.7.3. Test procedure

KDB 971168 D01v03 Section 5.8 and ANSI/TIA-603-E-2016.



#### 2.7.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. Test Antenna height is varied from 1m to 4m above the ground, and the Turn Table is actuated to turn from 0° to 360°, both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The substitution corrections are obtained as described below:

$$A_{\text{SUBST}} = P_{\text{SUBST\_TX}} - P_{\text{SUBST\_RX}} - L_{\text{SUBST\_CABLES}} + G_{\text{SUBST\_TX\_ANT}}$$

$$A_{\text{TOT}} = L_{\text{CABLES}} + A_{\text{SUBST}}$$

Where  $A_{\text{SUBST}}$  is the final substitution correction including receive antenna gain.

$P_{\text{SUBST\_TX}}$  is signal generator level,

$P_{\text{SUBST\_RX}}$  is receiver level,

$L_{\text{SUBST\_CABLES}}$  is cable losses including TX cable,

$G_{\text{SUBST\_TX\_ANT}}$  is substitution antenna gain.

$A_{\text{TOT}}$  is total correction factor including cable loss and substitution correction

During the test, the data of  $A_{\text{TOT}}$  was added in the Test Spectrum Analyze, so Spectrum Analyze reading is the final values which contain the data of  $A_{\text{TOT}}$ .

**Note1:** The power of the EUT transmitting frequency should be ignored.

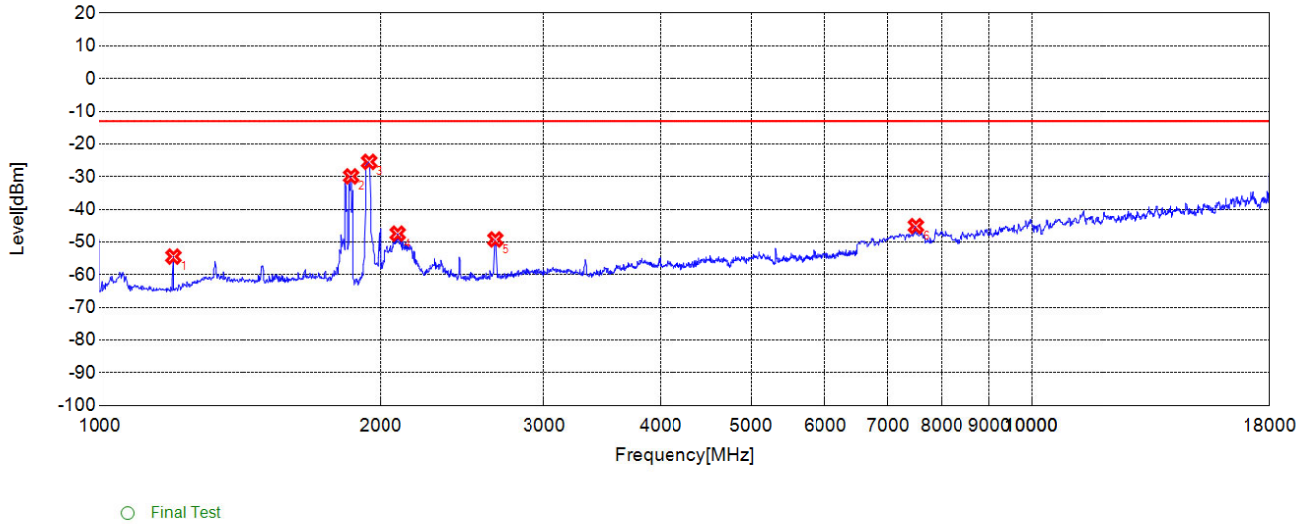
**Note2:** All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

**Note3:** All bandwidth and modulation were considered and evaluated respectively by performing full test for each band, only the worst cases (Max Bandwidth and QPSK mode) were recorded in this test report.





### Test Graph

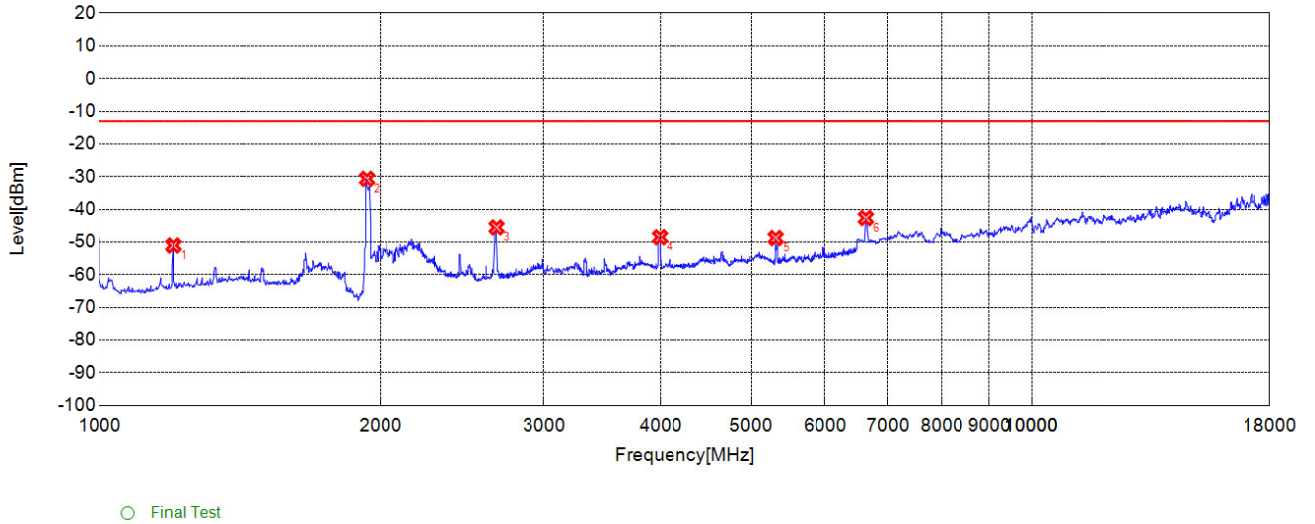


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-54.46	-13.00	41.46	-11.40	-45.85	34.45	Horizontal
2	1858.8590	-29.92	-13.00	16.92	-7.10	-46.67	39.57	NA
3	1942.9430	-25.48	-13.00	12.48	-5.23	-46.47	41.24	NA
4	2089.0890	-47.44	-13.00	34.44	-8.06	-47.20	39.14	Horizontal
5	2657.6580	-49.22	-13.00	36.22	-10.17	-47.31	37.14	Horizontal
6	7501.5020	-45.13	-13.00	32.13	10.71	-35.48	46.19	Horizontal

N2 372000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G H



### Test Graph

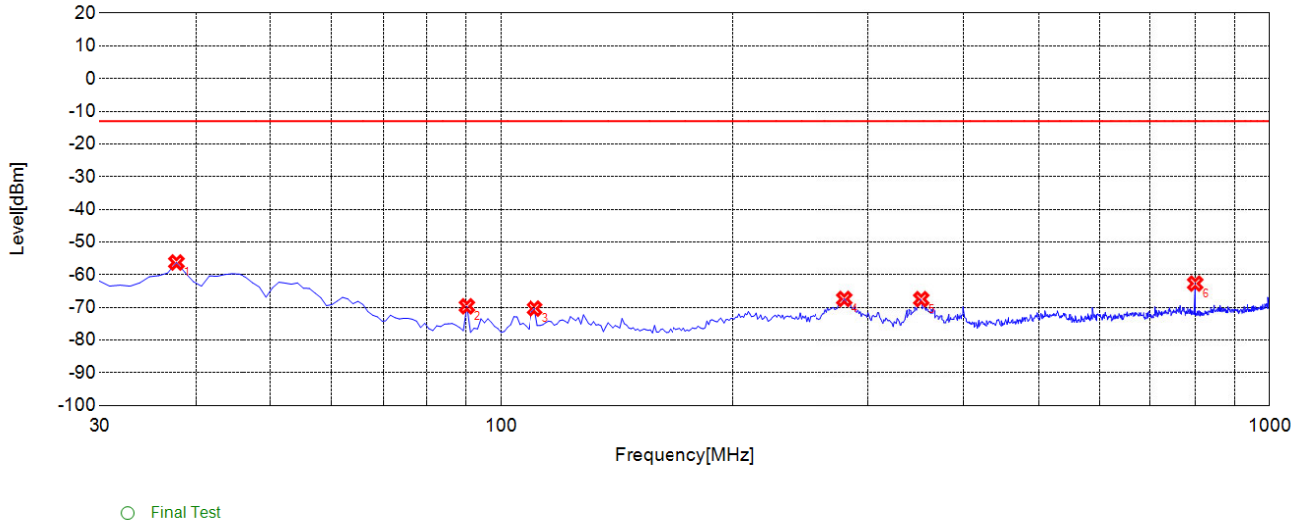


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-51.05	-13.00	38.05	-10.72	-45.85	35.13	Vertical
2	1932.9330	-30.67	-13.00	17.67	-10.81	-46.54	35.73	NA
3	2665.6660	-45.54	-13.00	32.54	-10.39	-47.34	36.95	Vertical
4	3991.4910	-48.53	-13.00	35.53	-8.14	-47.33	39.19	Vertical
5	5308.8090	-48.78	-13.00	35.78	-3.32	-43.33	40.01	Vertical
6	6638.1380	-42.66	-13.00	29.66	4.15	-39.19	43.34	Vertical

N2 372000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G V



### Test Graph

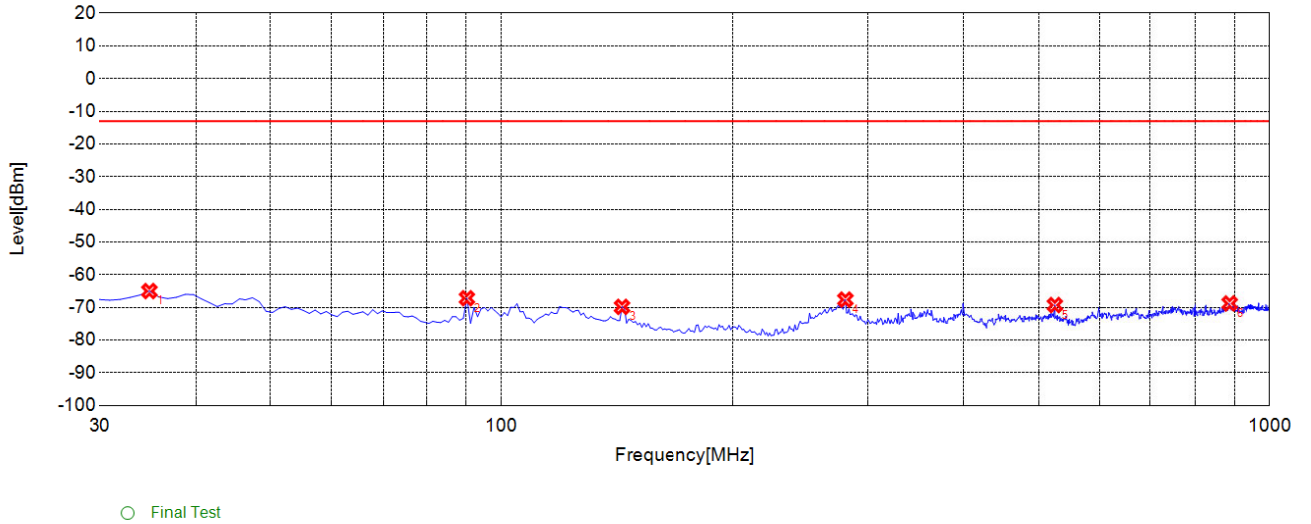


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	37.7680	-56.27	-13.00	43.27	-8.07	-39.56	31.49	Horizontal
2	90.2000	-69.67	-13.00	56.67	-18.92	-38.71	19.79	Horizontal
3	110.5910	-70.38	-13.00	57.38	-17.68	-38.68	21.00	Horizontal
4	279.5400	-67.42	-13.00	54.42	-12.04	-37.04	25.00	Horizontal
5	351.3910	-67.48	-13.00	54.48	-10.45	-36.95	26.50	Horizontal
6	799.9800	-62.71	-13.00	49.71	-3.49	-34.24	30.75	Horizontal

N2 372000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G H



### Test Graph

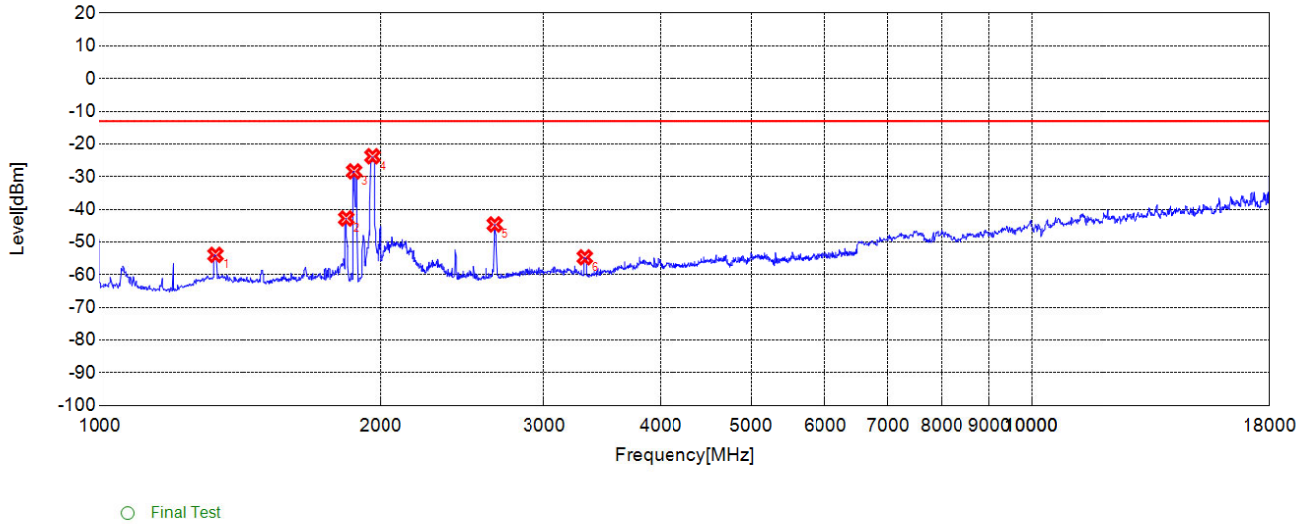


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	34.8550	-65.01	-13.00	52.01	-16.68	-39.58	22.90	Vertical
2	90.2000	-67.2	-13.00	54.20	-16.50	-38.71	22.21	Vertical
3	143.6040	-69.84	-13.00	56.84	-15.68	-38.61	22.93	Vertical
4	280.5110	-67.62	-13.00	54.62	-12.48	-37.03	24.55	Vertical
5	525.1950	-69.29	-13.00	56.29	-6.90	-35.04	28.14	Vertical
6	886.3960	-68.8	-13.00	55.80	-1.32	-34.00	32.68	Vertical

N2 372000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G V



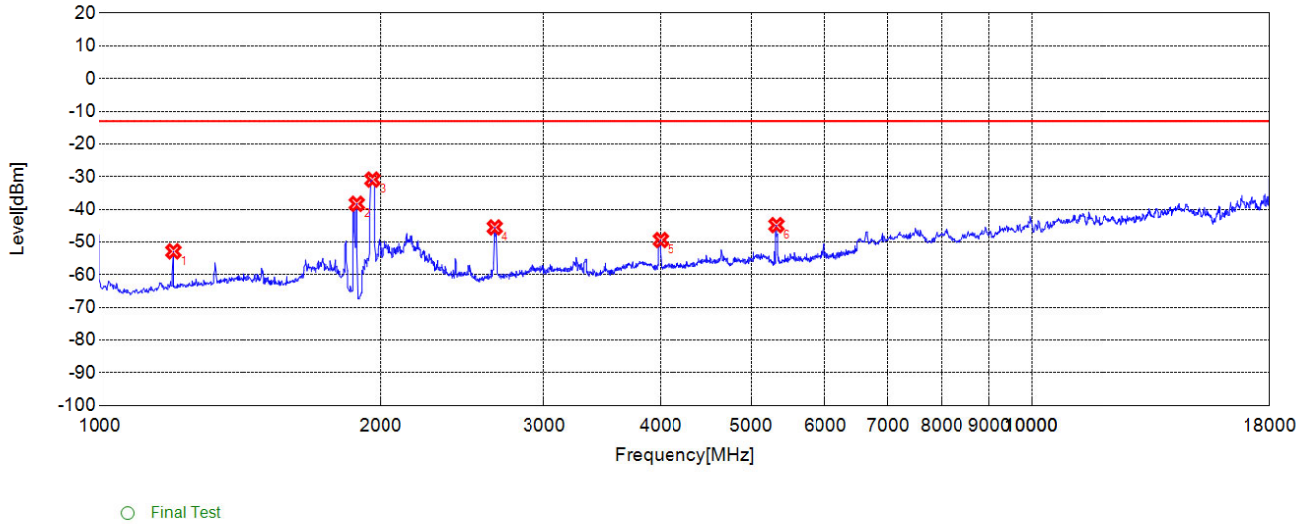
### Test Graph



Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1330.3300	-53.93	-13.00	40.93	-7.84	-45.28	37.44	Horizontal
2	1836.8370	-42.79	-13.00	29.79	-7.56	-46.57	39.01	Horizontal
3	1872.8730	-28.39	-13.00	15.39	-6.77	-46.70	39.93	NA
4	1958.9590	-23.77	-13.00	10.77	-4.94	-46.40	41.46	NA
5	2653.6540	-44.62	-13.00	31.62	-10.18	-47.30	37.12	Horizontal
6	3318.8190	-54.68	-13.00	41.68	-10.01	-48.05	38.04	Horizontal

N2 376000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G H

### Test Graph

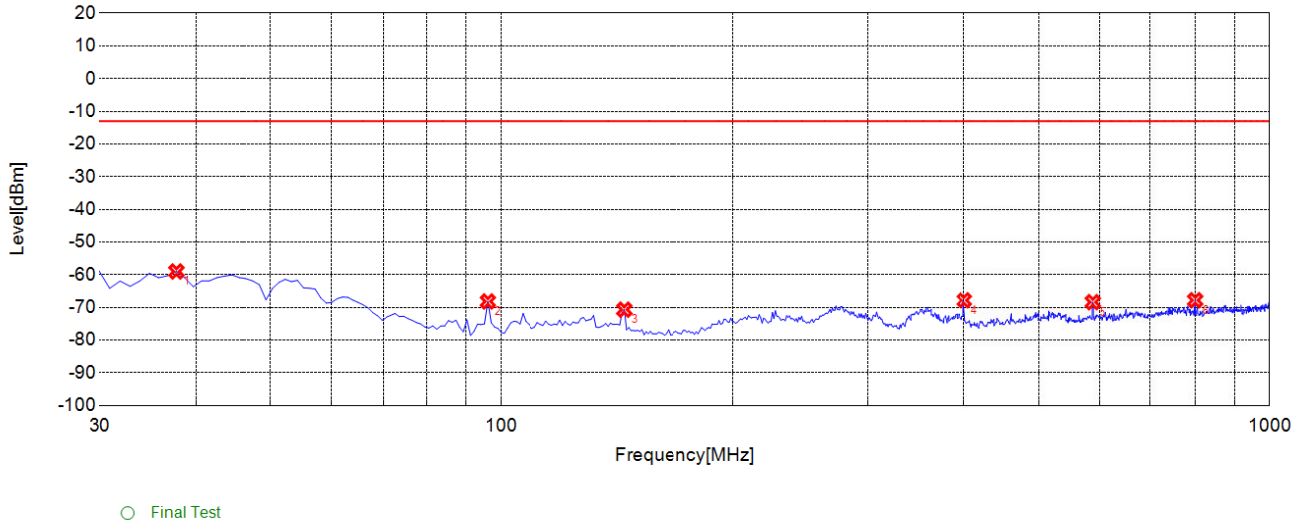


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-52.86	-13.00	39.86	-10.72	-45.85	35.13	Vertical
2	1884.8850	-38.31	-13.00	25.31	-11.02	-46.72	35.70	NA
3	1958.9590	-30.9	-13.00	17.90	-10.46	-46.40	35.94	NA
4	2653.6540	-45.53	-13.00	32.53	-10.38	-47.30	36.92	Vertical
5	3998.4980	-49.4	-13.00	36.40	-8.16	-47.33	39.17	Vertical
6	5319.3190	-44.84	-13.00	31.84	-3.20	-43.26	40.06	Vertical

N2 376000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G V



### Test Graph

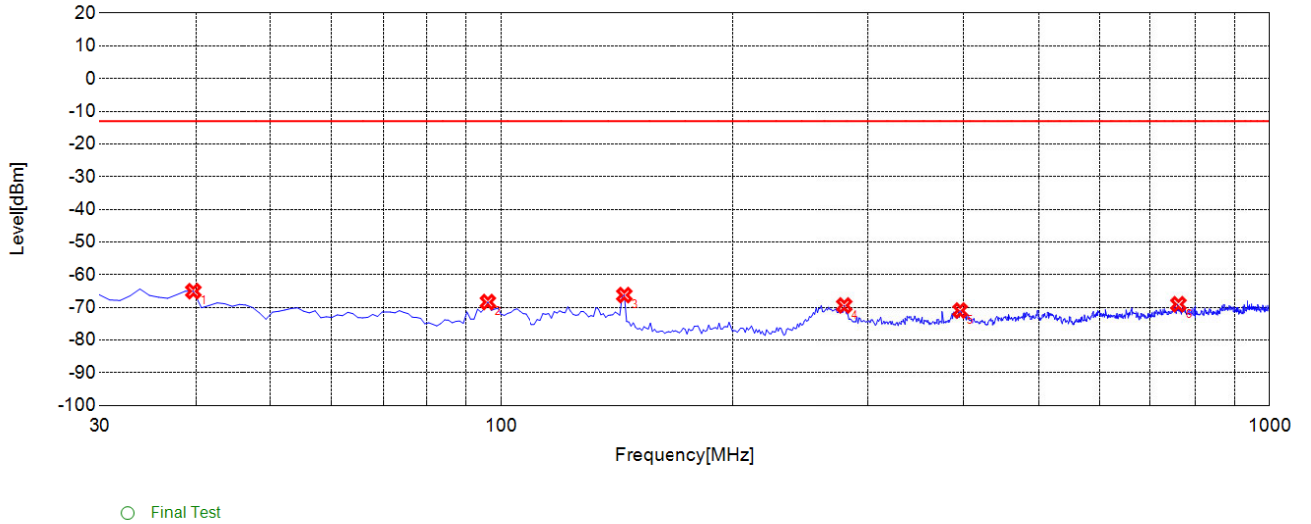


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	37.7680	-59.02	-13.00	46.02	-8.07	-39.56	31.49	Horizontal
2	96.0260	-68.18	-13.00	55.18	-18.01	-38.70	20.69	Horizontal
3	144.5750	-70.69	-13.00	57.69	-20.98	-38.62	17.64	Horizontal
4	399.9400	-67.83	-13.00	54.83	-10.14	-36.26	26.12	Horizontal
5	588.3080	-68.4	-13.00	55.40	-6.19	-34.91	28.72	Horizontal
6	799.9800	-67.81	-13.00	54.81	-3.49	-34.24	30.75	Horizontal

N2 376000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G H



### Test Graph

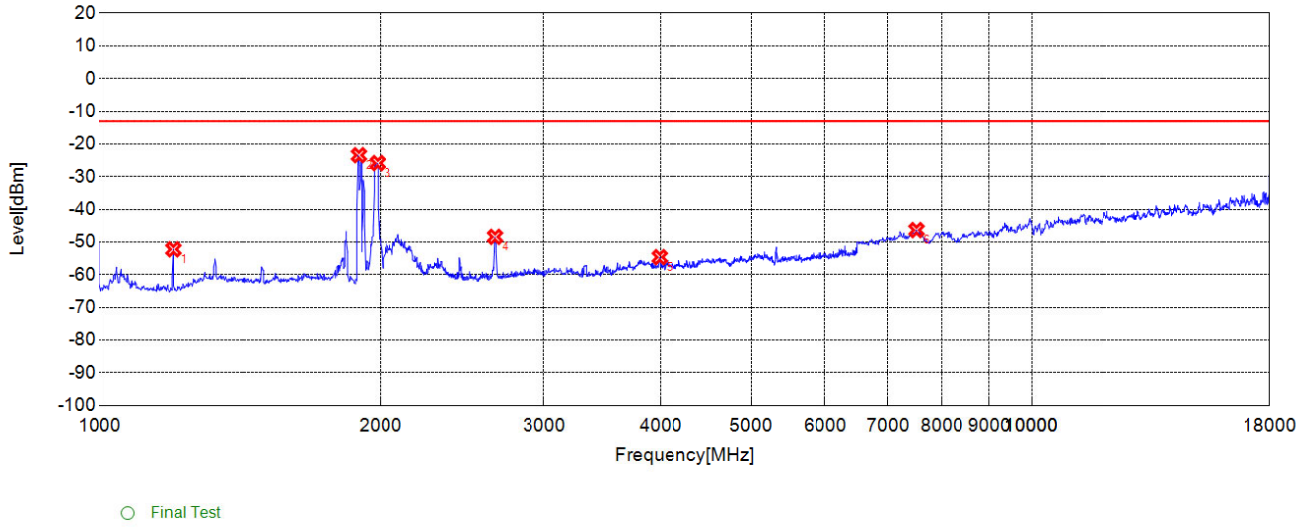


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	39.7100	-65.05	-13.00	52.05	-16.34	-39.54	23.20	Vertical
2	96.0260	-68.37	-13.00	55.37	-14.07	-38.70	24.63	Vertical
3	144.5750	-66.23	-13.00	53.23	-15.84	-38.62	22.78	Vertical
4	279.5400	-69.41	-13.00	56.41	-12.54	-37.04	24.50	Vertical
5	395.0850	-70.96	-13.00	57.96	-9.81	-36.34	26.53	Vertical
6	761.1410	-69.05	-13.00	56.05	-2.34	-34.21	31.87	Vertical

N2 376000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G V



### Test Graph

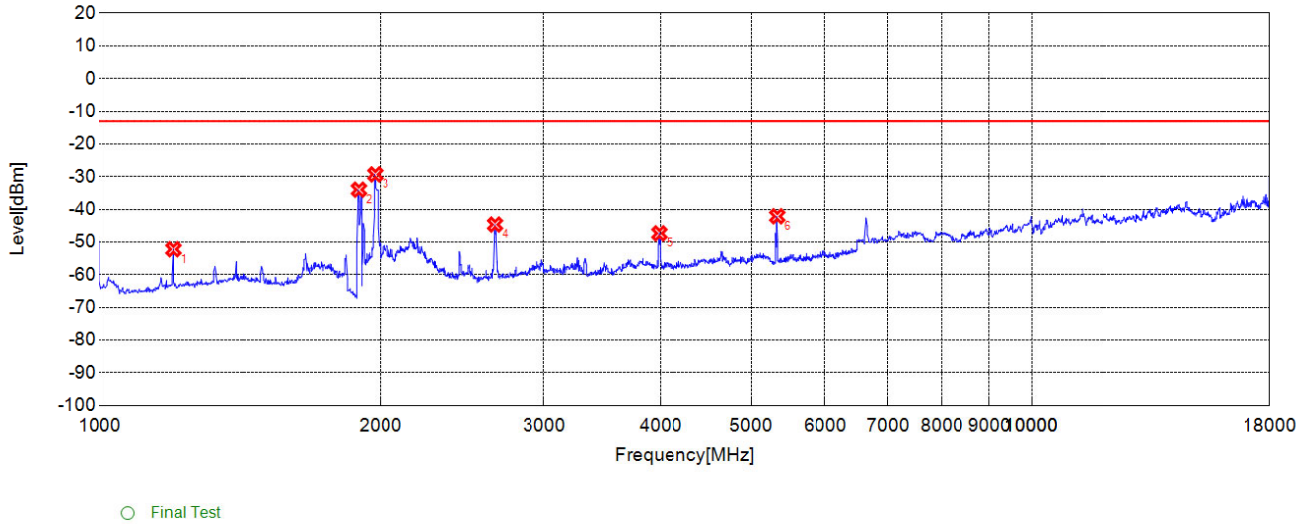


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-52.23	-13.00	39.23	-11.40	-45.85	34.45	Horizontal
2	1894.8950	-23.44	-13.00	10.44	-6.23	-46.73	40.50	NA
3	1984.9850	-25.85	-13.00	12.85	-4.49	-46.32	41.83	NA
4	2655.6560	-48.42	-13.00	35.42	-10.18	-47.31	37.13	Horizontal
5	3987.9880	-54.63	-13.00	41.63	-7.69	-47.33	39.64	Horizontal
6	7513.0130	-46.35	-13.00	33.35	10.44	-35.62	46.06	Horizontal

N2 380000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G H



### Test Graph

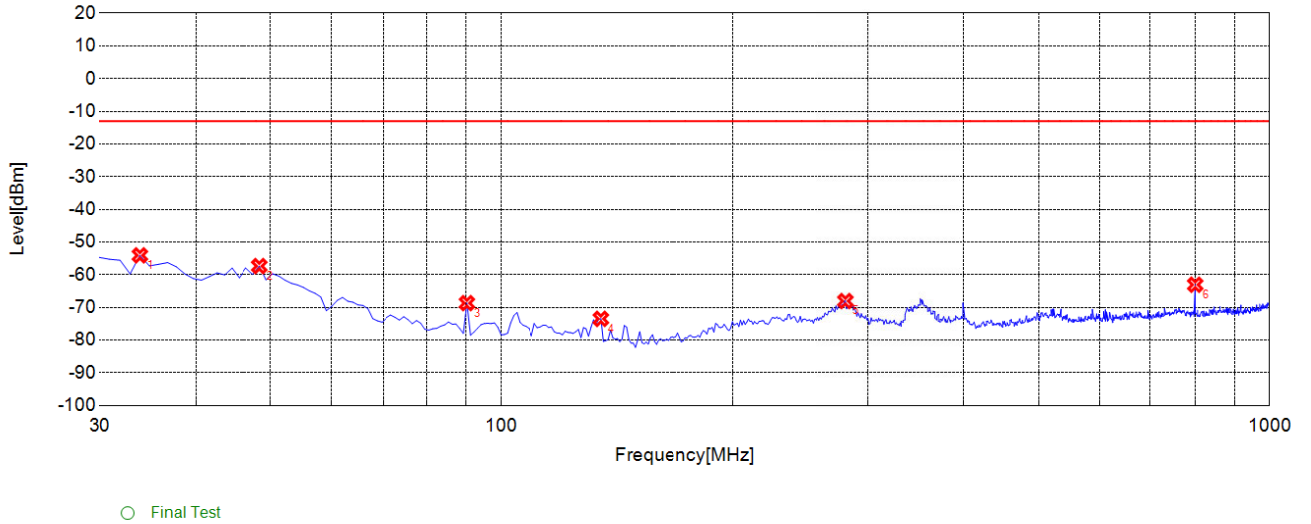


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-52.21	-13.00	39.21	-10.72	-45.85	35.13	Vertical
2	1894.8950	-34	-13.00	21.00	-11.19	-46.73	35.54	NA
3	1972.9730	-29.31	-13.00	16.31	-10.30	-46.36	36.06	NA
4	2655.6560	-44.65	-13.00	31.65	-10.38	-47.31	36.93	Vertical
5	3984.4840	-47.36	-13.00	34.36	-8.13	-47.33	39.20	Vertical
6	5329.8300	-42.14	-13.00	29.14	-3.06	-43.18	40.12	Vertical

N2 380000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 1-18G V



### Test Graph

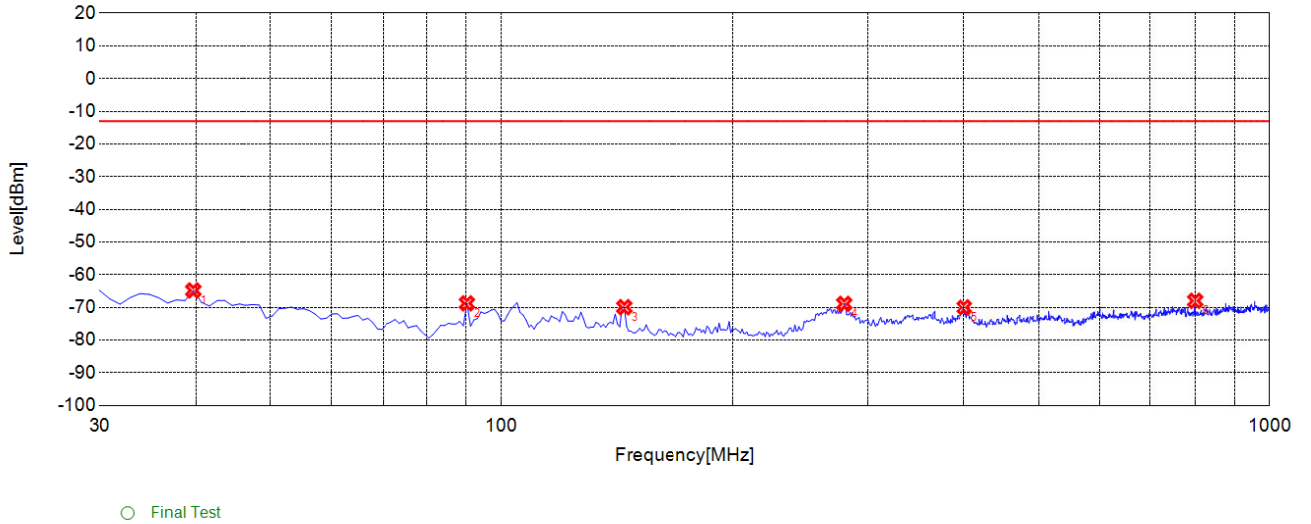


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	33.8840	-54.08	-13.00	41.08	-9.81	-39.59	29.78	Horizontal
2	48.4480	-57.37	-13.00	44.37	-7.02	-39.47	32.45	Horizontal
3	90.2000	-68.7	-13.00	55.70	-18.92	-38.71	19.79	Horizontal
4	134.8650	-73.5	-13.00	60.50	-20.61	-38.54	17.93	Horizontal
5	280.5110	-68.06	-13.00	55.06	-12.02	-37.03	25.01	Horizontal
6	799.9800	-63.07	-13.00	50.07	-3.49	-34.24	30.75	Horizontal

N2 380000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G H



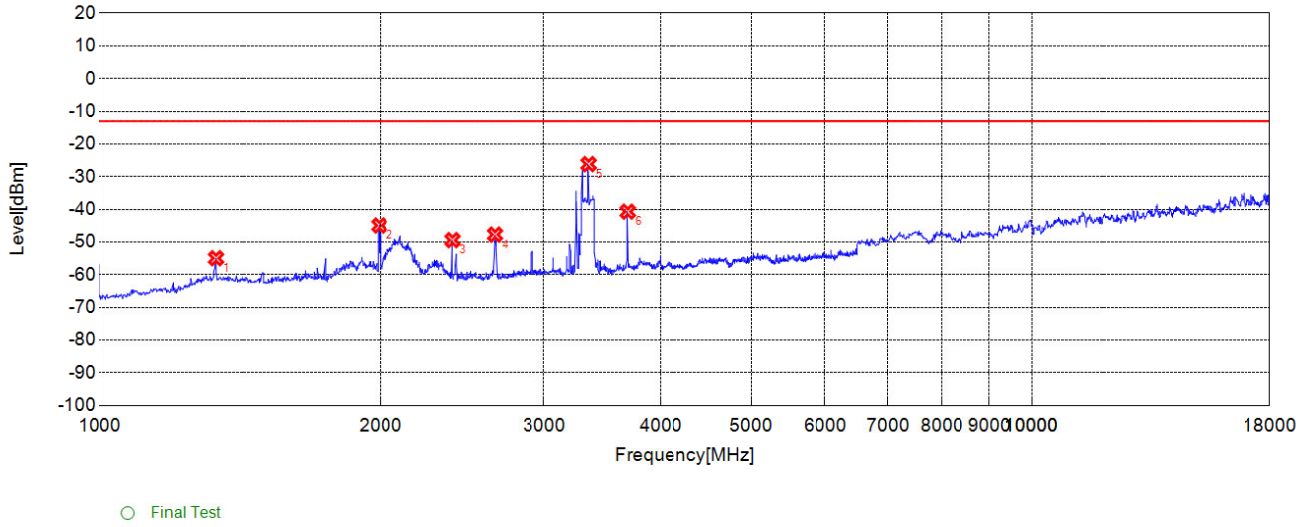
### Test Graph



Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	39.7100	-64.82	-13.00	51.82	-16.34	-39.54	23.20	Vertical
2	90.2000	-68.77	-13.00	55.77	-16.50	-38.71	22.21	Vertical
3	144.5750	-69.94	-13.00	56.94	-15.84	-38.62	22.78	Vertical
4	279.5400	-68.93	-13.00	55.93	-12.54	-37.04	24.50	Vertical
5	399.9400	-70	-13.00	57.00	-9.42	-36.26	26.84	Vertical
6	799.9800	-67.99	-13.00	54.99	-3.62	-34.24	30.62	Vertical

N2 380000 20M DFT-s-OFDM PI/2 BPSK RB Size-100 RB Offset-0 SCS 15KHz 30M-1G V

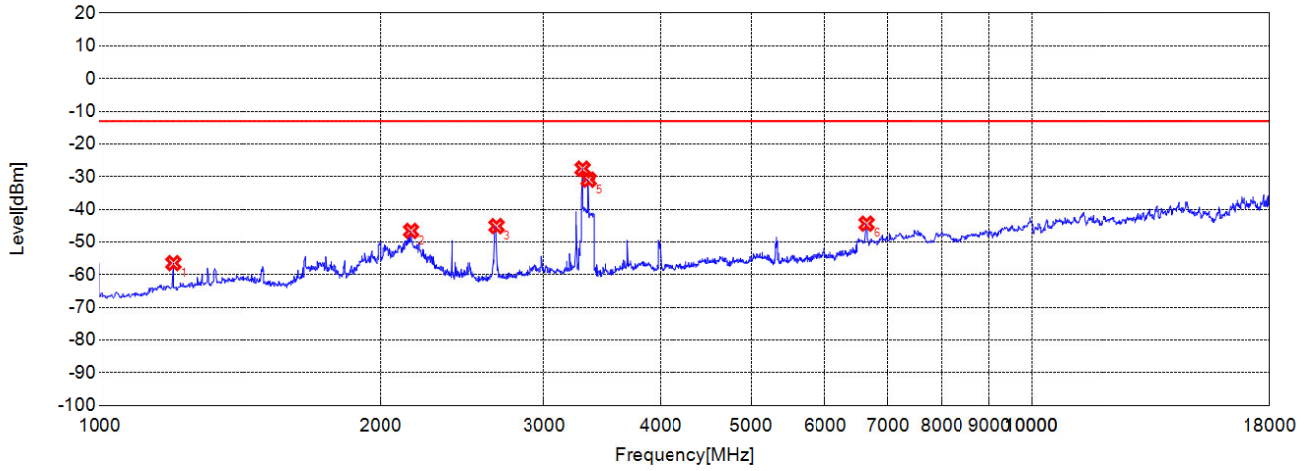
### Test Graph



Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1332.3320	-54.96	-13.00	41.96	-7.85	-45.28	37.43	Horizontal
2	1992.9930	-44.95	-13.00	31.95	-4.35	-46.29	41.94	Horizontal
3	2391.3910	-49.43	-13.00	36.43	-9.88	-47.31	37.43	Horizontal
4	2655.6560	-47.73	-13.00	34.73	-10.18	-47.31	37.13	Horizontal
5	3350.3500	-26.17	-13.00	13.17	-9.91	-48.06	38.15	NA
6	3686.6870	-40.72	-13.00	27.72	-7.64	-46.79	39.15	Horizontal

N78 623334 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G H

### Test Graph



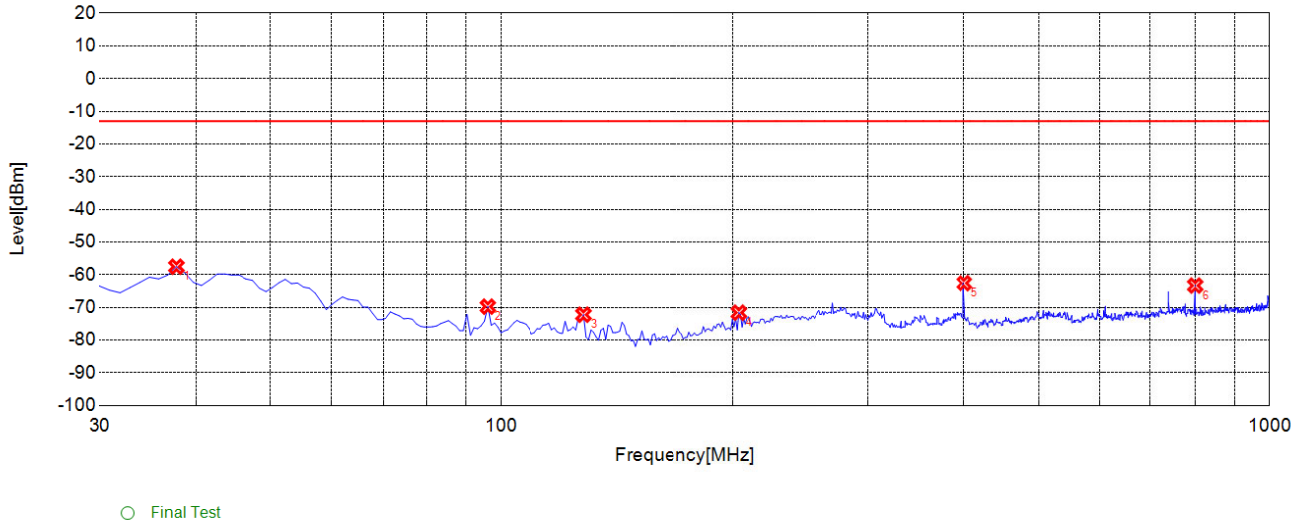
○ Final Test

Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-56.46	-13.00	43.46	-10.72	-45.85	35.13	Vertical
2	2159.1590	-46.59	-13.00	33.59	-8.30	-46.75	38.45	Vertical
3	2665.6660	-45.14	-13.00	32.14	-10.39	-47.34	36.95	Vertical
4	3301.3010	-27.57	-13.00	14.57	-10.57	-48.04	37.47	NA
5	3350.3500	-30.93	-13.00	17.93	-10.53	-48.06	37.53	NA
6	6649.6500	-44.39	-13.00	31.39	4.03	-39.22	43.25	Vertical

N78 623334 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G V



### Test Graph

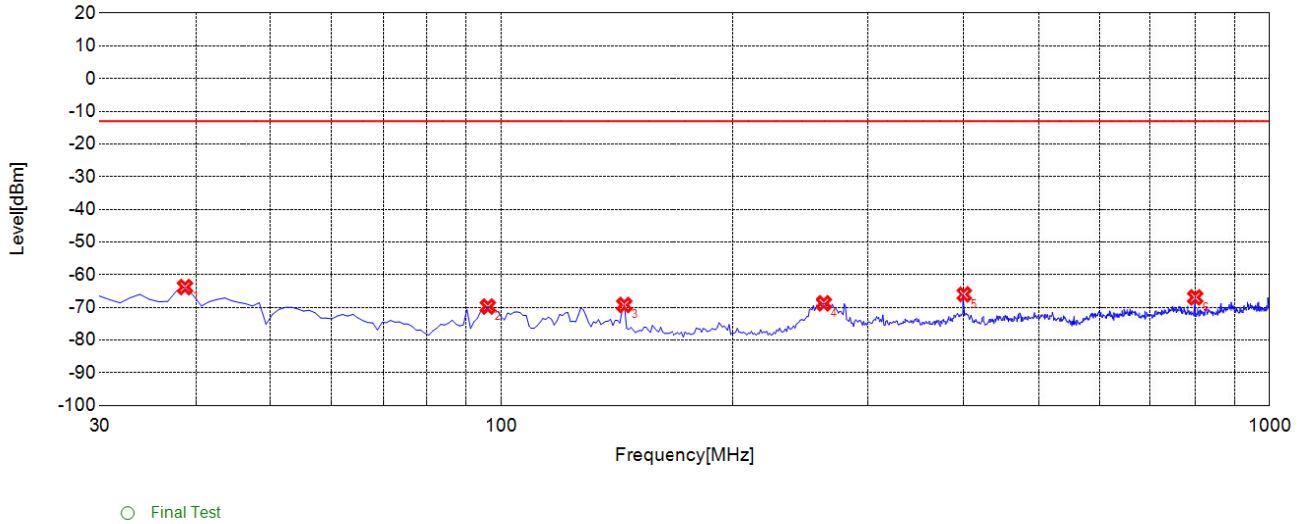


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	37.7680	-57.55	-13.00	44.55	-8.07	-39.56	31.49	Horizontal
2	96.0260	-69.77	-13.00	56.77	-18.01	-38.70	20.69	Horizontal
3	128.0680	-72.24	-13.00	59.24	-19.89	-38.52	18.63	Horizontal
4	203.8040	-71.61	-13.00	58.61	-14.59	-37.73	23.14	Horizontal
5	399.9400	-62.59	-13.00	49.59	-10.14	-36.26	26.12	Horizontal
6	799.9800	-63.33	-13.00	50.33	-3.49	-34.24	30.75	Horizontal

N78 623334 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G H



### Test Graph



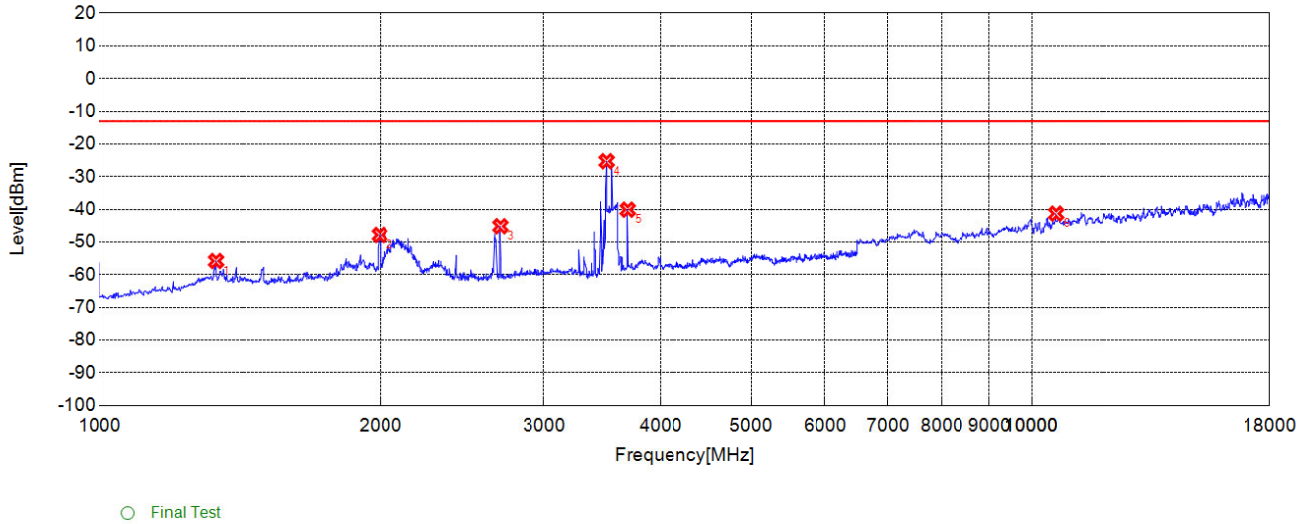
Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	38.7390	-63.78	-13.00	50.78	-16.41	-39.55	23.14	Vertical
2	96.0260	-69.73	-13.00	56.73	-14.07	-38.70	24.63	Vertical
3	144.5750	-69.26	-13.00	56.26	-15.84	-38.62	22.78	Vertical
4	263.0330	-68.75	-13.00	55.75	-13.57	-37.31	23.74	Vertical
5	399.9400	-66.02	-13.00	53.02	-9.42	-36.26	26.84	Vertical
6	799.9800	-66.94	-13.00	53.94	-3.62	-34.24	30.62	Vertical

N78 623334 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G V





### Test Graph

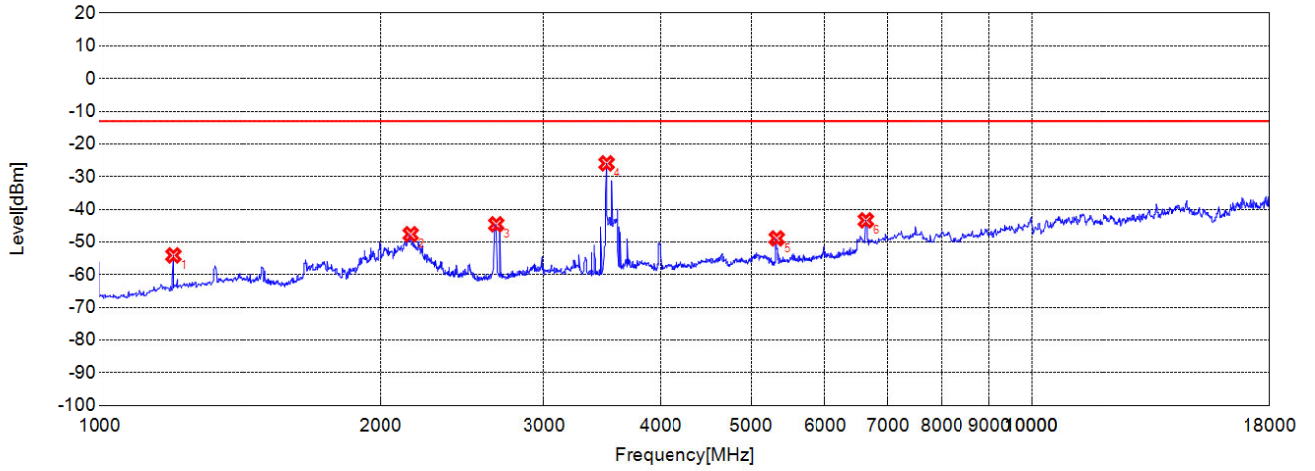


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1332.3320	-55.8	-13.00	42.80	-7.85	-45.28	37.43	Horizontal
2	1994.9950	-47.85	-13.00	34.85	-4.32	-46.29	41.97	Horizontal
3	2691.6920	-45.18	-13.00	32.18	-10.16	-47.42	37.26	Horizontal
4	3501.0010	-25.29	-13.00	12.29	-8.35	-47.38	39.03	NA
5	3686.6870	-40.11	-13.00	27.11	-7.64	-46.79	39.15	Horizontal
6	10621.1210	-41.32	-13.00	28.32	13.31	-35.37	48.68	Horizontal

N78 636666 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G H



### Test Graph



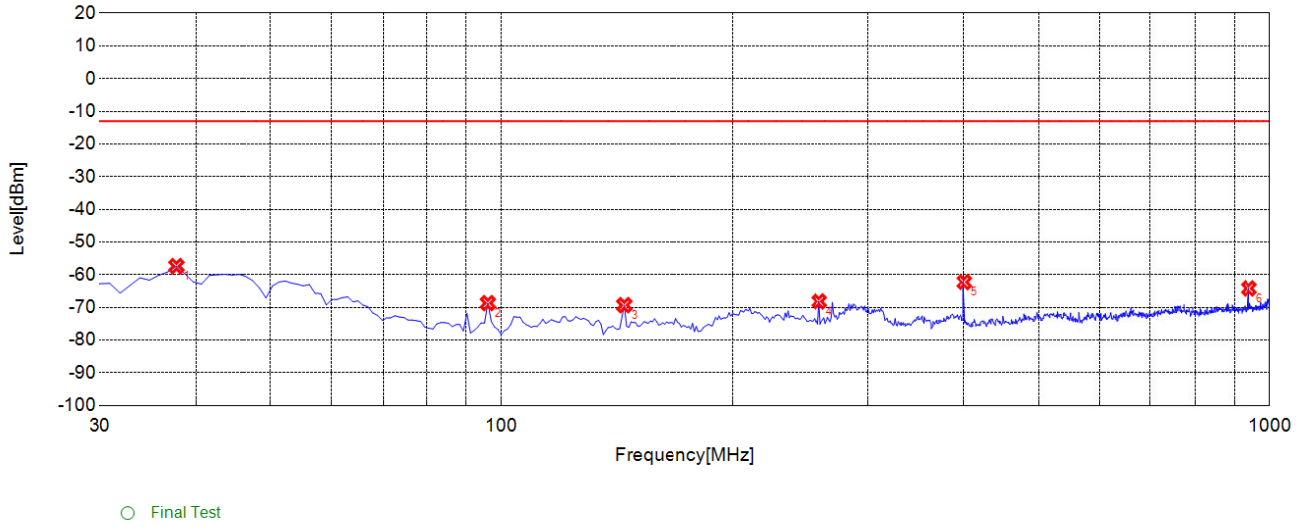
○ Final Test

Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-54.09	-13.00	41.09	-10.72	-45.85	35.13	Vertical
2	2157.1570	-47.61	-13.00	34.61	-8.35	-46.75	38.40	Vertical
3	2663.6640	-44.59	-13.00	31.59	-10.38	-47.33	36.95	Vertical
4	3501.0010	-25.95	-13.00	12.95	-8.81	-47.38	38.57	Vertical
5	5322.8230	-48.9	-13.00	35.90	-3.15	-43.23	40.08	Vertical
6	6638.1380	-43.37	-13.00	30.37	4.15	-39.19	43.34	Vertical

N78 636666 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G V



### Test Graph

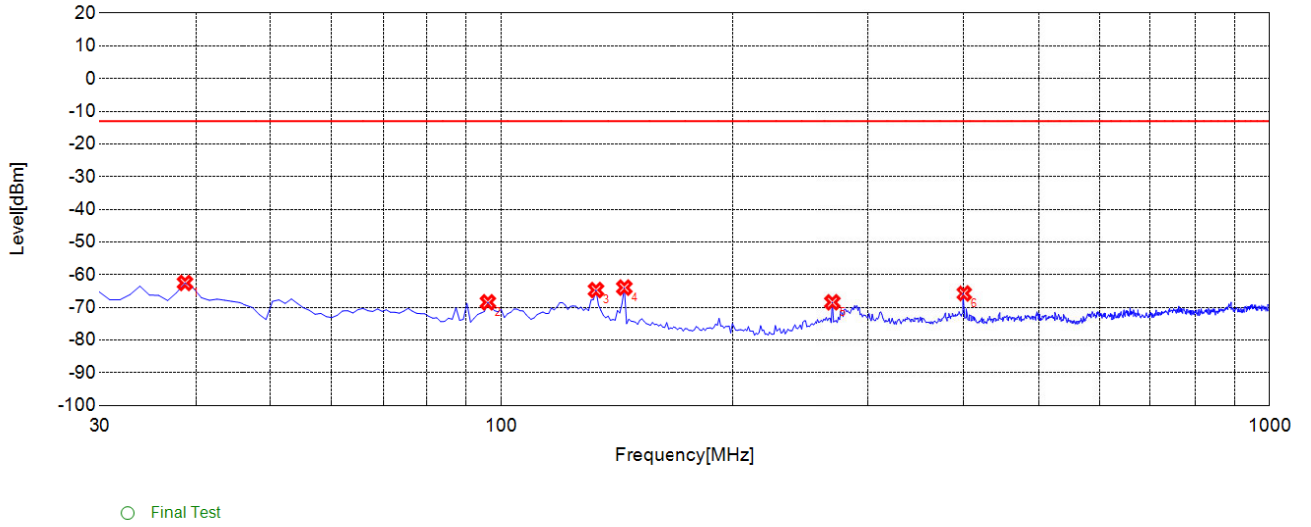


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	37.7680	-57.38	-13.00	44.38	-8.07	-39.56	31.49	Horizontal
2	96.0260	-68.7	-13.00	55.70	-18.01	-38.70	20.69	Horizontal
3	144.5750	-69.32	-13.00	56.32	-20.98	-38.62	17.64	Horizontal
4	259.1490	-68.18	-13.00	55.18	-12.68	-37.43	24.75	Horizontal
5	399.9400	-62.26	-13.00	49.26	-10.14	-36.26	26.12	Horizontal
6	939.8000	-64.2	-13.00	51.20	-2.09	-34.06	31.97	Horizontal

N78 636666 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G H



### Test Graph

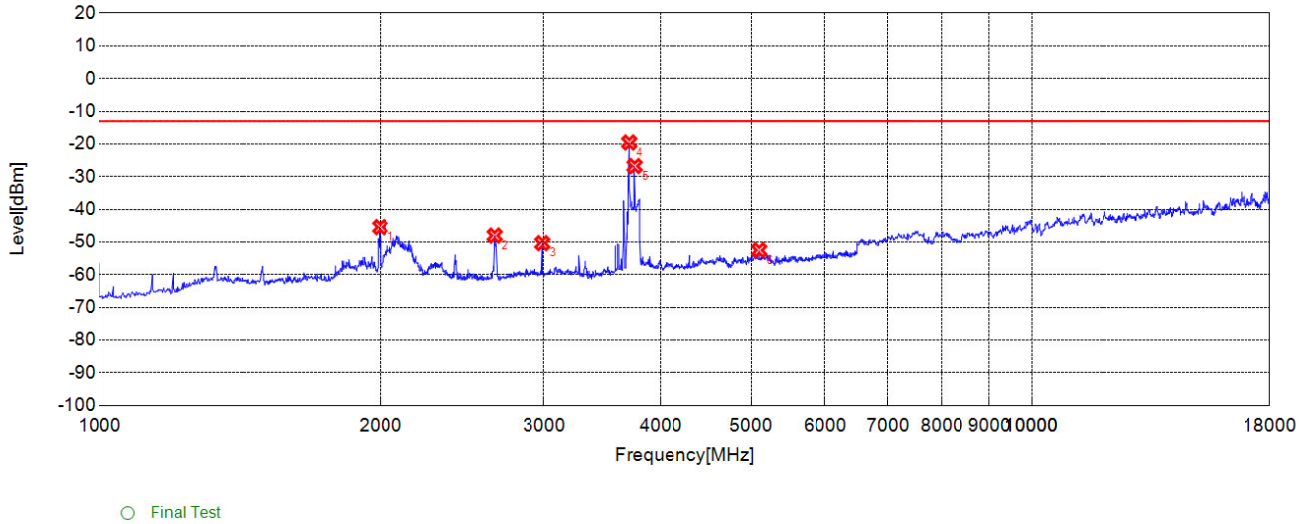


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	38.7390	-62.53	-13.00	49.53	-16.41	-39.55	23.14	Vertical
2	96.0260	-68.44	-13.00	55.44	-14.07	-38.70	24.63	Vertical
3	132.9230	-64.7	-13.00	51.70	-16.38	-38.52	22.14	Vertical
4	144.5750	-63.95	-13.00	50.95	-15.84	-38.62	22.78	Vertical
5	269.8300	-68.45	-13.00	55.45	-13.17	-37.11	23.94	Vertical
6	399.9400	-65.74	-13.00	52.74	-9.42	-36.26	26.84	Vertical

N78 636666 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G V



### Test Graph

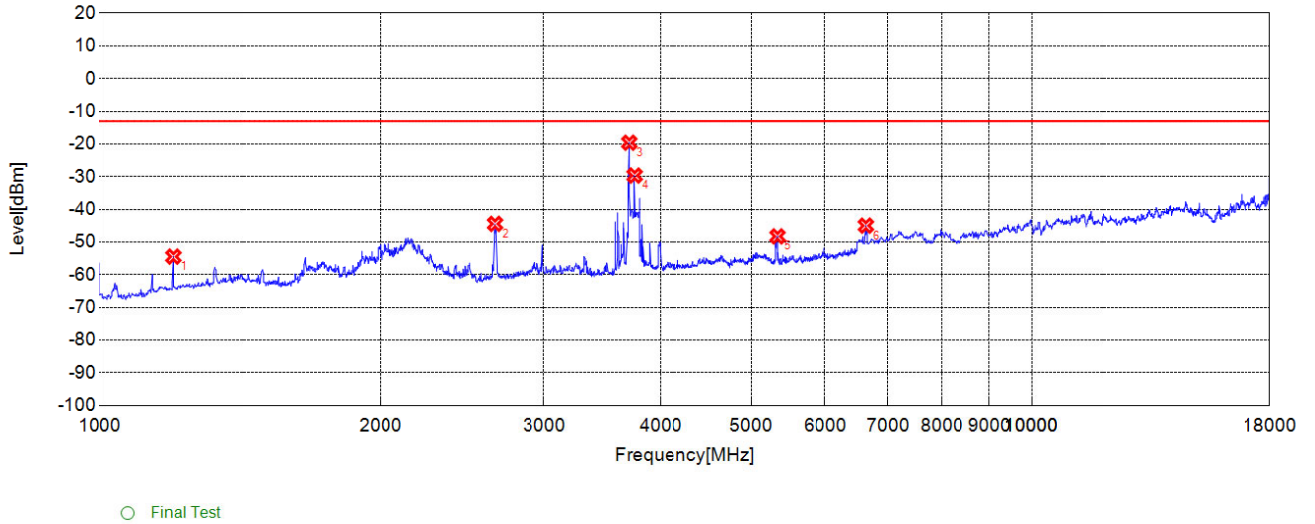


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1996.9970	-45.45	-13.00	32.45	-4.28	-46.28	42.00	Horizontal
2	2653.6540	-48.03	-13.00	35.03	-10.18	-47.30	37.12	Horizontal
3	2989.9900	-50.35	-13.00	37.35	-9.07	-47.87	38.80	Horizontal
4	3700.7010	-19.56	-13.00	6.56	-7.48	-46.61	39.13	NA
5	3749.7500	-26.77	-13.00	13.77	-8.34	-47.64	39.30	NA
6	5098.5990	-52.52	-13.00	39.52	-2.29	-43.84	41.55	Horizontal

N78 650000 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G H



### Test Graph

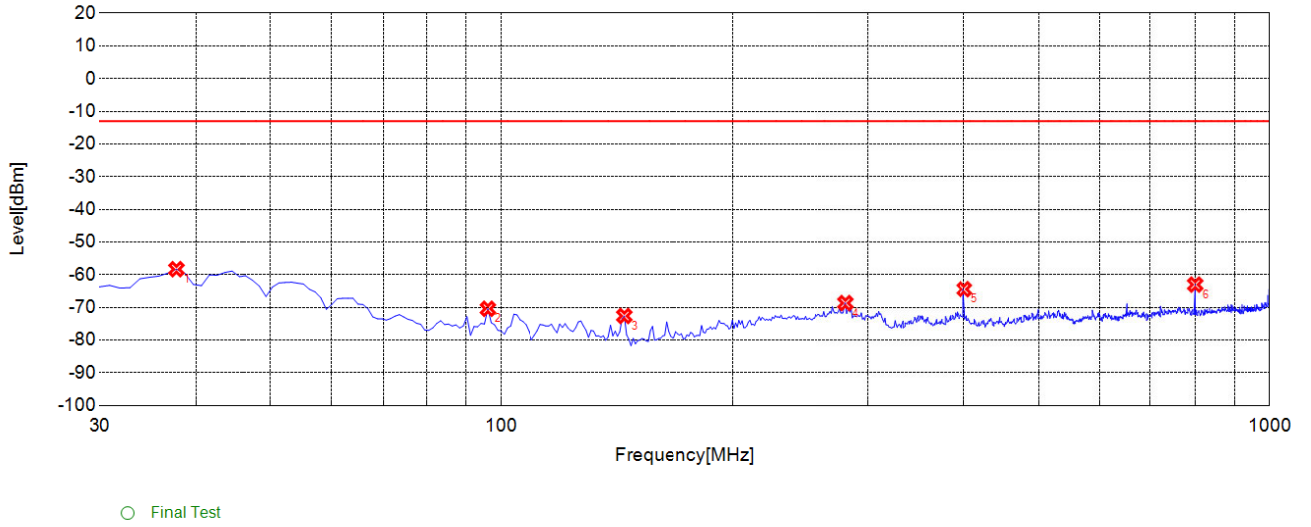


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	1200.2000	-54.47	-13.00	41.47	-10.72	-45.85	35.13	Vertical
2	2655.6560	-44.45	-13.00	31.45	-10.38	-47.31	36.93	Vertical
3	3700.7010	-19.62	-13.00	6.62	-7.54	-46.61	39.07	NA
4	3749.7500	-29.67	-13.00	16.67	-8.57	-47.64	39.07	NA
5	5333.3330	-48.28	-13.00	35.28	-3.02	-43.15	40.13	Vertical
6	6638.1380	-45	-13.00	32.00	4.15	-39.19	43.34	Vertical

N78 650000 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 1-18G V



### Test Graph

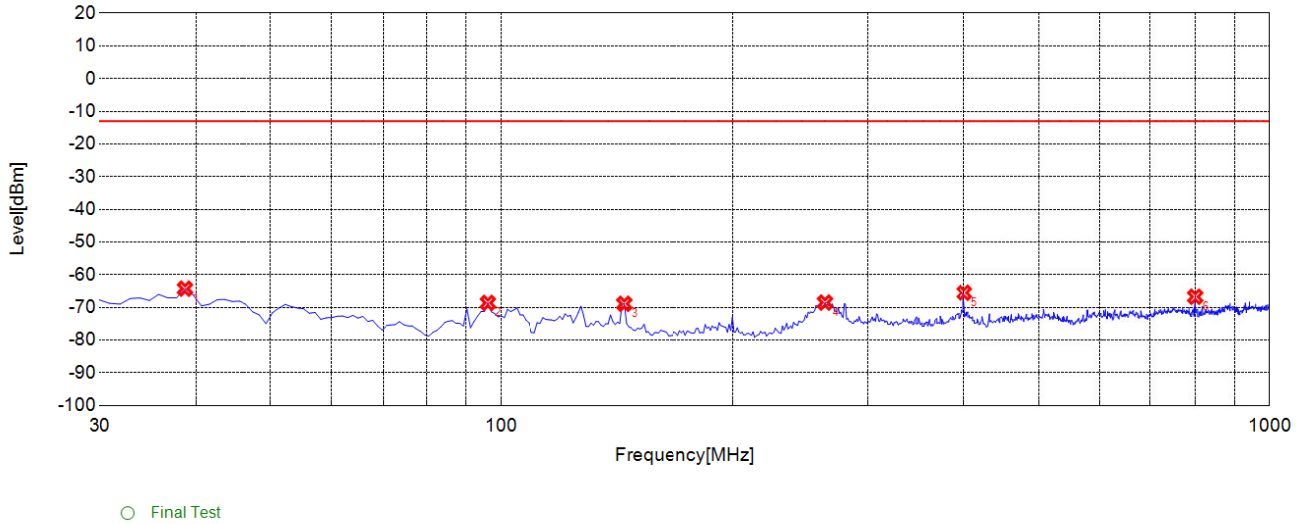


Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	37.7680	-58.31	-13.00	45.31	-8.07	-39.56	31.49	Horizontal
2	96.0260	-70.42	-13.00	57.42	-18.01	-38.70	20.69	Horizontal
3	144.5750	-72.63	-13.00	59.63	-20.98	-38.62	17.64	Horizontal
4	280.5110	-68.68	-13.00	55.68	-12.02	-37.03	25.01	Horizontal
5	399.9400	-64.44	-13.00	51.44	-10.14	-36.26	26.12	Horizontal
6	799.9800	-63.03	-13.00	50.03	-3.49	-34.24	30.75	Horizontal

N78 650000 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G H



### Test Graph



Suspected List								
NO.	Freq. [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Air [dB]	Ant. Pol.
1	38.7390	-64.26	-13.00	51.26	-16.41	-39.55	23.14	Vertical
2	96.0260	-68.63	-13.00	55.63	-14.07	-38.70	24.63	Vertical
3	144.5750	-68.91	-13.00	55.91	-15.84	-38.62	22.78	Vertical
4	264.0040	-68.52	-13.00	55.52	-13.51	-37.28	23.77	Vertical
5	399.9400	-65.53	-13.00	52.53	-9.42	-36.26	26.84	Vertical
6	799.9800	-66.74	-13.00	53.74	-3.62	-34.24	30.62	Vertical

N78 650000 100M DFT-s-OFDM QPSK RB Size-1 RB Offset-1 SCS 30KHz 30M-1G V





## Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test items	Uncertainty
Output Power	$\pm 2.22$ dB
Bandwidth	$\pm 5\%$
Conducted Spurious Emission	$\pm 2.77$ dB
Band Edge	$\pm 2.77$ dB
Equivalent Isotropic Radiated Power	$\pm 2.22$ dB
Radiated Spurious Emissions	$\pm 6$ dB

When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.



## Annex B Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

<b>Company Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
<b>Telephone:</b>	+86 755 36698555
<b>Facsimile:</b>	+86 755 36698525

### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

### 3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



#### 4. Test Equipments Utilized

##### 4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
Power Splitter	NW521	1506A	Weinschel	N/A	N/A
Attenuator 1	(N/A.)	10dB	Resnet	N/A	N/A
Attenuator 2	(N/A.)	3dB	Resnet	N/A	N/A
EXA Signal Analyzer	MY54170556	N9030A	Keysight	2021.01.08	2022.01.07
USB Power Sensor	MY54210011	U2021XA	Agilent	2020.10.23	2021.10.22
System Simulator	6262012906	MT8000A	Anritsu	2020.10.28	2021.10.27
RF cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial cable	CB02	RF02	Morlab	N/A	N/A
SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A
Temperature Chamber	(N/A)	HUT705P	CHONGQING HANBA EXPERIMENTAL EQUIPMENT CO.,LTD	2020.10.26	2021.10.25
Computer	T430i	Think Pad	Lenovo	N/A	N/A
Test system	N/A	WCS FCC V1.0	CeSheng	N/A	N/A

**4.2 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
System Simulator	6262012906	MT8000A	Anritsu	2021.09.17	2022.09.16
System Simulator	152038	CMW500	R&S	2020.11.19	2021.11.18
System Simulator	MY48364176	8960-E5515 C	Agilent	2021.03.25	2022.03.24
System Simulator	6200995016	MT8820C	Agilent	2020.10.28	2021.10.27
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
Receiver	MY56400093	N9038A	Keysight	2021.03.09	2022.03.08
Receiver	595WX11007	PMM 9010	PMM	2021.04.02	2022.04.01
Receiver	001WX1100	PMM 9060	PMM	2021.03.30	2022.03.29
Signal Analyzer	MY56060145	N9020A	Agilent	2021.07.26	2022.07.25
6db Attenuator	E191001	BW-N6W5+	Mini-circuits	2021.10.18	2022.10.17
Preamplifier	61171/61172	S020180L32 03	LUCIX CORP.	2021.07.15	2022.07.14
Preamplifier	46732	S10M100L38 02	LUCIX CORP.	2021.07.15	2022.07.14
Test Antenna – Loop	1519-022	FMZB 1519	Schwarzbeck	2019.02.15	2022.02.14
Test Antenna - Bi-Log	9163-274	VULB 9163	Schwarzbeck	2019.11.23	2022.11.22
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	9120D-963	BBHA 9120D	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna - Horn	BBHA9170#7 73	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25

————— END OF REPORT —————