

FCC TEST REPORT

(PART 96)

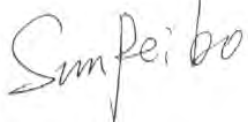
Applicant:	BARTEC GmbH
Address:	Max-Eyth-Str.16 , 97980 Bad Mergentheim, Germany

Manufacturer or Supplier:	BARTEC GmbH
Address:	Max-Eyth-Str.16 , 97980 Bad Mergentheim, Germany
Product:	Smartscanner / Smartphone
Brand Name:	BARTEC
Model Name:	SP9EX1/SC9EX1/SP9EX2/SC9EX2
FCC ID:	TBUSX9EX
Date of tests:	Jan. 02, 2024~ Jul. 26, 2024

The tests have been carried out according to the requirements of the following standard:

☒ **47 CFR FCC Part 96**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
 Date: Jul. 26, 2024	 Date: Jul. 26, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	DESCRIPTION	DATE ISSUED
PSU-QSU2312140113RF06	Original release	Jul. 26, 2024



1 SUMMARY OF TEST RESULTS

47 CFR FCC PART 96			
FCC CLAUSE	TEST ITEM	RESULT	LAB
2.1046 96.41(b)	Maximum Peak Output Power and Maximum EIRP	Compliance	A
2.1046 96.41(e)	Conducted Band Edge	Compliance	B
2.1049	Occupied Bandwidth	Compliance	B
2.1055	Frequency Stability	Compliance	B
2.1051 96.41(e)	Conducted Spurious Emissions	Compliance	B
2.1053 96.41(e)	Radiated Spurious Emissions	Compliance	A
96.41(g)	Peak-to-Average Power Ratio	Compliance	B

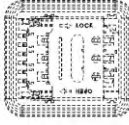
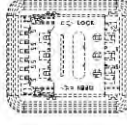
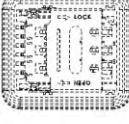
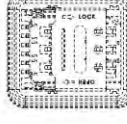
NOTE:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. In this report, the test EUT version is EVT, after the test is completed, the customer optimizes the product to DVT, and the final customer's shipment is PVT. For differences between EVT and DVT and PVT, please refer to the documentation provided by the customer (SC9EX1_SP9EX1 PCBA HW Release Note rev 2_0).
3. There are no differences on the PCBA between the Model SC9EX1 (FCC ID: TBUSX9EX) and the variants SP9EX1 (FCC ID: TBUSX9EX). All mounted components are the same. No functionality related to any radio interface is affected. The only difference is the presence of the barcode scanner module and the "bump" on the back cover that incorporates the barcode scanner module. Testing has been run on parent product SC9EX1 and the worst cases of power and RSE have been verified also on SP9EX1 variant. Only the worst-case data (SC9EX1) have been reported.
4. The devices BARTEC SP9EX1 Smartphone and BARTEC SP9EX2 Smartphone share the same hardware and software. The same applies for the devices BARTEC SC9EX1 Smartscanner and BARTEC SC9EX2 Smartscanner. The only difference are the hazardous area marking of the devices, see table for clarification.



BUREAU
VERITAS

Test Report No.: PSU-QSU2312140113RF06

BARTEC SP9EX1 Smartphone	BARTEC SP9EX2 Smartphone
BARTEC SP9EX1 Type: 17-S19P-****/***** Mfr: BARTEC GmbH Max-Eyth-SträÙe 16 97980 Bad Mergentheim, DE www.bartec.com  Nano SIM UL 24 ATEX 3153X II 1G Ex ia IIC T4 Ga II 2D Ex ia IIC T135°C Db IP64 IECEx UL 24.0004X QR-code S/N: TTTTYYSSSSS MFD: MONTHYY reserved for logos of country approvals Class I, Div 1, Groups A, B, C and D; Class II, Div 1, Groups E, F and G; Class III, T4 Zone 0, AEx ia IIC T4 Ga Zone 21, AEx ia IIC T135°C Db Zone 0, Ex ia IIC T4 Ga Zone 21, Ex ia IIC T135°C Db -20° < Ta < +55°C USB port: USB-PD compatible – 5-20 Vdc / max 3 A DC-In port: 12 Vdc / max 1.5 A USB Um = 20 V / DCin Um = 12 V WARNING/ATTENTION: Use only replaceable battery pack BARTEC GmbH type: 17-S1Z0-0020/**** Utiliser uniquement la batterie BARTEC GmbH type: 17-S1Z0-0020/**** INTRINSICALLY SAFE/SECURITÉ INTRINSEQUE Warning - Substitution of components may impair intrinsic safety. Avertissement - La substitution des composants peut nuire à la sécurité intrinsèque.	BARTEC SP9EX2 Type: B7-S29P-****/***** Mfr: BARTEC GmbH Max-Eyth-SträÙe 16 97980 Bad Mergentheim, DE www.bartec.com  Nano SIM UL 24 ATEX xxxxx II 3G Ex ic IIC T4 Gc II 3D Ex ic IIC T135°C Dc IP64 IECEx UL 24.xxxxx QR-code S/N: TTTTYYSSSSS MFD: MONTHYY reserved for logos of country approvals Class I, Div 2, Groups A, B, C and D; Class II, Div 2, Groups E, F and G; Class III, T4 Zone 2, AEx ic IIC T4 Gc Zone 22, AEx ic IIC T135°C Dc Zone 2, Ex ic IIC T4 Gc Zone 22, Ex ic IIC T135°C Dc -20° < Ta < +55°C USB port: USB-PD compatible – 5-20 Vdc / max 3 A DC-In port: 12 Vdc / max 1.5 A USB Um = 20 V / DCin Um = 12 V WARNING/ATTENTION: Use only replaceable battery pack BARTEC GmbH type: B7-A2Z0-0098/**** Utiliser uniquement la batterie BARTEC GmbH type: B7-A2Z0-0098/**** INTRINSICALLY SAFE/SECURITÉ INTRINSEQUE Warning - Substitution of components may impair intrinsic safety. Avertissement - La substitution des composants peut nuire à la sécurité intrinsèque.
BARTEC SC9EX1 Smartscanner	BARTEC SC9EX2 Smartscanner
BARTEC SC9EX1 Type: 17-S19C-****/***** Mfr: BARTEC GmbH Max-Eyth-SträÙe 16 97980 Bad Mergentheim, DE www.bartec.com  Nano SIM UL 24 ATEX 3153X II 1G Ex ia op is IIC T4 Ga II 2D Ex ia op is IIC T135°C Db IP64 IECEx UL 24.0004X QR-code S/N: TTTTYYSSSSS MFD: MONTHYY reserved for logos of country approvals Class I, Div 1, Groups A, B, C and D; Class II, Div 1, Groups E, F and G; Class III, T4 Zone 0, AEx ia op is IIC T4 Ga Zone 21, AEx ia op is IIC T135°C Db Zone 0, Ex ia op is IIC T4 Ga Zone 21, Ex ia op is IIC T135°C Db -20° < Ta < +55°C USB port: USB-PD compatible – 5-20 Vdc / max 3 A DC-In port: 12 Vdc / max 1.5 A USB Um = 20 V / DCin Um = 12 V WARNING/ATTENTION: Use only replaceable battery pack BARTEC GmbH type: 17-S1Z0-0020/**** Utiliser uniquement la batterie BARTEC GmbH type: 17-S1Z0-0020/**** INTRINSICALLY SAFE/SECURITÉ INTRINSEQUE Warning - Substitution of components may impair intrinsic safety. Avertissement - La substitution des composants peut nuire à la sécurité intrinsèque.	BARTEC SC9EX2 Type: B7-S29C-****/***** Mfr: BARTEC GmbH Max-Eyth-SträÙe 16 97980 Bad Mergentheim, DE www.bartec.com  Nano SIM UL 24 ATEX xxxxx II 3G Ex ic op is IIC T4 Gc II 3D Ex ic op is IIC T135°C Dc IP64 IECEx UL 24.xxxxx QR-code S/N: TTTTYYSSSSS MFD: MONTHYY reserved for logos of country approvals Class I, Div 2, Groups A, B, C and D; Class II, Div 2, Groups E, F and G; Class III, T4 Zone 2, AEx ic op is IIC T4 Gc Zone 22, AEx ic op is IIC T135°C Dc Zone 2, Ex ic op is IIC T4 Gc Zone 22, Ex ic op is IIC T135°C Dc -20° < Ta < +55°C USB port: USB-PD compatible – 5-20 Vdc / max 3 A DC-In port: 12 Vdc / max 1.5 A USB Um = 20 V / DCin Um = 12 V WARNING/ATTENTION: Use only replaceable battery pack BARTEC GmbH type: B7-A2Z0-0098/**** Utiliser uniquement la batterie BARTEC GmbH type: B7-A2Z0-0098/**** INTRINSICALLY SAFE/SECURITÉ INTRINSEQUE Warning - Substitution of components may impair intrinsic safety. Avertissement - La substitution des composants peut nuire à la sécurité intrinsèque.

***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

Lab B:

BV 7Layers Communications Technology (Shenzhen) Co., Ltd

Lab Address:

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park,
Nanshan District, Shenzhen, Guangdong, China

Accredited Test Lab Cert 3939.01

FCC Site Registration No. : 525120; Designation No. : CN1171;

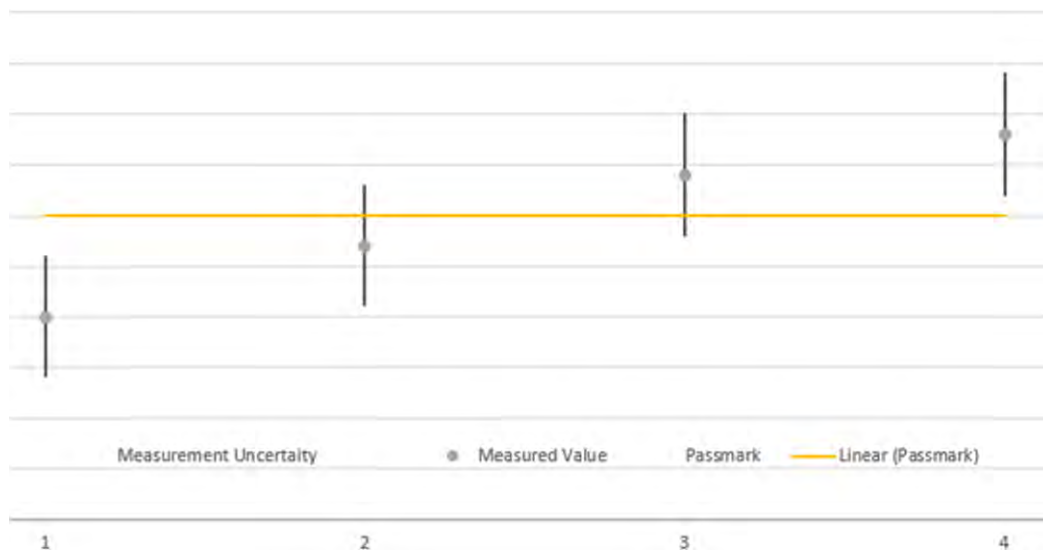


1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Effective Radiated Power	$\pm 1.48\text{dB}$
Frequency Stability	$\pm 39.27\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions & Radiated Power (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{ dB}$
Occupied Channel Bandwidth	$\pm 21.7\text{KHz}$
Band Edge Measurements	$\pm 1.48\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.



1.2 TEST SITE AND INSTRUMENT

Lab A:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.15,24	Feb.14,26
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.15,24	Feb.14,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESR26	101734	Feb.24,24	Feb.23,26
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.24,24	Feb.23,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.27,24	Feb.26,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.22,24	Feb.21,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,24	Feb.21,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.26,24	Jun.25,26
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24



PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.0 OM	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.0 OM	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Apr.27,24
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	W12.14	N/A	Apr.28,23	Apr.27,24
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Apr.27,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,24	Apr.26,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Apr.27,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,24	Apr.26,25
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26

- NOTE:**
1. The calibration interval of the above test instruments is 12/ 24 / 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

Lab B:

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,23	Mar. 27,24
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 27,24	Mar. 26,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.10,23	May.09,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.09,24	May.08,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.02,23	Sep.01,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,23	Feb. 17,24
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 17,24	Feb. 16,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,23	Feb. 17,24
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 17,24	Feb. 16,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.03, 23	Sep.02, 24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,23	Feb. 13,24
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 13,24	Feb. 12,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 06,23	May. 05,24



Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,23	May.09,24
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.09,24	May.08,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,23	Feb.16,24
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb.16,24	Feb.15,25
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 06,23	May. 05,24
10dB Attenuator	JFW/USA	50HF-010-SMA	50HF-010-SMA	May. 05,24	May. 04,25
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,23	Feb. 13,24
Power Meter	Anritsu	ML2495A	1506002	Feb. 13,24	Feb. 12,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,23	Feb. 13,24
Power Sensor	Anritsu	MA2411B	1339352	Feb. 13,24	Feb. 12,25
Temperature Chamber	ESPEC	SH-242	93000855	May. 06,23	May. 05,24
Temperature Chamber	ESPEC	SH-242	93000855	May. 05,24	May. 04,25
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,23	Feb. 13,24
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 13,24	Feb. 12,25
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.10,23	May.09,24
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.09,24	May.08,25
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 11,23	Aug. 10,24

- NOTE:**
1. The calibration interval of the above test instruments is 12/ 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Smartscanner / Smartphone	
BRAND NAME*	BARTEC	
MODEL NAME*	SP9EX1/SC9EX1/SP9EX2/SC9EX2	
NOMINAL VOLTAGE*	5.0V/9.0V/12.0Vdc (adapter) 3.2V/3.8V/4.2V/dc (battery)	
MODULATION TECHNOLOGY	5G NR	DFT-s-OFMA(Pi/2 BPSK,QPSK,16QAM,64QAM,256QAM); CP-OFMA(QPSK,16QAM,64QAM,256QAM);
LTE ANCHOR BAND FOR NR BAND	NR Band n48/ NR Band n48(HPUE)	LTE Band 2/66
FREQUENCY RANGE	NR Band n48/ NR Band n48(HPUE)	3555 MHz ~ 3694.98MHz
EMISSION DESIGNATOR	NR Band n48 Channel Bandwidth: 10MHz	QPSK: 8M58G7D 16QAM: 8M56W7D 64QAM: 8M57W7D 256QAM: 8M54W7D Pi/2BPSK: 8M56G7D
	NR Band n48 Channel Bandwidth: 20MHz	QPSK: 17M8G7D 16QAM: 17M9W7D 64QAM: 17M8W7D 256QAM: 17M8W7D Pi/2BPSK: 17M8G7D
	NR Band n48 Channel Bandwidth: 40MHz	QPSK: 35M7G7D 16QAM: 35M7W7D 64QAM: 35M8W7D 256QAM: 35M8W7D Pi/2BPSK: 35M7G7D
MAX. EIRP POWER	NR Band n48 Channel Bandwidth: 10MHz	199.53mW
	NR Band n48 Channel Bandwidth: 20MHz	197.7mW
	NR Band n48 Channel Bandwidth: 40MHz	153.82mW
	NR Band n48(HPUE) Channel Bandwidth: 10MHz	199.53mW



	NR Band n48(HPUE) Channel Bandwidth: 20MHz	199.53mW
	NR Band n48(HPUE) Channel Bandwidth: 40MHz	165.96mW
ANTENNA GAIN*	Main TX/RX ANT5: IFA Antennawith 0.9dBi gain for NR Band n48 RX ANT SEC.ANT3: IFA Antennawith 1.7dBi gain for NR Band n48 RX ANT PRIM. MIMO ANT1: IFA Antennawith -0.6dBi gain for NR Band n48 RX ANT SEC. MIMO ANT4: IFA Antennawith 1.5dBi gain for NR Band n48	
HW VERSION*	E	
SW VERSION*	TWG1.240820.261	
I/O PORTS*	Refer to user's manual	
DATA CABLE*	USB cable: non-shielded cable, with w/o ferrite core, 0.8 meter	
EXTREME TEMPERATURE*	-20℃-60 ℃	
EXTREME VOLTAGE*	3.2V – 4.2V	

NOTE:

1. *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and four receivers.

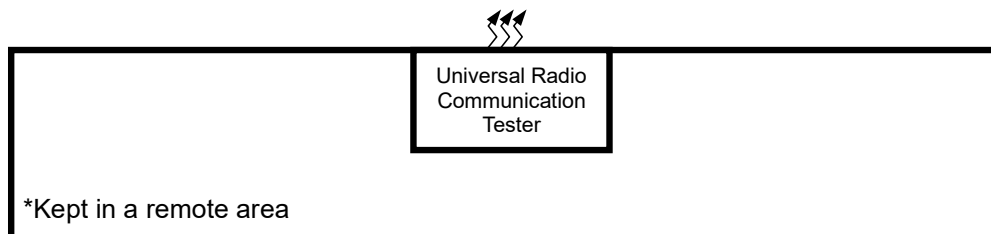
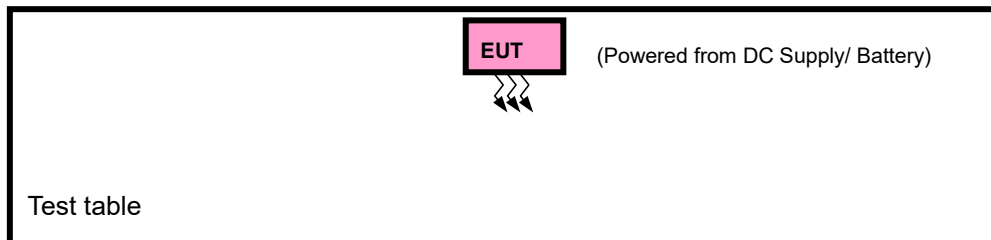
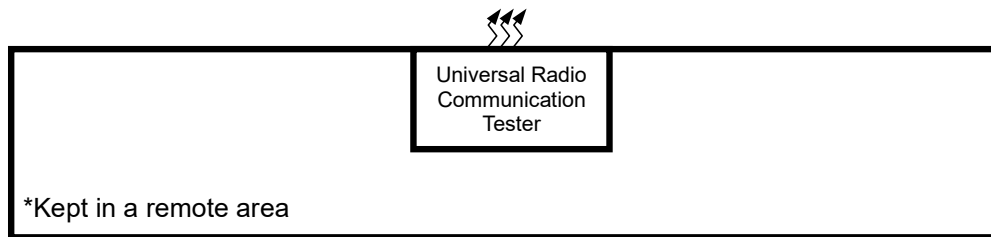
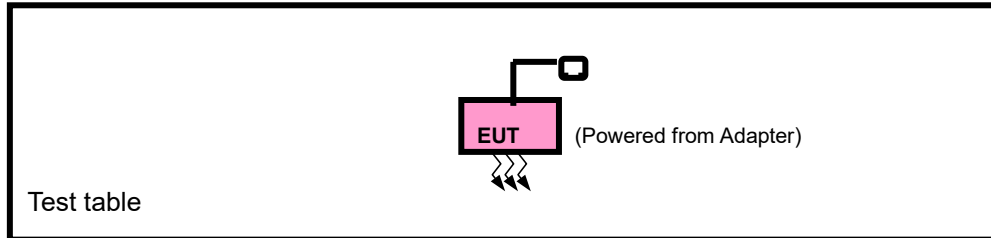
MODULATION MODE	TX FUNCTION
NR	1TX/4RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
5. Output power measurements were measured on QPSK,16QAM,64QAM and 256QAM modulations. And tests other than output power are performed only in worst-case QPSK and 16QAM,64QAM modes.

**6. List of Accessory:**

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Display(AMOLED)	Xiao Xin	N/A	XX611OLED-A002.1	N/A
Back cover	IV Techmould	N/A	N/A	N/A
Bezel	IV Techmould	N/A	N/A	N/A
Photo/Video Camera 1	Sunny Optical	N/A	F48N03A (Auto focus)	N/A
Photo/Video Camera 2	TrulyOpto	N/A	CSF208-B8BF-E(Fix focus)	N/A
CPU	Qualcomm	N/A	QCM6490	N/A
UFS	Kioxia	N/A	THGJFAT0T44BAIL	N/A
BT/WLAN Module	Murata	N/A	LBEE5QG2CX-830	N/A
NFC chipset	NXP	N/A	SN110TUK1	N/A
Battery	BARTEC	N/A	17-S1Z0-0020/****	4300 mAh, 3.68V
USB-C Cable	BARTEC	N/A	G7-A0Z0-0010	Length: 0.8m

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST





2.3 DESCRIPTION OF SUPPORT UNITS

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.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Adapter	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB Line: Shielded, Detachable 0.8m;

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with 5G NR link
B	EUT + Battery with 5G NR link

5G NR n48 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CP-OFDM CHANNEL	AVAILABLE DFT-S-OFDM CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE(DFT-S-OFDM) (INCLUDE CP-OFDM)
A	EIRP	637000 to 646332	637000 to 646332	Low, Middle, High	10MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB/ 0RB Offset
		637334 to 646000	637334 to 646000	Low, Middle, High	20MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB/ 0RB Offset
		638000 to 645332	638000 to 645332	Low, Middle, High	40MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	1RB/ 0RB Offset
B	FREQUENCY STABILITY	637334 to 646000	637334 to 646000	Low, Middle, High	20MHz	QPSK	Outer_ Full
A	PEAK TO AVERAGE RATIO	637334 to 646000	637334 to 646000	Low, Middle, High	20MHz	QPSK	Outer_ Full
A	OCCUPIED BANDWIDTH	637000 to 646332	637000 to 646332	Middle	10MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	Outer_ Full
		637334 to 646000	637334 to 646000	Middle	20MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	Outer_ Full
		638000 to 645332	638000 to 645332	Middle	40MHz	Pi/2BPSK, QPSK, 16QAM, 64QAM, 256QAM	Outer_ Full
A	BAND EDGE	637000 to 646332	637000 to 646332	Low	10MHz	QPSK	1RB/ 0RB Offset



							Outer_Full
				High	10MHz	QPSK	1RB/ max Offset
							Outer_Full
				Low	20MHz	QPSK	1RB/ 0RB Offset
		637334 to 646000	637334 to 646000				Outer_Full
				High	20MHz	QPSK	1RB/ max Offset
							Outer_Full
				Low	40MHz	QPSK	1RB/ 0RB Offset
		638000 to 645332	638000 to 645332				Outer_Full
				High	40MHz	QPSK	1RB/ max Offset
							Outer_Full
		637000 to 646332	637000 to 646332	Low, Middle, High	10MHz	QPSK	1RB/ 0RB Offset
				Low, Middle, High	20MHz	QPSK	1RB/ 0RB Offset
				Low, Middle, High	40MHz	QPSK	1RB/ 0RB Offset
A	RADIATED EMISSION	637000 to 646332	637000 to 646332	Low, Middle, High	10MHz	QPSK	1RB/ 0RB Offset
		637334 to 646000	637334 to 646000	Middle	20MHz	QPSK	1RB/ 0RB Offset
		638000 to 645332	638000 to 645332	Middle,	40MHz	QPSK	1RB/ 0RB Offset
A	ACLR	637000 to 646332	637000 to 646332	Low	10MHz	QPSK	1RB/ 0RB Offset
							Outer_Full
				High	10MHz	QPSK	1RB/ max Offset
							Outer_Full
		637334 to 646000	637334 to 646000	Low	20MHz	QPSK	1RB/ 0RB Offset
							Outer_Full
				High	20MHz	QPSK	1RB/ max Offset
							Outer_Full
		638000 to 645332	638000 to 645332	Low	40MHz	QPSK	1RB/ 0RB Offset
							Outer_Full
				High	40MHz	QPSK	1RB/ max Offset
							Outer_Full

Note: 1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. The test data presented in the report from worst SA_n48



TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.2V/ 3.8V/ 4.2V By Battery	Hanwen Xu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
BAND EDGE	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
CONDCUDETED EMISSION	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu



2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 96

KDB 971168 D02 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.



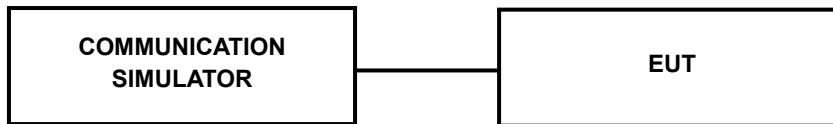
3 TEST TYPES AND RESULTS

3.1 MAXIMUM EIRP MEASUREMENT

3.1.1 LIMITS OF MAXIMUM EIRP MEASUREMENT

Device	Maximum EIRP (dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

3.1.2 TEST SETUP



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

3.1.3 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

- The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle, and high channel and record the power level shown on simulator.

Note: The worst case EIRP shown in this section is found with SA operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 10, 20, 40MHz).

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST RESULTS

5G SA

N48 PC3(ANT5):

n48 (SCS 30 kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		638000	641666	645332
		Frequency (MHz)		3570	3624.99	3679.98
40M	DFT-s-OFDM Pi/2 BPSK	1	1	19.46	20.97	19.68
		1	104	19.26	20.94	19.68
		50	28	19.30	20.60	19.20
		100	0	19.30	20.74	19.31
	DFT-s-OFDM QPSK	1	1	19.46	20.15	19.72
		1	104	19.31	20.97	19.63
		50	28	19.23	20.63	19.58
		100	0	19.33	20.74	19.33
	DFT-s-OFDM 16QAM	1	1	18.08	19.08	18.30
	DFT-s-OFDM 64QAM	1	1	17.13	18.08	17.86
	DFT-s-OFDM 256QAM	1	1	15.14	16.06	15.79
BW	MCS Index	Channel		637334	641666	646000
		Frequency (MHz)		3560.01	3624.99	3690
20M	DFT-s-OFDM Pi/2 BPSK	1	1	21.79	21.62	22.00
		1	49	21.52	21.51	21.88
		25	12	21.64	21.66	22.05
		50	0	21.64	21.65	22.02
	DFT-s-OFDM QPSK	1	1	21.73	21.62	22.01
		1	49	21.52	21.51	21.93
		25	12	21.67	21.61	22.06
		50	0	21.69	21.69	22.00
	DFT-s-OFDM 16QAM	1	1	21.72	21.59	21.99
	DFT-s-OFDM 64QAM	1	1	20.37	21.41	21.70
	DFT-s-OFDM 256QAM	1	1	20.34	21.35	21.71
BW	MCS Index	Channel		637000	641666	646332
		Frequency (MHz)		3555	3624.99	3694.98



10M	DFT-s-OFDM Pi/2 BPSK	1	1	21.95	21.82	22.09
		1	22	21.87	21.75	22.02
		12	6	21.77	21.69	21.91
		24	0	21.05	21.68	21.97
	DFT-s-OFDM QPSK	1	1	21.97	21.82	22.10
		1	22	21.98	21.83	22.04
		12	6	21.79	21.71	21.95
		24	0	21.06	21.73	22.01
	DFT-s-OFDM 16QAM	1	1	21.80	21.78	22.01
	DFT-s-OFDM 64QAM	1	1	20.57	21.57	21.64
	DFT-s-OFDM 256QAM	1	1	20.48	21.52	21.59



N48 PC2(ANT5):

n48 (SCS 30 kHz)						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		638000	641666	645332
		Frequency (MHz)		3570	3624.99	3679.98
40M	DFT-s-OFDM Pi/2 BPSK	1	1	19.71	21.30	19.97
		1	104	19.51	21.22	20.06
		50	28	19.59	20.98	19.49
		100	0	19.64	21.05	19.61
	DFT-s-OFDM QPSK	1	1	19.84	20.47	20.10
		1	104	19.60	21.30	19.89
		50	28	19.62	20.94	19.88
		100	0	19.70	21.11	19.60
	DFT-s-OFDM 16QAM	1	1	18.45	19.36	18.66
	DFT-s-OFDM 64QAM	1	1	17.46	18.34	18.12
	DFT-s-OFDM 256QAM	1	1	15.39	16.34	16.17
	BW	MCS Index	Channel		637334	641666
Frequency (MHz)			3560.01	3624.99	3690	
20M	DFT-s-OFDM Pi/2 BPSK	1	1	21.79	21.67	22.03
		1	49	21.55	21.55	21.89
		25	12	21.66	21.68	22.10
		50	0	21.67	21.69	22.05
	DFT-s-OFDM QPSK	1	1	21.74	21.66	22.04
		1	49	21.53	21.53	21.93
		25	12	21.68	21.62	22.06
		50	0	21.69	21.70	22.03
	DFT-s-OFDM 16QAM	1	1	21.76	21.62	22.03
	DFT-s-OFDM 64QAM	1	1	20.42	21.43	21.72
	DFT-s-OFDM 256QAM	1	1	20.35	21.38	21.74
	BW	MCS Index	Channel		637000	641666
Frequency (MHz)			3555	3624.99	3694.98	
10M	DFT-s-OFDM Pi/2 BPSK	1	1	21.74	22.01	22.08
		1	22	21.35	22.05	21.72
		12	6	21.31	21.58	21.53
		24	0	21.08	21.24	21.57
	DFT-s-OFDM QPSK	1	1	21.78	22.10	21.89
		1	22	21.22	22.09	22.08
		12	6	21.30	21.55	21.75



		24	0	21.31	21.49	21.55
	DFT-s-OFDM 16QAM	1	1	21.19	21.86	21.84
	DFT-s-OFDM 64QAM	1	1	20.62	21.32	21.24
	DFT-s-OFDM 256QAM	1	1	20.15	21.16	21.27

**EIRP****N48 PC3:****CHANNEL BANDWIDTH: 40M DFT-s-OFDM Pi/2 BPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	19.46	0.9	20.36	108.64	23
641666	3624.99	20.97	0.9	21.87	153.82	23
645332	3679.98	19.68	0.9	20.58	114.29	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	19.46	0.9	20.36	108.64	23
641666	3624.99	20.97	0.9	21.87	153.82	23
645332	3679.98	19.72	0.9	20.62	115.35	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	18.08	0.9	18.98	79.07	23
641666	3624.99	19.08	0.9	19.98	99.54	23
645332	3679.98	18.30	0.9	19.2	83.18	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	17.13	0.9	18.03	63.53	23
641666	3624.99	18.08	0.9	18.98	79.07	23
645332	3679.98	17.86	0.9	18.76	75.16	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	15.14	0.9	16.04	40.18	23
641666	3624.99	16.06	0.9	16.96	49.66	23
645332	3679.98	15.79	0.9	16.69	46.67	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM Pi/2 BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.79	0.9	22.69	185.78	23
641666	3624.99	21.66	0.9	22.56	180.3	23
646000	3690	22.05	0.9	22.95	197.24	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.73	0.9	22.63	183.23	23
641666	3624.99	21.69	0.9	22.59	181.55	23
646000	3690	22.06	0.9	22.96	197.7	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.72	0.9	22.62	182.81	23
641666	3624.99	21.59	0.9	22.49	177.42	23
646000	3690	21.99	0.9	22.89	194.54	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	20.37	0.9	21.27	133.97	23
641666	3624.99	21.41	0.9	22.31	170.22	23
646000	3690	21.70	0.9	22.6	181.97	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	20.34	0.9	21.24	133.05	23
641666	3624.99	21.35	0.9	22.25	167.88	23
646000	3690	21.71	0.9	22.61	182.39	23

**CHANNEL BANDWIDTH: 10M DFT-s-OFDM Pi/2 BPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.95	0.9	22.85	192.75	23
641666	3624.99	21.82	0.9	22.72	187.07	23
646332	3694.98	22.09	0.9	22.99	199.07	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.98	0.9	22.88	194.09	23
641666	3624.99	21.83	0.9	22.73	187.5	23
646332	3694.98	22.1	0.9	23	199.53	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.80	0.9	22.7	186.21	23
641666	3624.99	21.78	0.9	22.68	185.35	23
646332	3694.98	22.01	0.9	22.91	195.43	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	20.57	0.9	21.47	140.28	23
641666	3624.99	21.57	0.9	22.47	176.6	23
646332	3694.98	21.64	0.9	22.54	179.47	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	20.48	0.9	21.38	137.4	23
641666	3624.99	21.52	0.9	22.42	174.58	23
646332	3694.98	21.59	0.9	22.49	177.42	23



N48 PC2:

CHANNEL BANDWIDTH: 40M DFT-s-OFDM Pi/2 BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	19.71	0.90	20.61	115.08	23
641666	3624.99	21.3	0.90	22.20	165.96	23
645332	3679.98	20.06	0.90	20.96	124.74	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	19.84	0.90	20.74	118.58	23
641666	3624.99	21.3	0.90	22.20	165.96	23
645332	3679.98	20.1	0.90	21.00	125.89	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	18.45	0.90	19.35	86.1	23
641666	3624.99	19.36	0.90	20.26	106.17	23
645332	3679.98	18.66	0.90	19.56	90.36	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	17.46	0.90	18.36	68.55	23
641666	3624.99	18.34	0.90	19.24	83.95	23
645332	3679.98	18.12	0.90	19.02	79.8	23

CHANNEL BANDWIDTH: 40M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
638000	3570	15.39	0.90	16.29	42.56	23
641666	3624.99	16.34	0.90	17.24	52.97	23
645332	3679.98	16.17	0.90	17.07	50.93	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM Pi/2 BPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.79	0.90	22.69	185.78	23
641666	3624.99	21.69	0.90	22.59	181.55	23
646000	3690	22.1	0.90	23.00	199.53	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.74	0.90	22.64	183.65	23
641666	3624.99	21.7	0.90	22.60	181.97	23
646000	3690	22.06	0.90	22.96	197.7	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	21.76	0.90	22.66	184.5	23
641666	3624.99	21.62	0.90	22.52	178.65	23
646000	3690	22.03	0.90	22.93	196.34	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	20.42	0.90	21.32	135.52	23
641666	3624.99	21.43	0.90	22.33	171	23
646000	3690	21.72	0.90	22.62	182.81	23

CHANNEL BANDWIDTH: 20M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637334	3560.01	20.35	0.90	21.25	133.35	23
641666	3624.99	21.38	0.90	22.28	169.04	23
646000	3690	21.74	0.90	22.64	183.65	23

**CHANNEL BANDWIDTH: 10M DFT-s-OFDM Pi/2 BPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.74	0.90	22.64	183.65	23
641666	3624.99	22.05	0.90	22.95	197.24	23
646332	3694.98	22.08	0.90	22.98	198.61	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.78	0.90	22.68	185.35	23
641666	3624.99	22.1	0.90	23.00	199.53	23
646332	3694.98	22.08	0.90	22.98	198.61	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	21.19	0.90	22.09	161.81	23
641666	3624.99	21.86	0.90	22.76	188.8	23
646332	3694.98	21.84	0.90	22.74	187.93	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	20.62	0.90	21.52	141.91	23
641666	3624.99	21.32	0.90	22.22	166.72	23
646332	3694.98	21.24	0.90	22.14	163.68	23

CHANNEL BANDWIDTH: 10M DFT-s-OFDM 256QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (dBm/10MHz)
637000	3555	20.15	0.90	21.05	127.35	23
641666	3624.99	21.16	0.90	22.06	160.69	23
646332	3694.98	21.27	0.90	22.17	164.82	23

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

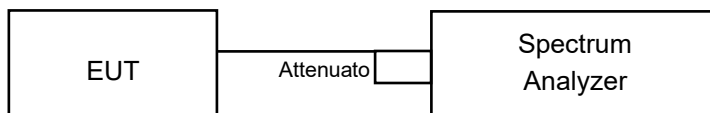
Note: The worst case EIRP shown in this section is found with NR operating only using 1RB. As such, the EIRP/10MHz and full channel EIRP values will be identical since 1RB is fully contained within all available channel bandwidths (i.e., 10, 20,40MHz).

3.2 CONDUCTED BAND EDGE

3.2.1 LIMITS OF CONDUCTED BAND EDGE MEASUREMENT

The conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

3.2.2 TEST SETUP



3.2.3 TEST INSTRUMENTS

Refer to section 1.2 to get information about the above instrument.



3.2.4 TEST PROCEDURE

For the Conducted Band Edge:

- a. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- b. Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW).
- c. Set the resolution bandwidth (RBW) $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
- d. Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- e. Set the video bandwidth (VBW) to $\geq 3 \times$ RBW.
- f. Select the average power (RMS) display detector.
- g. Set the number of measurement points to ≥ 1001 .
- h. Use auto-coupled sweep time.
- i. Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- j. The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- k. Record the max trace plot into the test report.

For Adjacent Channel Leakage Ratio (ACLR) measurement:

1. The Adjacent Channel Leakage Ratio (ACLR) is the ratio of the average power in the assigned aggregated channel bandwidth to the average power over the equivalent adjacent channel bandwidth.
2. The option ACLR of spectrum analyzer is used and measures the ACLR ratio by setting equivalent channel bandwidth.
3. The measured ACLR ratio shall be at least 30 dB.

3.2.5 DEVIATION FROM TEST STANDARD

No deviation.

3.2.6 TEST RESULTS

Please Refer to Appendix Of this test report.



3.3 FREQUENCY STABILITY MEASUREMENT

3.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

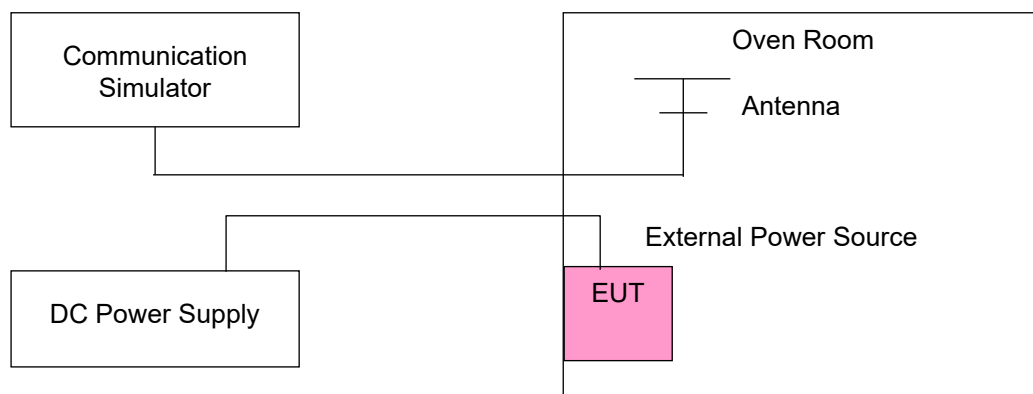
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency band.

3.3.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.3.3 TEST SETUP



3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

Note: VL = Low voltage(3.2V); VN/NV = Normal voltage(3.8V); VH = High voltage(4.2V);
NT = Normal temperature (25°C)

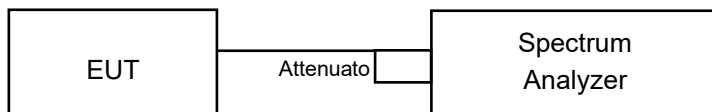


3.4 OCCUPIED BANDWIDTH MEASUREMENT

3.4.1 OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 1.2 to get information of above instrument.

3.4.4 TEST PROCEDURE

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 TEST RESULT

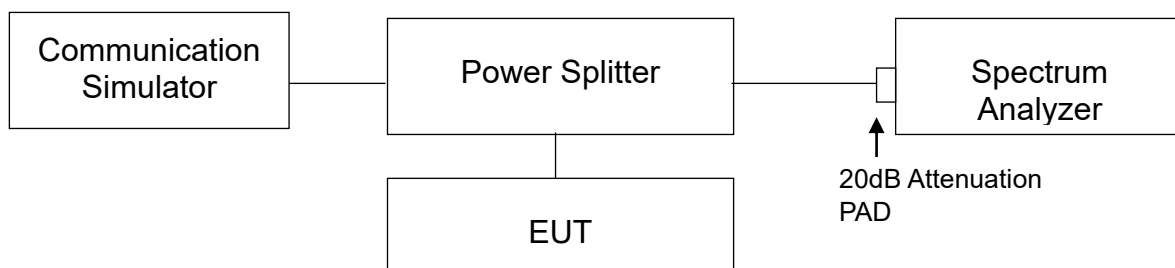
Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

3.5.2 TEST SETUP



3.5.3 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 40 GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.



3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
- c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
$$\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}.$$

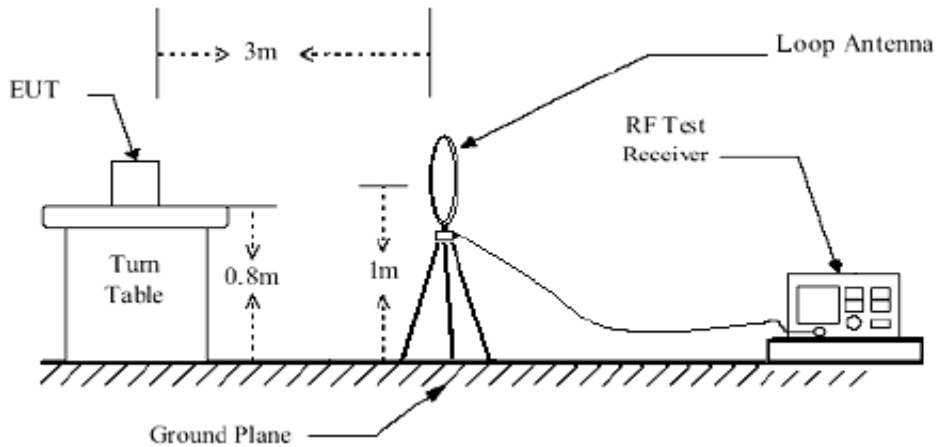
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

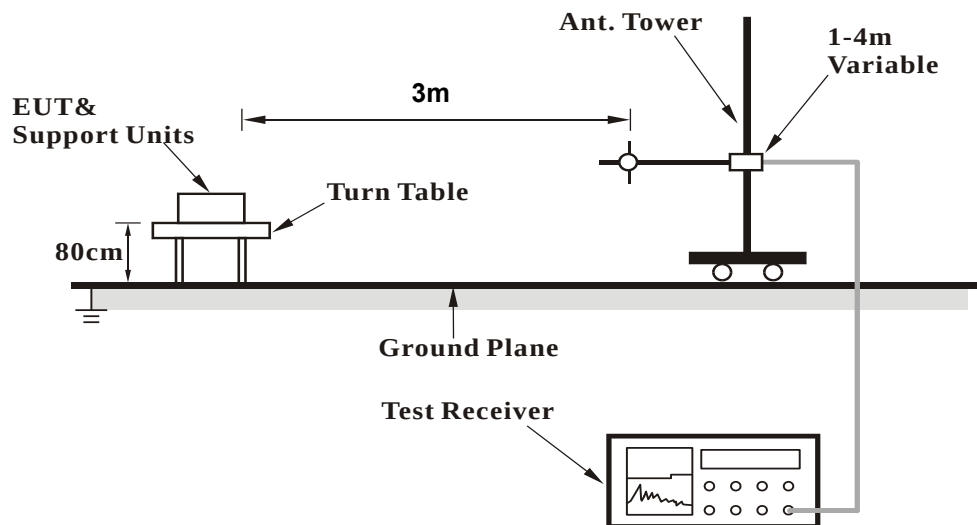
No deviation.

3.6.4 TEST SET UP

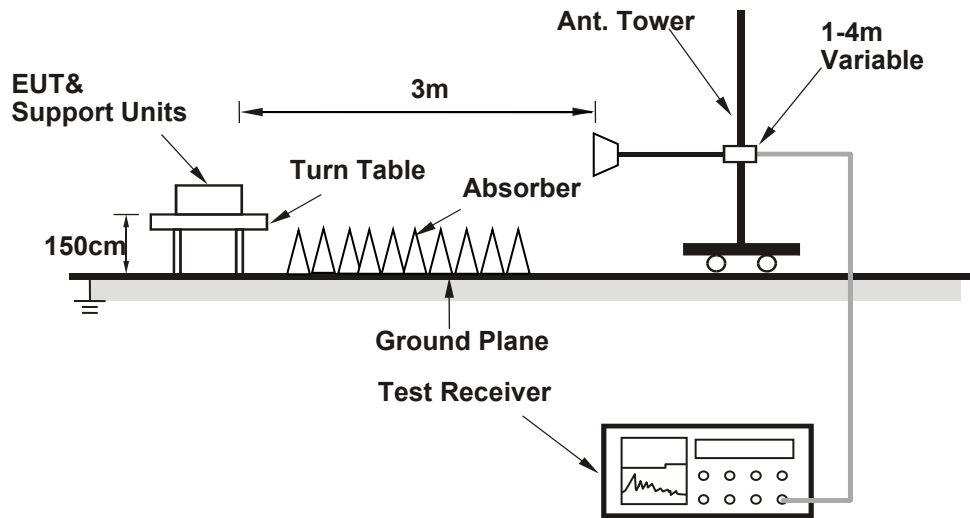
< Frequency Range below 30MHz >



<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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



3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

5G SA BELOW 1GHz WORST-CASE DATA

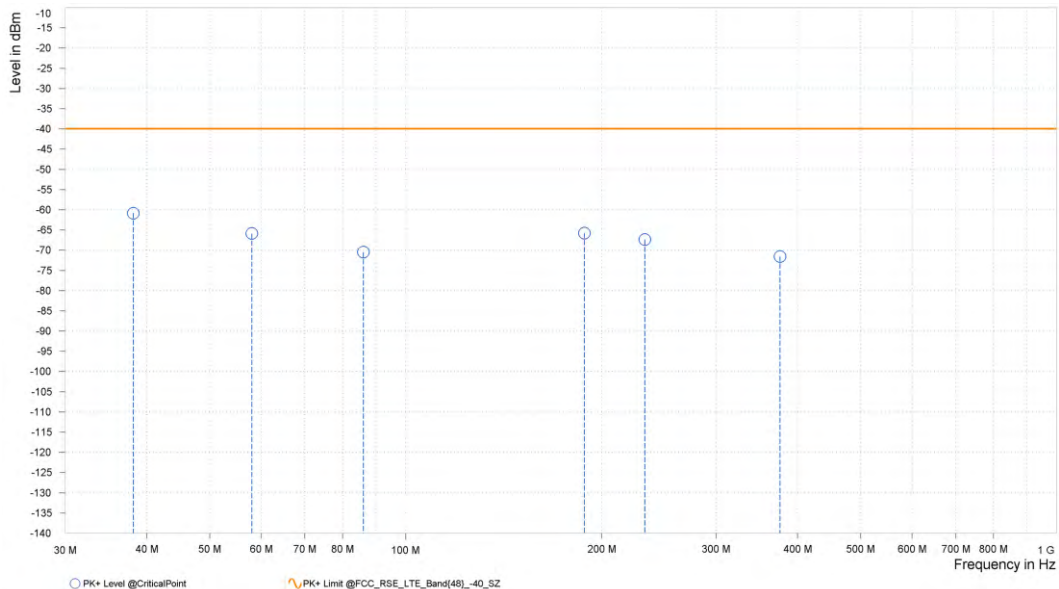
30 MHz – 1GHz data:

N48

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 641666	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	38.150	-60.87	-40.00	20.87	5.12	H	4.2	1.00
1	58.050	-65.89	-40.00	25.89	1.49	H	146.2	1.00
1	86.100	-70.48	-40.00	30.48	-7.45	H	212.4	2.00
1	188.150	-65.77	-40.00	25.77	-0.23	H	356.7	1.00
1	233.200	-67.39	-40.00	27.39	6.86	H	359	1.00
1	375.950	-71.54	-40.00	31.54	4.57	H	212.4	2.00



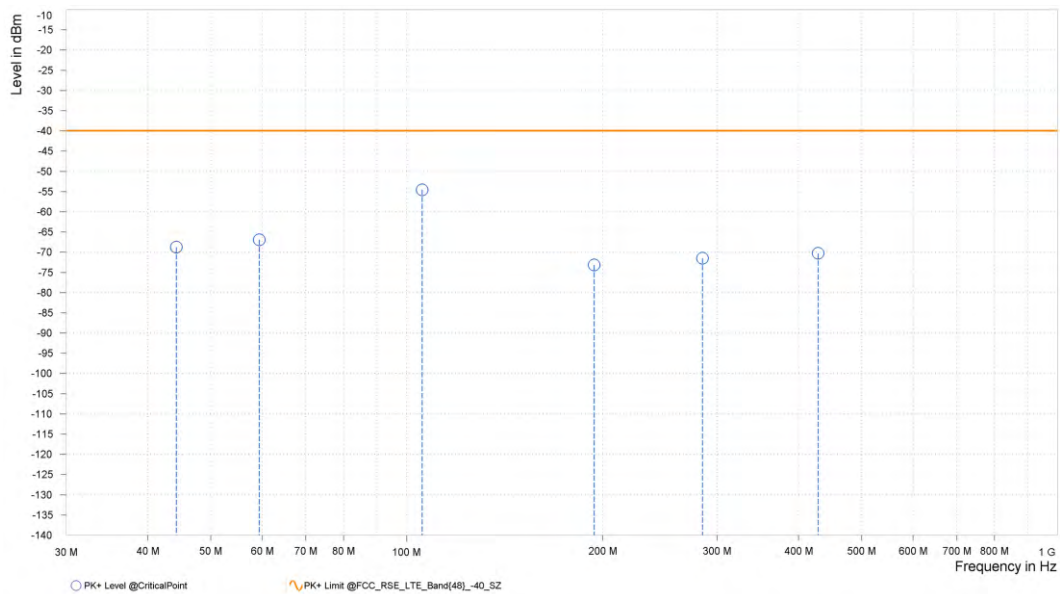


BUREAU
VERITAS

Test Report No.: PSU-QSU2312140113RF06

MODE	TX channel 641666	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	44.300	-68.77	-40.00	28.77	-1.48	V	5	1.00
1	59.400	-66.91	-40.00	26.91	0.29	V	5	1.00
1	105.650	-54.58	-40.00	14.58	9.41	V	2.8	2.00
1	194.200	-73.17	-40.00	33.17	-1.84	V	359	2.00
1	284.800	-71.47	-40.00	31.47	4.10	V	1	1.00
1	428.750	-70.28	-40.00	30.28	6.58	V	357	1.00





ABOVE 1GHz

Note: For higher frequency, the emission is too low to be detected.

N48(HUPE)

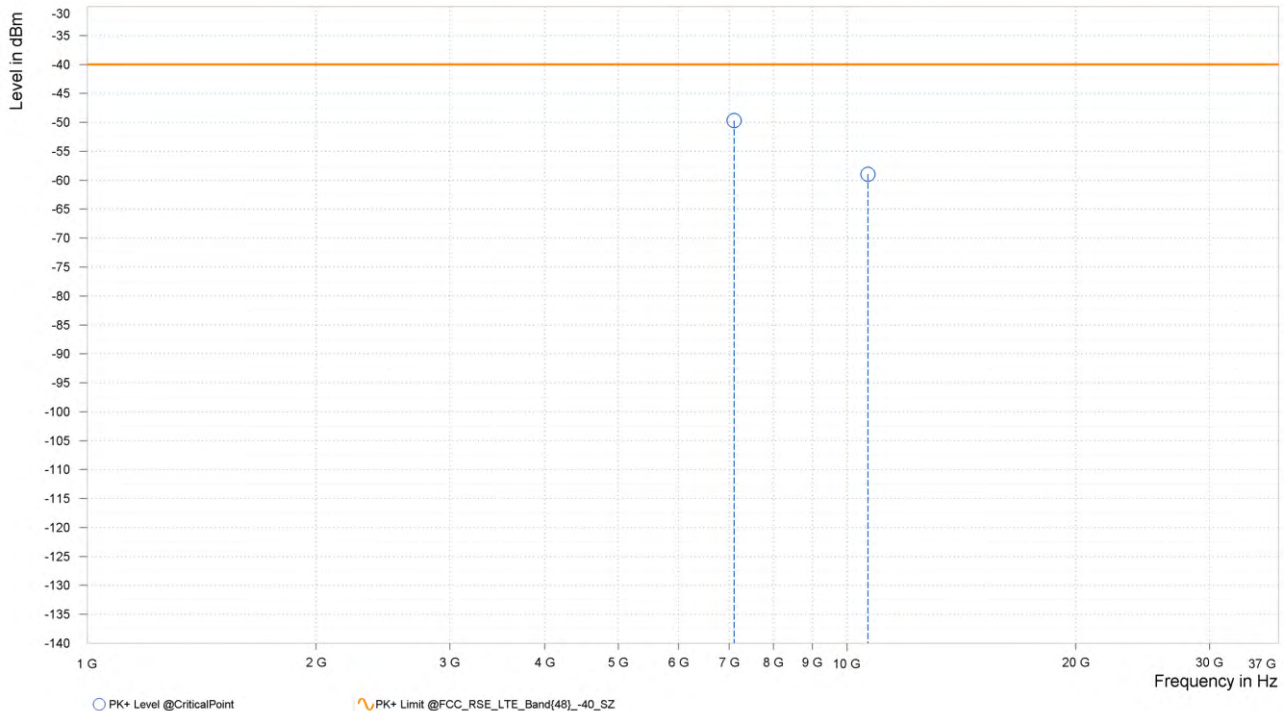
Note: For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

CHANNEL BANDWIDTH: 10MHz / QPSK

637000

MODE	TX channel 637000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

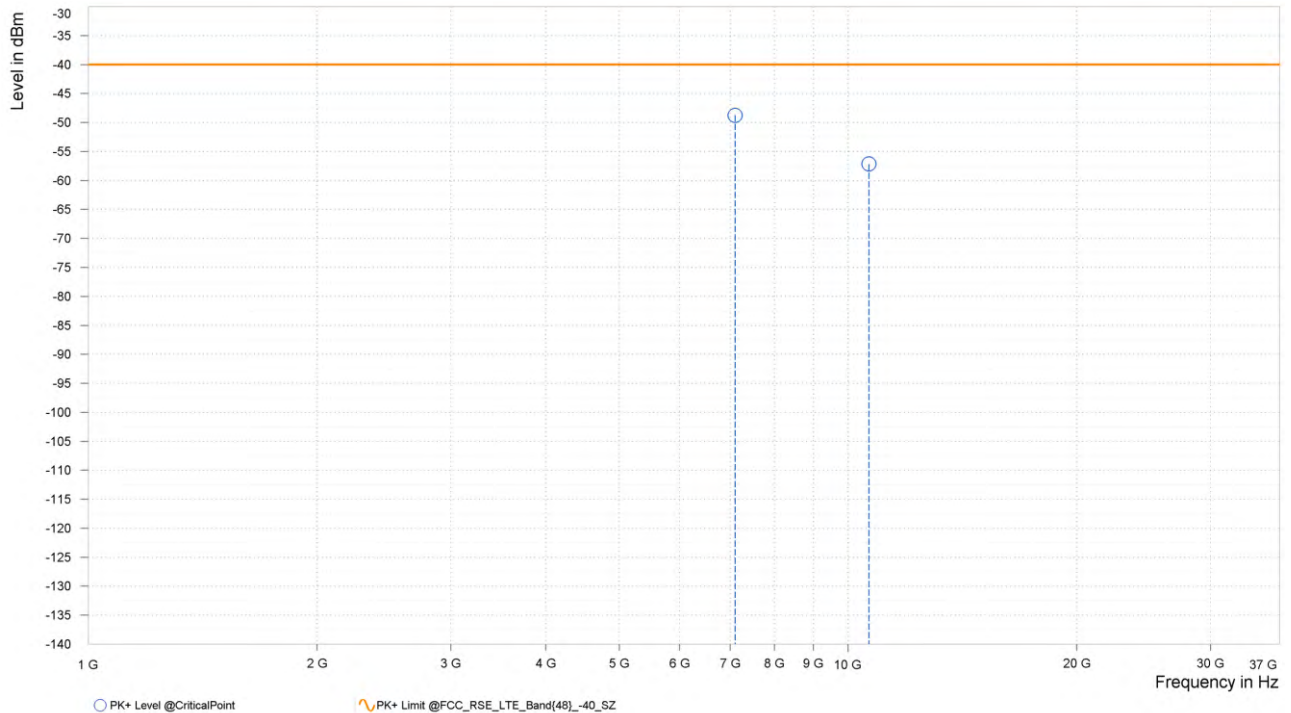
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,101.000	-49.71	-40.00	9.71	22.49	H	359	1.00
6	10,651.500	-58.98	-40.00	18.98	10.04	H	273	1.00





MODE	TX channel 637000	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,101.000	-48.76	-40.00	8.76	22.49	V	1	2.00
6	10,651.500	-57.16	-40.00	17.16	10.04	V	13.6	2.00

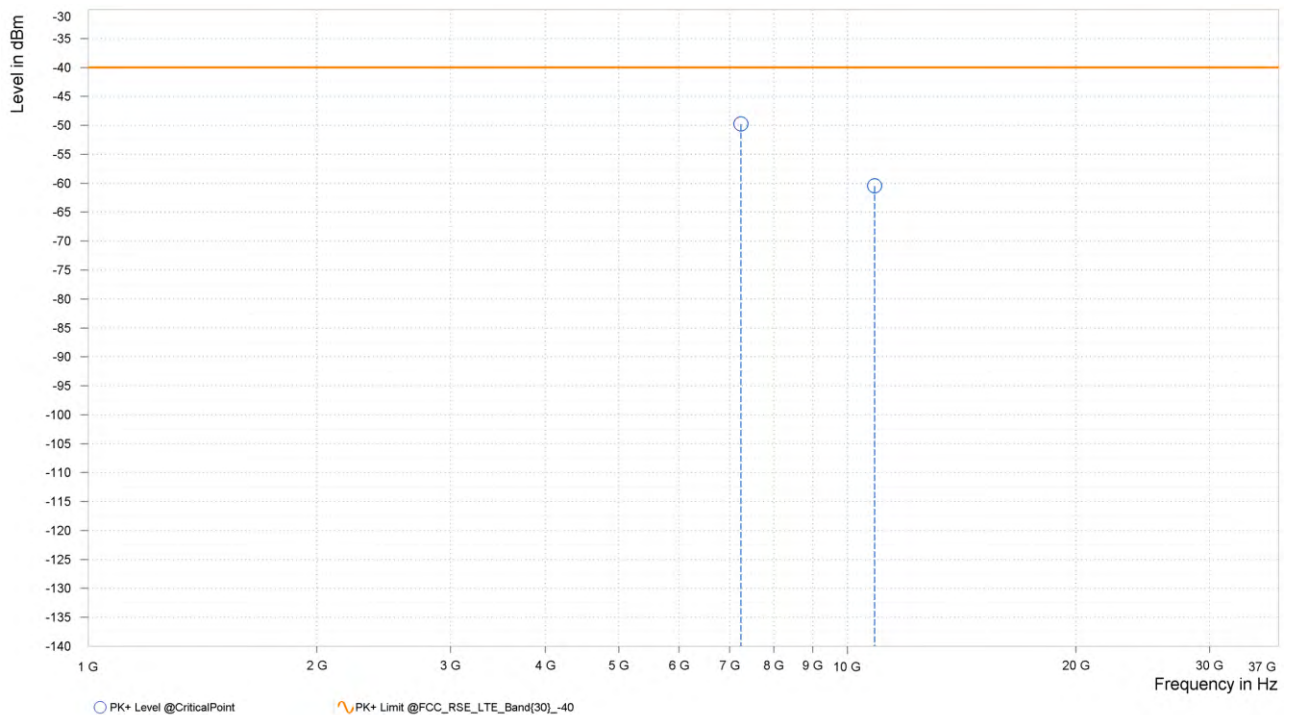




CH641666

MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

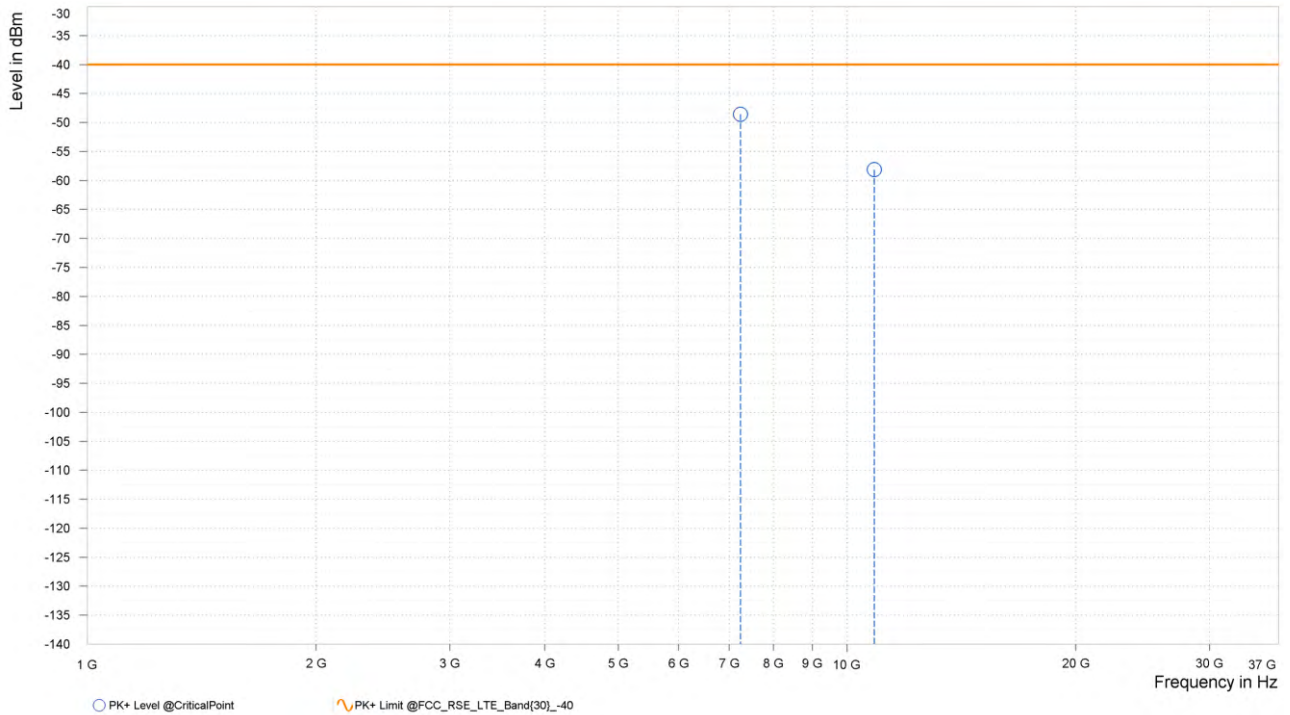
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,241.000	-49.77	-40.00	9.77	22.51	H	359	1.00
6	10,861.000	-60.46	-40.00	20.46	9.62	H	1.6	2.00





MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,241.000	-48.57	-40.00	8.57	22.51	V	282.6	1.00
6	10,861.000	-58.14	-40.00	18.14	9.62	V	1.7	2.00

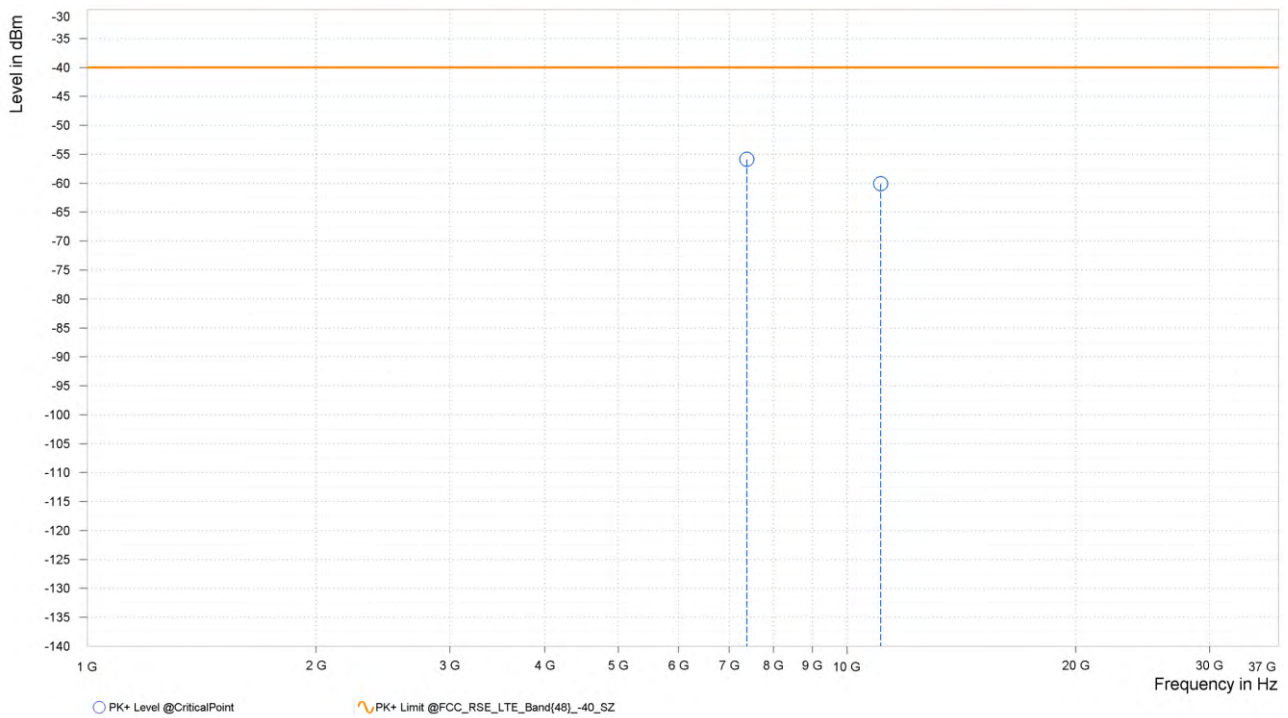




CH646332

MODE	TX channel 646332	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

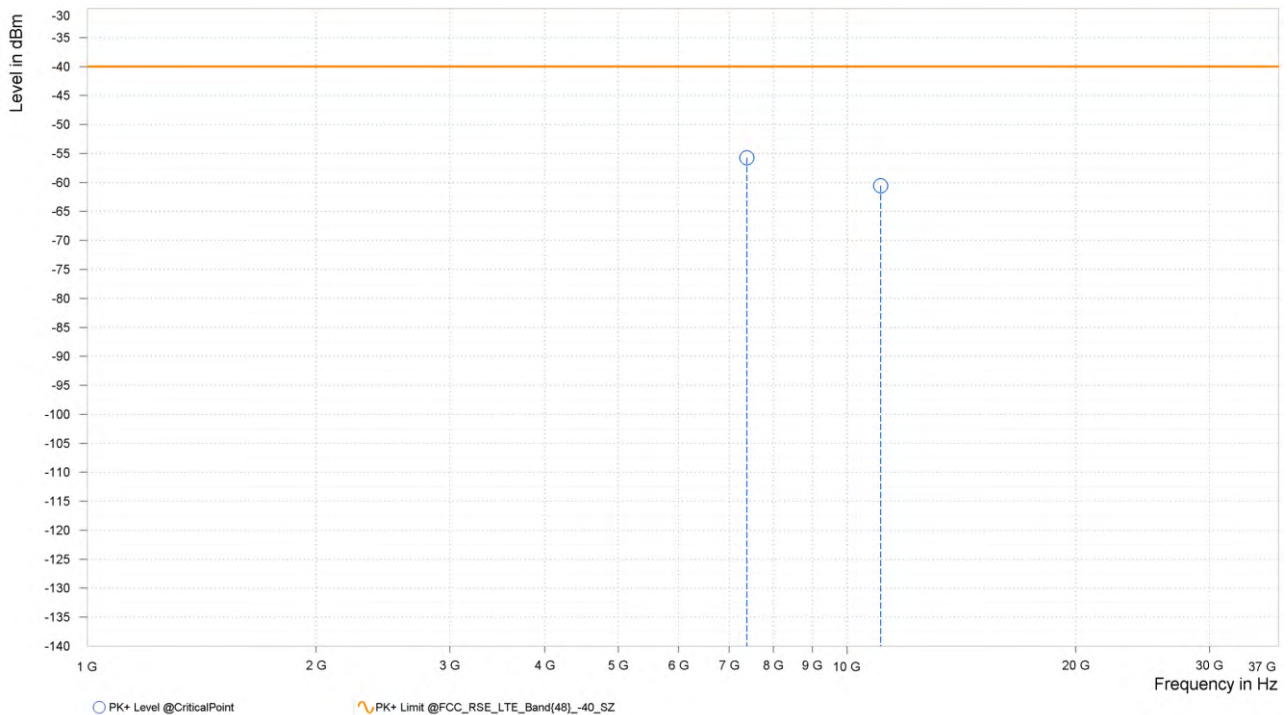
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,381.000	-55.87	-40.00	15.87	16.80	H	359	1.00
6	11,071.500	-60.10	-40.00	20.10	9.72	H	1	1.00





MODE	TX channel 646332	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,381.000	-55.73	-40.00	15.73	16.80	V	359	1.00
6	11,071.500	-60.57	-40.00	20.57	9.72	V	155	2.00

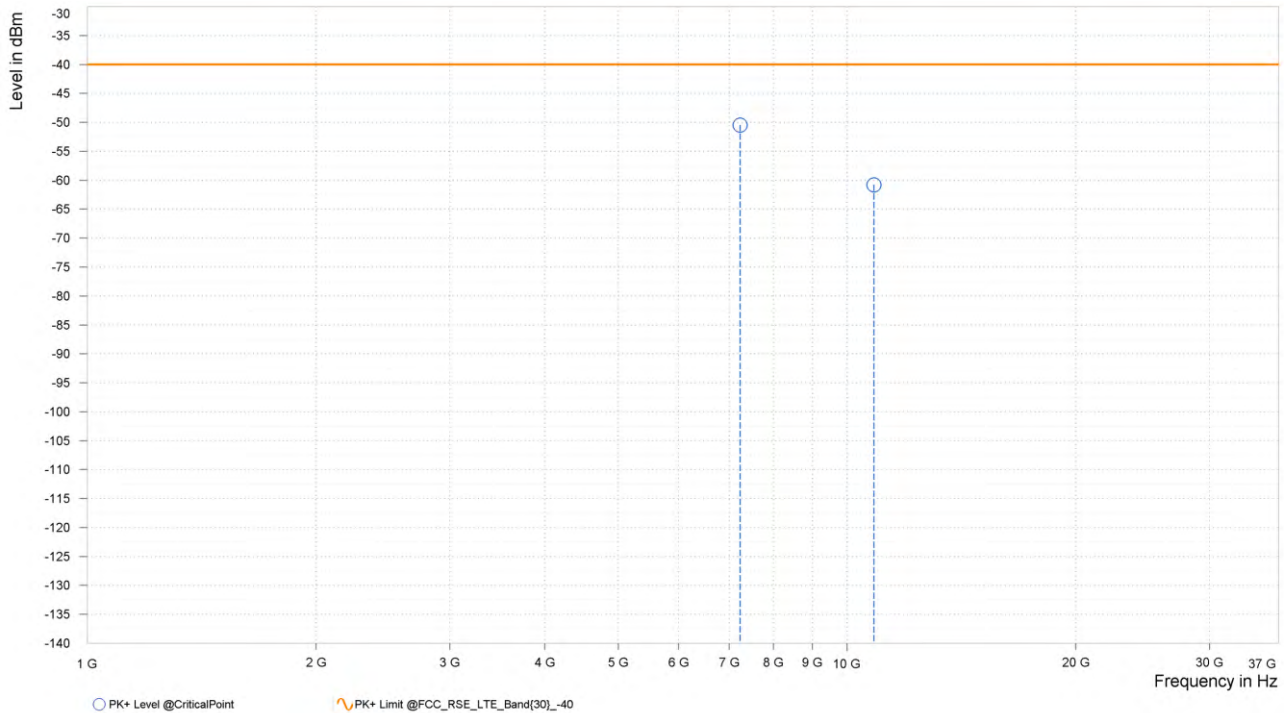




CHANNEL BANDWIDTH: 20MHz / QPSK

MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

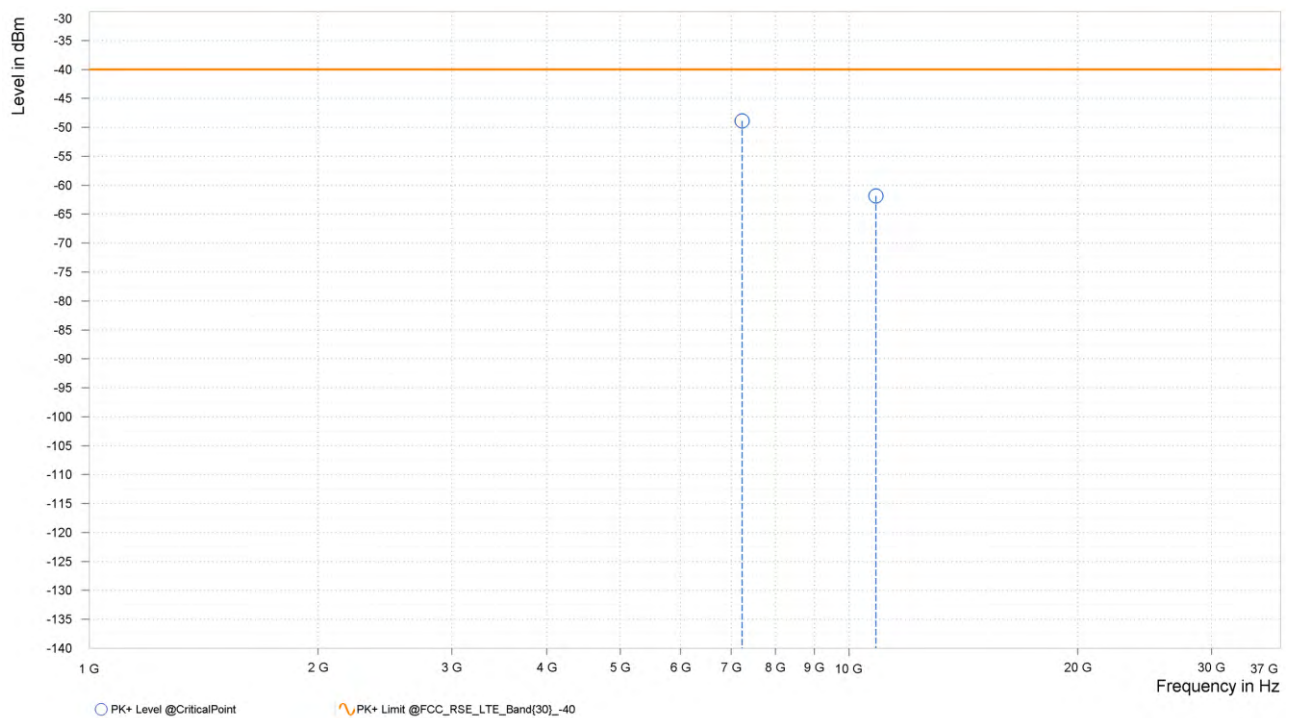
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,232.000	-50.46	-40.00	10.46	22.47	H	207.7	2.00
6	10,848.000	-60.81	-40.00	20.81	9.63	H	298.2	1.00





MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,232.000	-48.87	-40.00	8.87	22.47	V	75	2.00
6	10,848.000	-61.83	-40.00	21.83	9.63	V	359	1.00

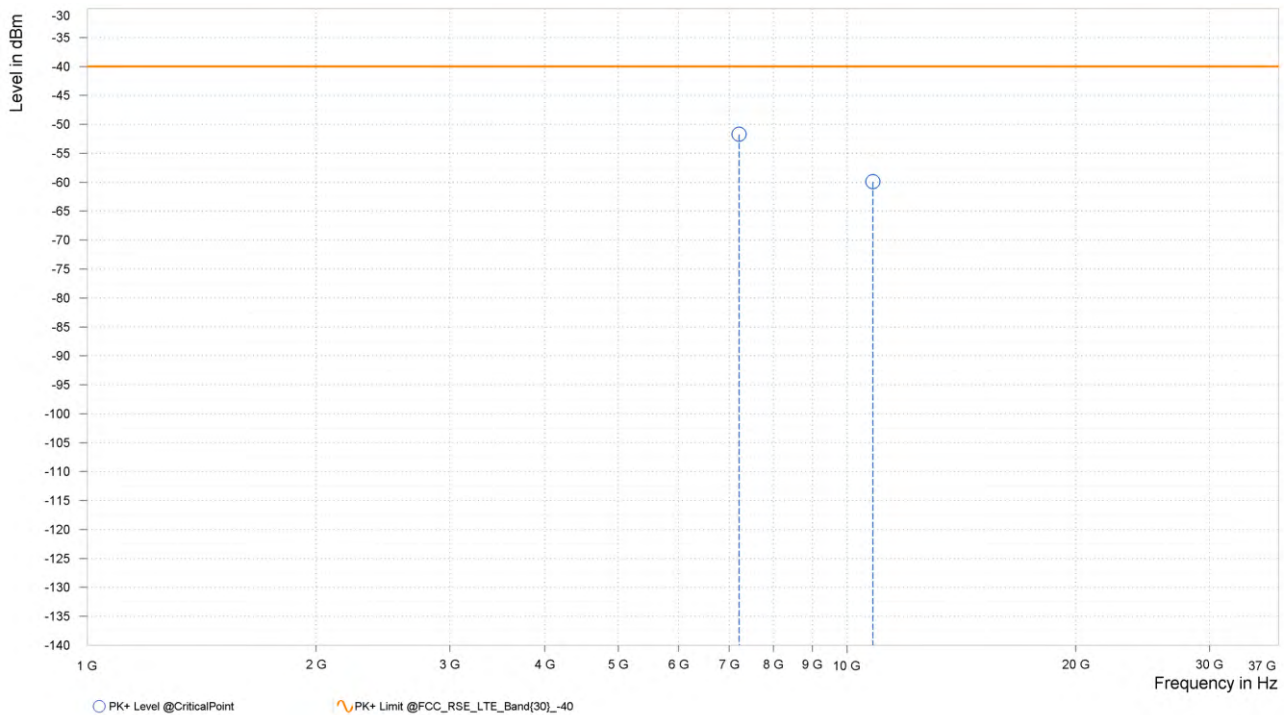




CHANNEL BANDWIDTH: 40MHz / QPSK

MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

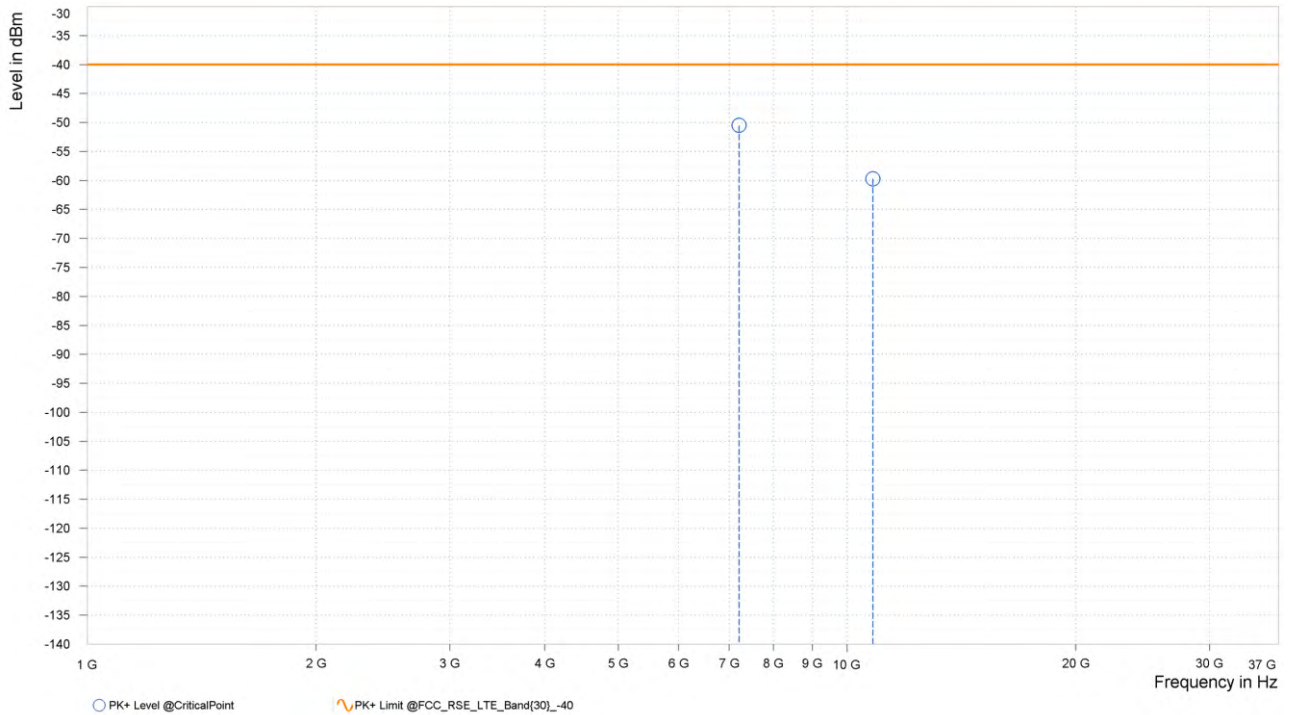
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,214.000	-51.71	-40.00	11.71	22.44	H	359	1.00
6	10,821.000	-59.92	-40.00	19.92	9.80	H	1	1.00





MODE	TX channel 641666	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	7,214.000	-50.51	-40.00	10.51	22.44	V	75	2.00
6	10,821.000	-59.70	-40.00	19.70	9.80	V	1	1.00

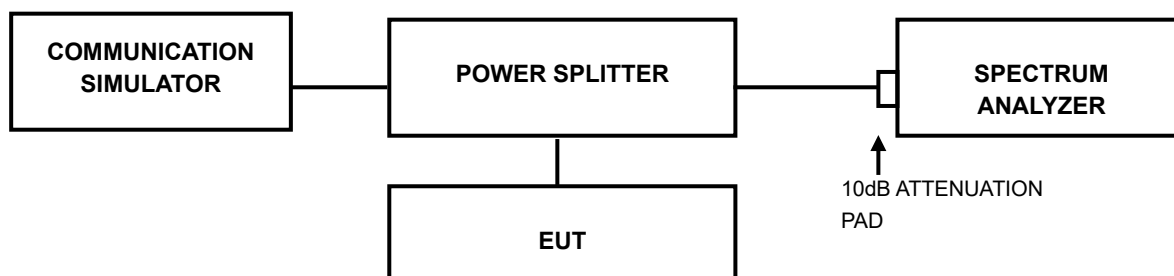


3.7 PEAK TO AVERAGE RATIO

3.6.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

3.6.2 TEST SETUP



3.6.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.



3.6.4 TEST RESULTS

Please Refer to Appendix Of this test report.



4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

If you have any comments, please feel free to contact us at the following:

Suzhou EMC/RF Lab:

Tel: +86 (0557) 368 1008



5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.



6 APPENDIX

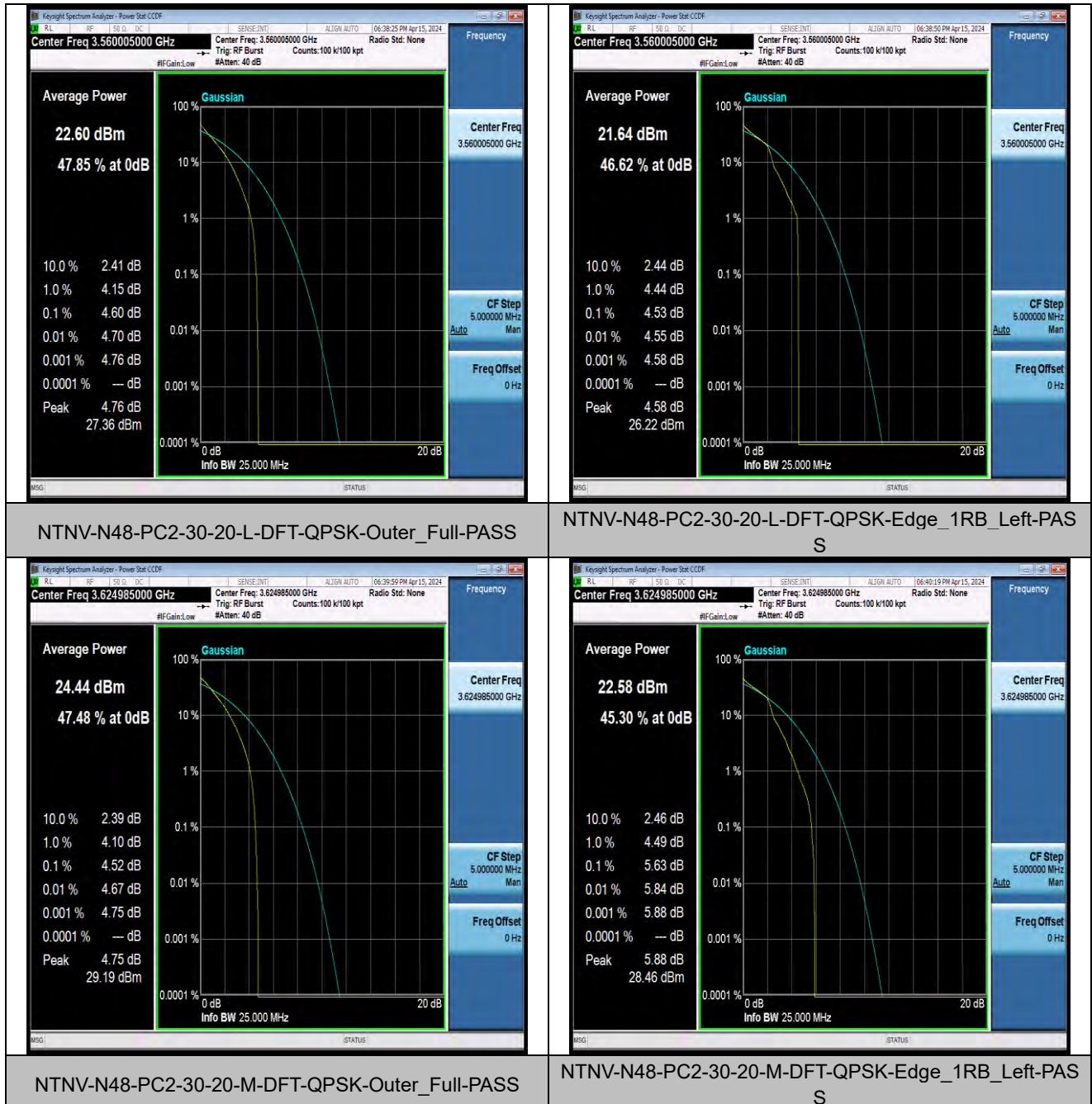
N48

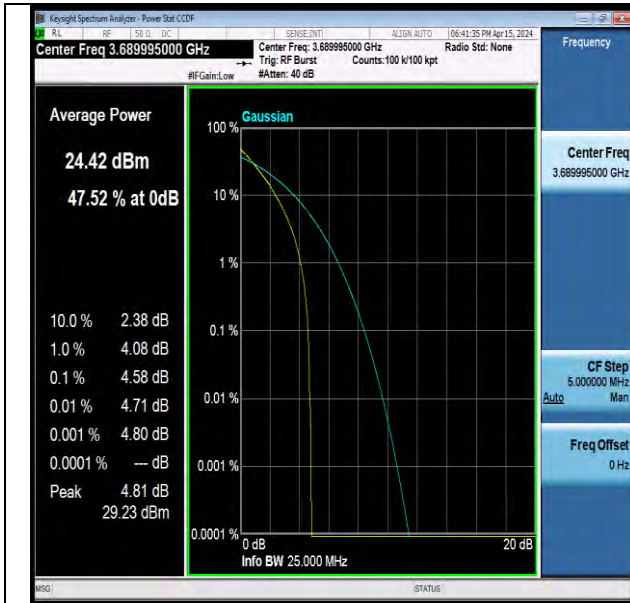
PEAK-TO-AVERAGE RATIO(CCDF) TEST RESULT

Band	SCS	Bandwidth	Modulation	Channel	RB Config	Result	Limit	Verdict
N48	30	20	DFT-QPSK	L	Outer_Full	4.60	≤13	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	4.53	≤13	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	4.52	≤13	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	5.63	≤13	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	4.58	≤13	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	5.74	≤13	PASS

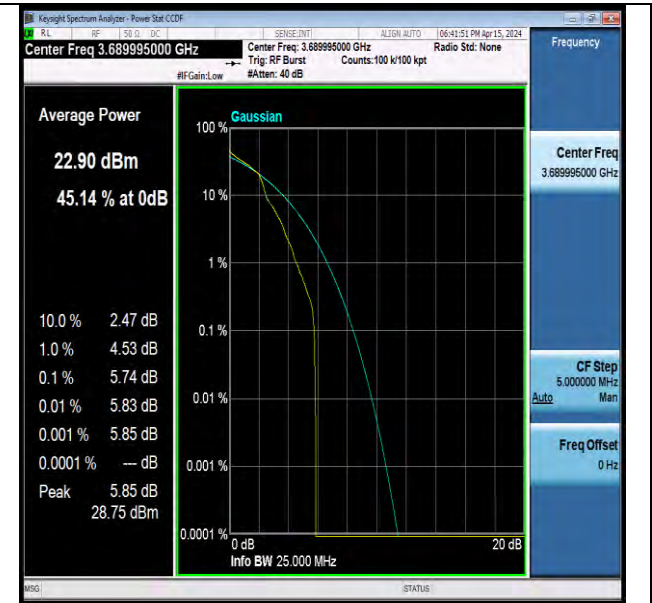


TEST GRAPHS





NTNV-N48-PC2-30-20-H-DFT-QPSK-Outer_Full-PASS



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Left-PASS

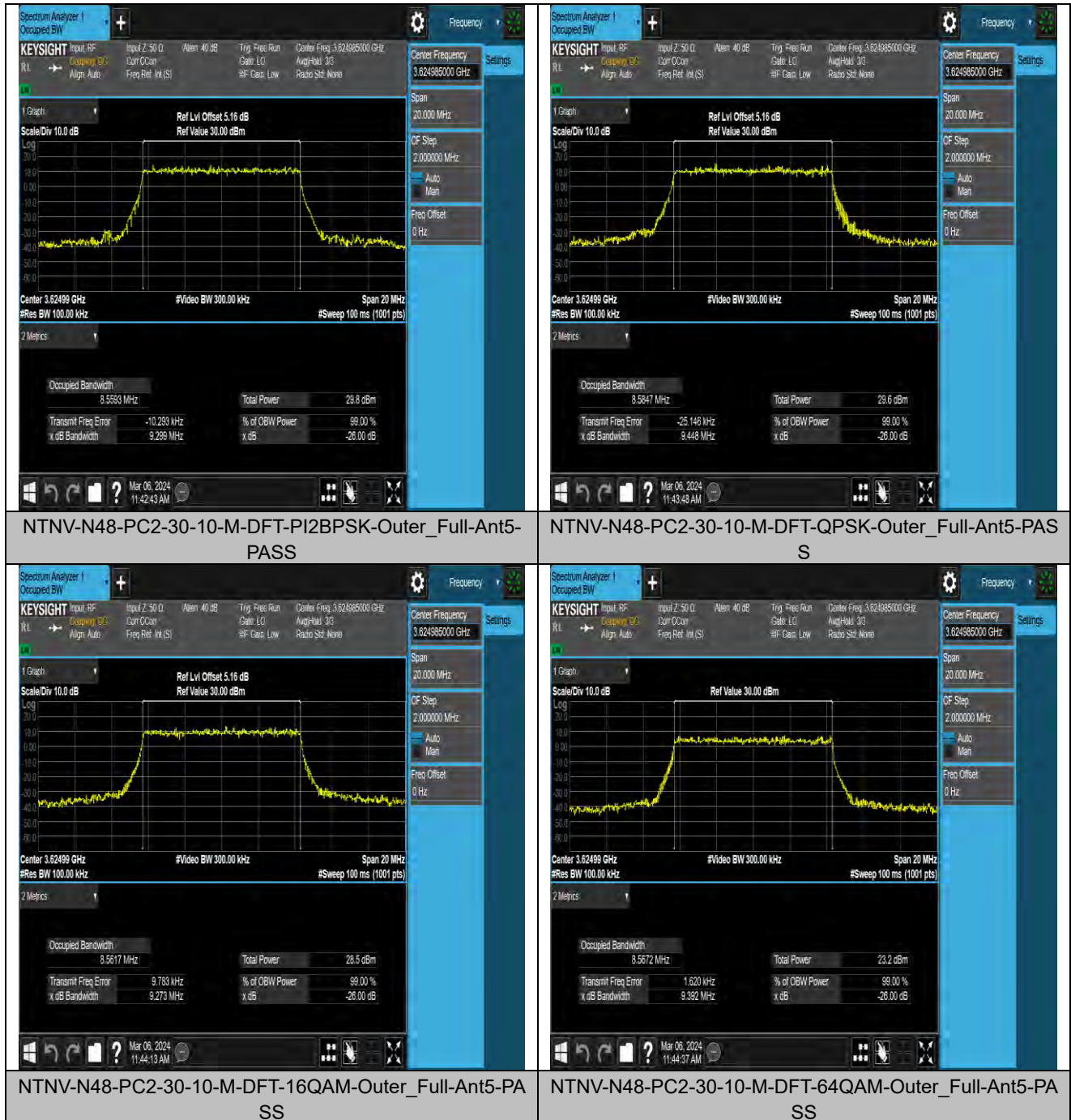


26DB BANDWIDTH AND OCCUPIED BANDWIDTH FOR SA TEST RESULT

Band	SCS	Bandwidth	Modulation	Channel	RB Config	Result (99%)	Result (26dB)	Verdict
N48	30	10	DFT-PI2BPSK	M	Outer_Full	8.5593	9.299	PASS
N48	30	10	DFT-QPSK	M	Outer_Full	8.5847	9.448	PASS
N48	30	10	DFT-16QAM	M	Outer_Full	8.5617	9.273	PASS
N48	30	10	DFT-64QAM	M	Outer_Full	8.5672	9.392	PASS
N48	30	10	DFT-256QAM	M	Outer_Full	8.5397	9.336	PASS
N48	30	20	DFT-PI2BPSK	M	Outer_Full	17.810	18.94	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	17.831	18.90	PASS
N48	30	20	DFT-16QAM	M	Outer_Full	17.859	18.85	PASS
N48	30	20	DFT-64QAM	M	Outer_Full	17.799	19.02	PASS
N48	30	20	DFT-256QAM	M	Outer_Full	17.797	18.89	PASS
N48	30	40	DFT-PI2BPSK	M	Outer_Full	35.712	37.43	PASS
N48	30	40	DFT-QPSK	M	Outer_Full	35.686	37.30	PASS
N48	30	40	DFT-16QAM	M	Outer_Full	35.742	37.46	PASS
N48	30	40	DFT-64QAM	M	Outer_Full	35.756	37.47	PASS
N48	30	40	DFT-256QAM	M	Outer_Full	35.754	37.47	PASS



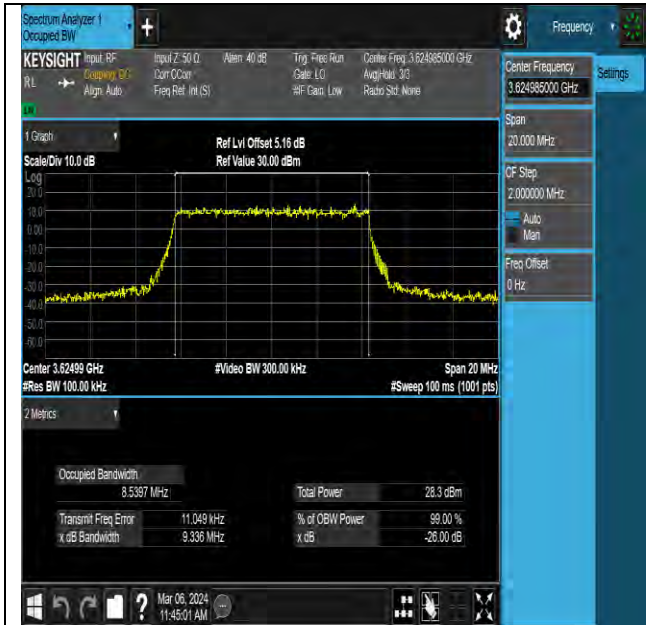
TEST GRAPHS





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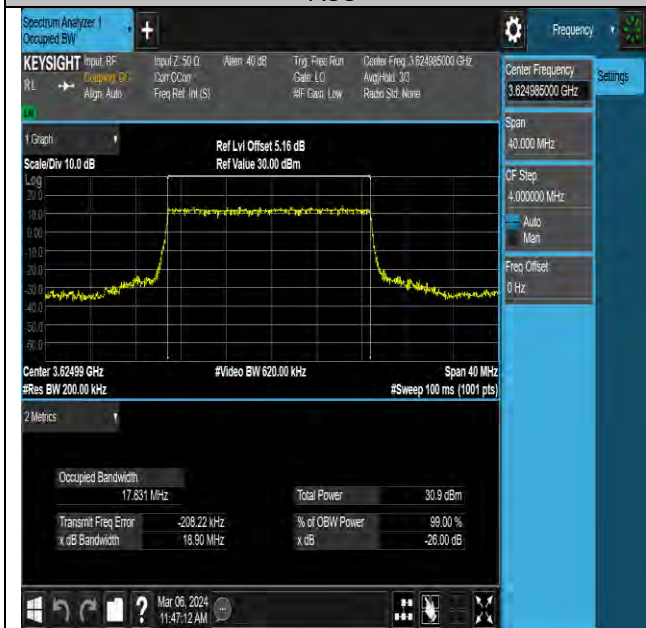
Test Report No.: PSU-QSU2312140113RF06



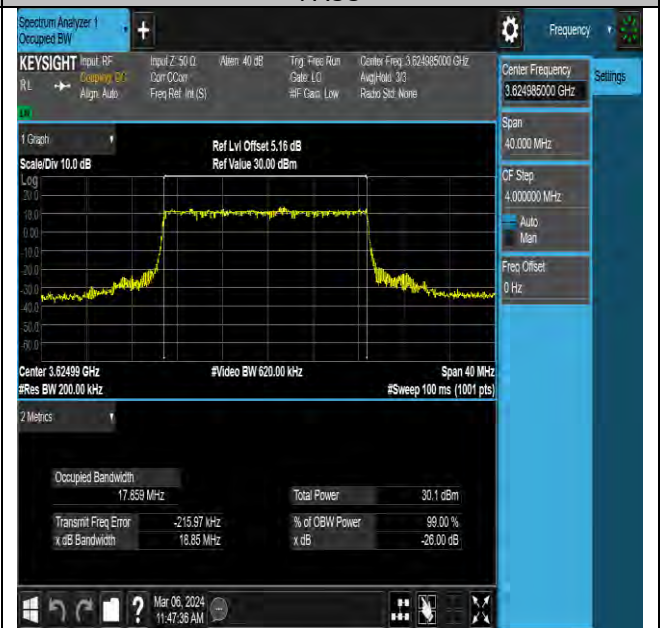
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ASS



NTNV-N48-PC2-30-20-M-DFT-PI2BPSK-Outter_Full-Ant5-P
PASS



NTNV-N48-PC2-30-20-M-DFT-QPSK-Outter_Full-Ant5-P
S

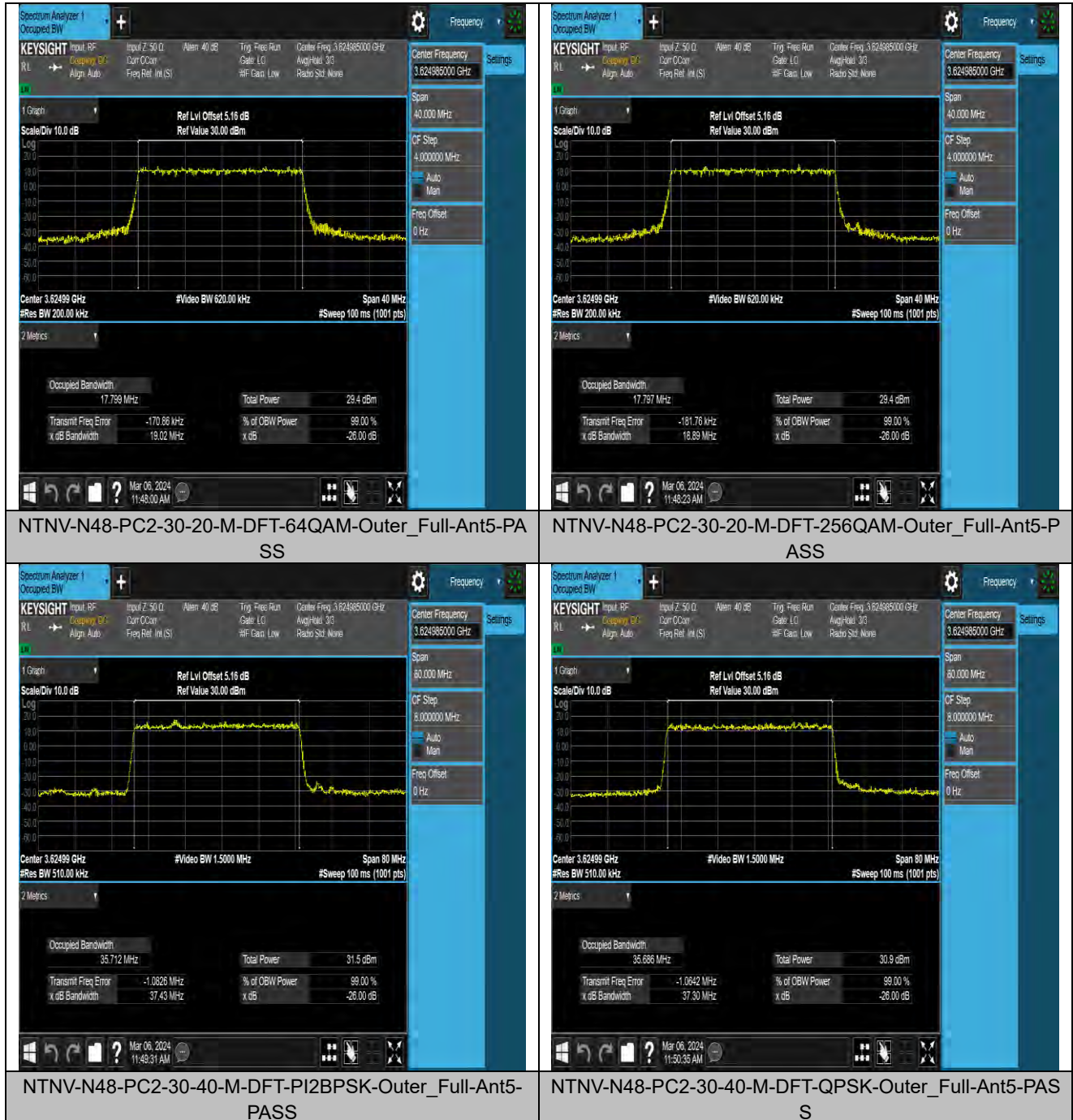


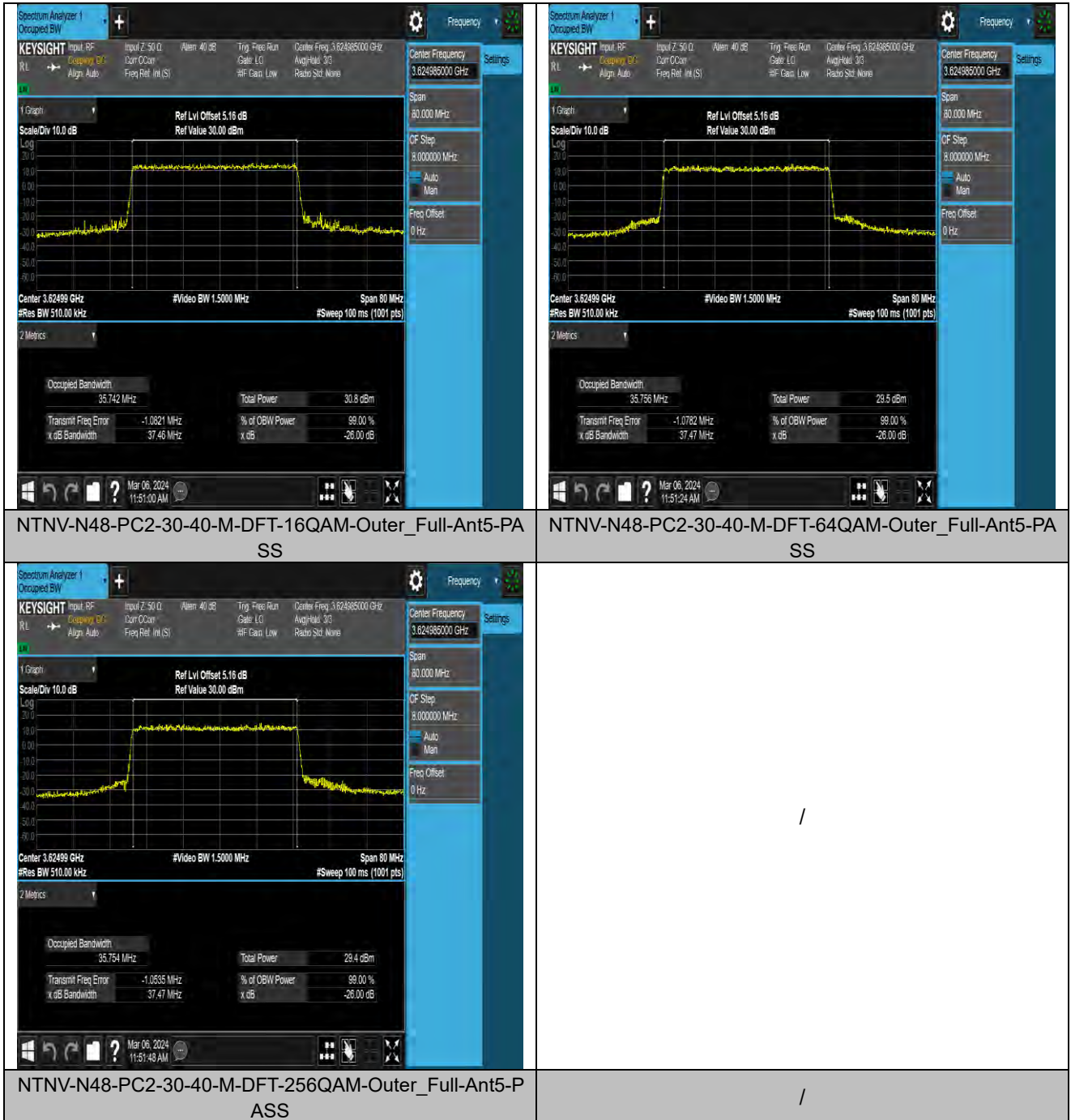
NTNV-N48-PC2-30-20-M-DFT-16QAM-Outter_Full-Ant5-P
SS



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Test Report No.: PSU-QSU2312140113RF06





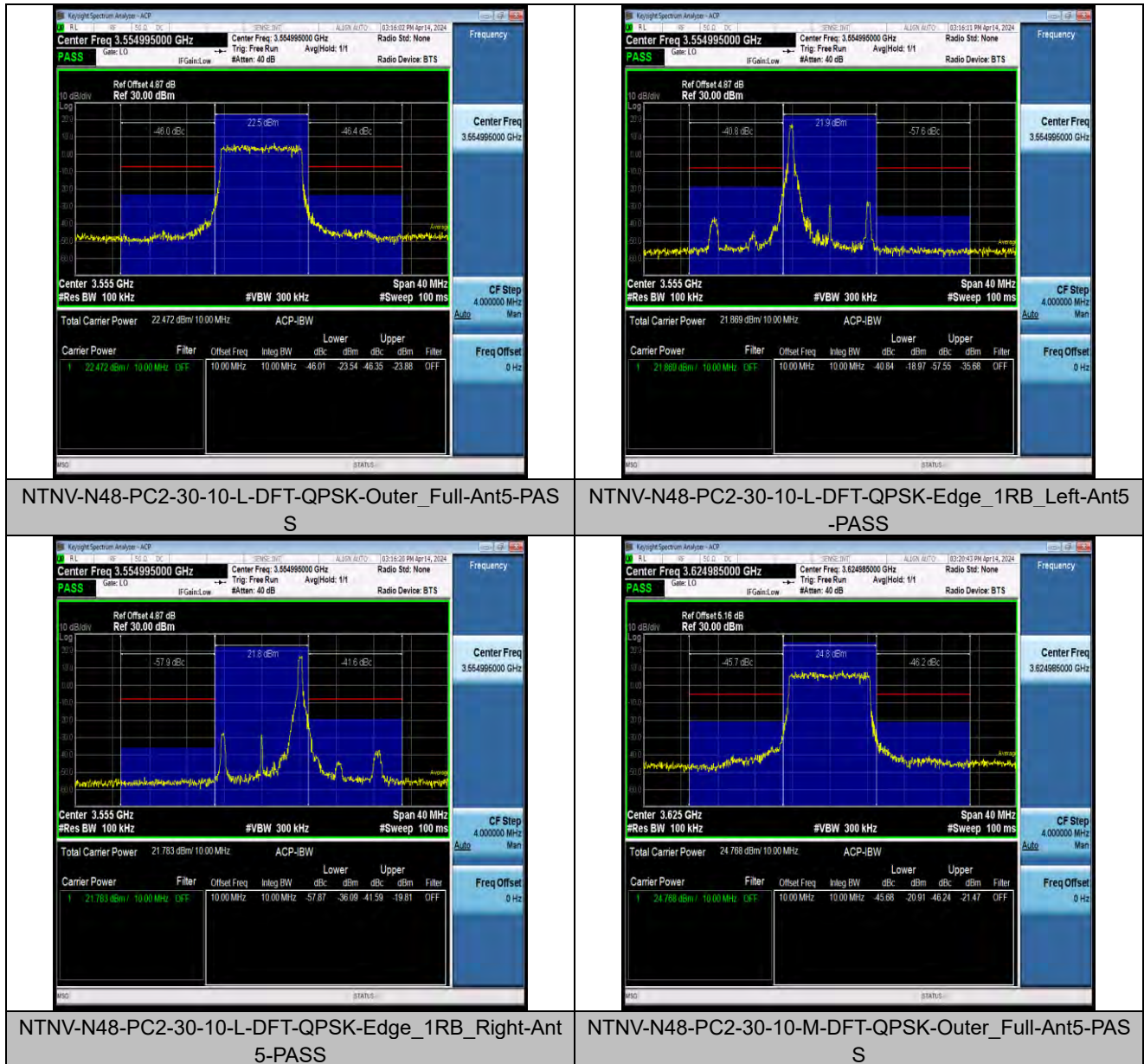


ACLR FOR SA TEST RESULT

Band	SCS	Bandwidth	Modulation	Channel	RB Config	Result	Verdict
N48	30	10	DFT-QPSK	L	Outer_Full	≤ -30	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Left	≤ -30	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Right	≤ -30	PASS
N48	30	10	DFT-QPSK	M	Outer_Full	≤ -30	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Left	≤ -30	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Right	≤ -30	PASS
N48	30	10	DFT-QPSK	H	Outer_Full	≤ -30	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Left	≤ -30	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Right	≤ -30	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	≤ -30	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	≤ -30	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Right	≤ -30	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	≤ -30	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	≤ -30	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Right	≤ -30	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	≤ -30	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	≤ -30	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Right	≤ -30	PASS
N48	30	40	DFT-QPSK	L	Outer_Full	≤ -30	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Left	≤ -30	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Right	≤ -30	PASS
N48	30	40	DFT-QPSK	M	Outer_Full	≤ -30	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Left	≤ -30	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Right	≤ -30	PASS
N48	30	40	DFT-QPSK	H	Outer_Full	≤ -30	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Left	≤ -30	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Right	≤ -30	PASS



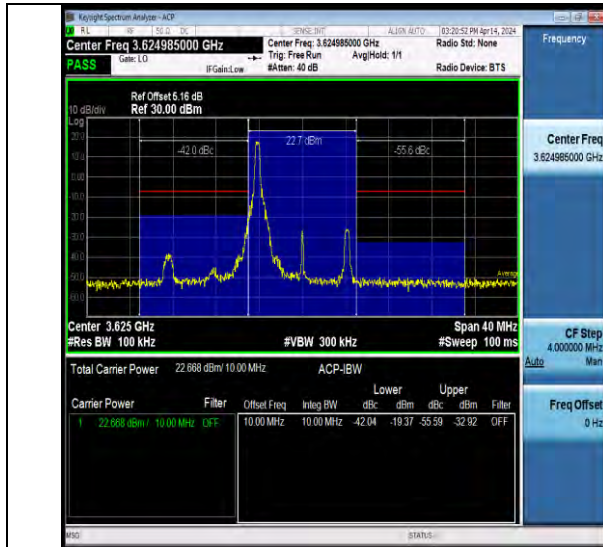
TEST GRAPHS



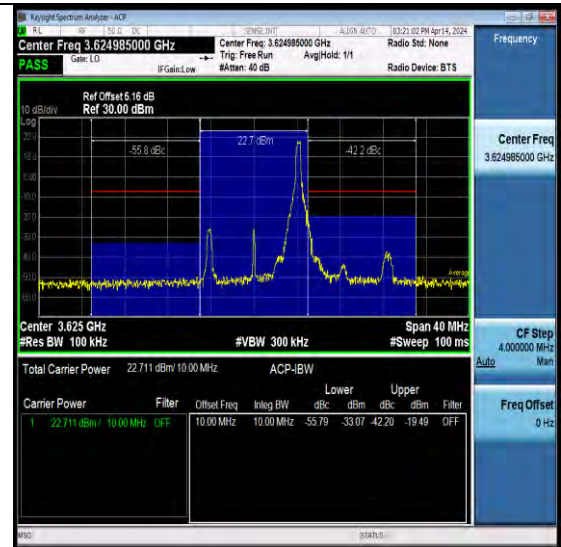


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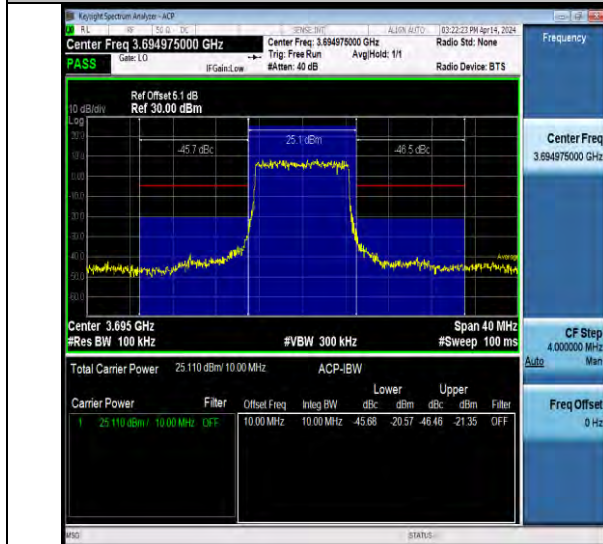
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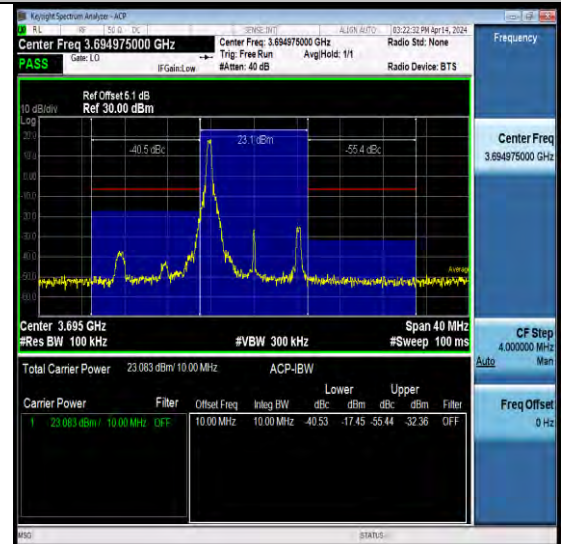
NTVN-N48-PC2-30-10-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTVN-N48-PC2-30-10-M-DFT-QPSK-Edge_1RB_Right-Ant
t5-PASS



NTVN-N48-PC2-30-10-H-DFT-QPSK-Outer_Full-Ant5-PAS
S



NTVN-N48-PC2-30-10-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTVN-N48-PC2-30-10-H-DFT-QPSK-Edge_1RB_Right-Ant



NTVN-N48-PC2-30-20-L-DFT-QPSK-Outer Full-Ant5-PAS

Huarui 7layers High Technology (Suzhou)
Co., Ltd.

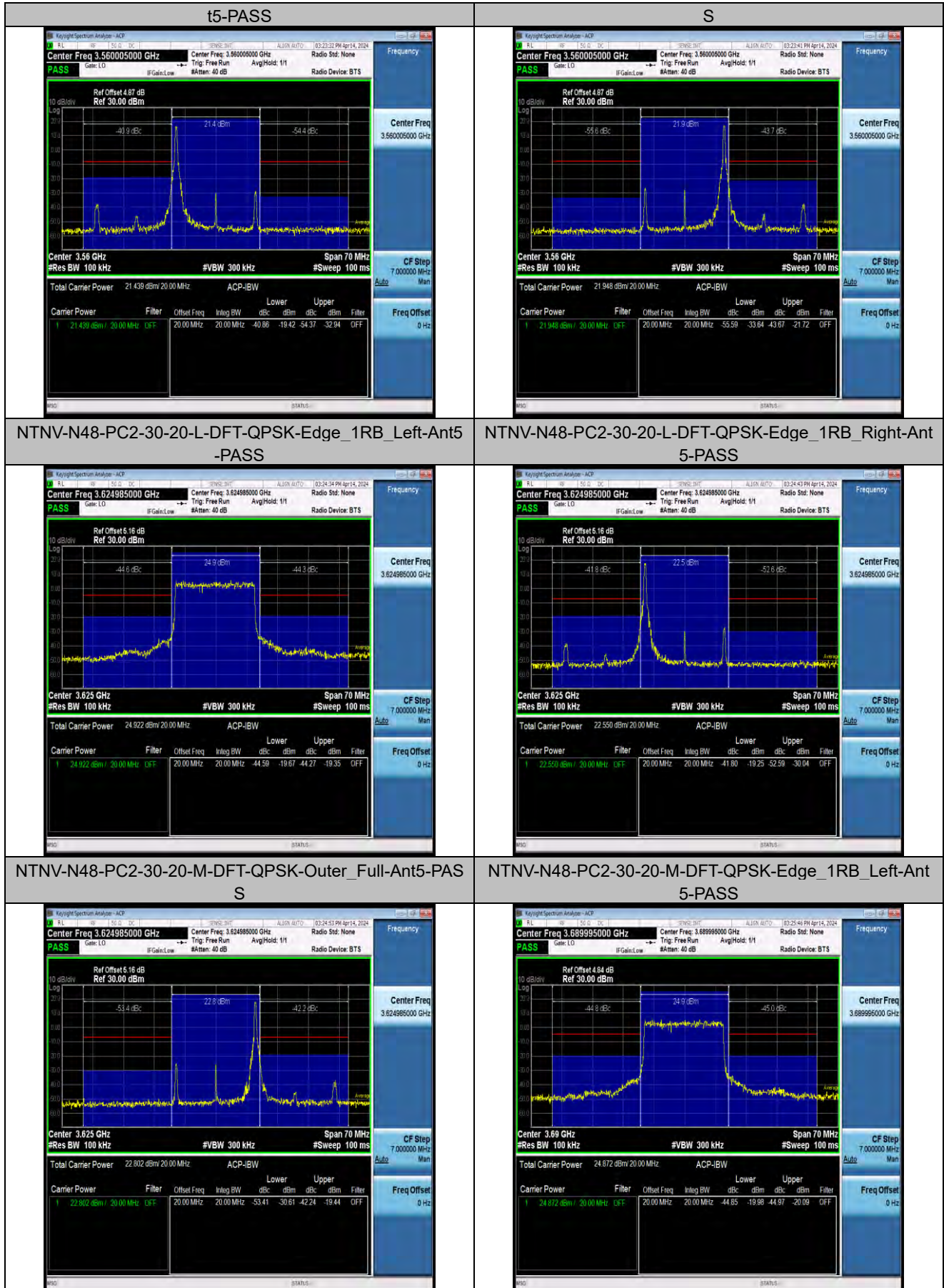
Tower N, Innovation Center, 88 Zuyi Road, High-tech
District, Suzhou City, Anhui Province

Tel: +86 (0557) 368 1008



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Test Report No.: PSU-QSU2312140113RF06



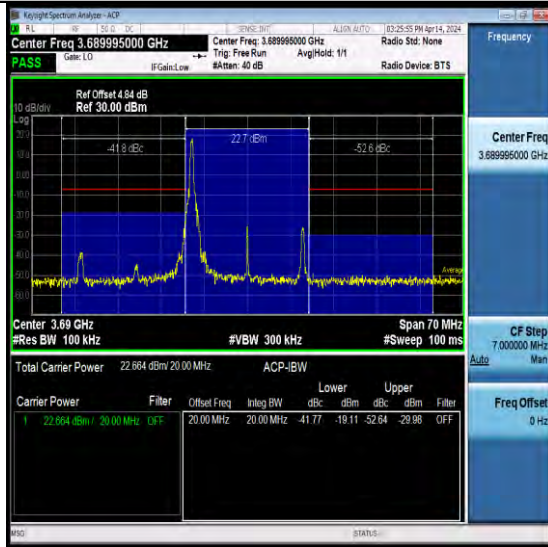
Huarui 7layers High Technology (Suzhou)
Co., Ltd.

Tower N, Innovation Center, 88 Zuyi Road, High-tech
District, Suzhou City, Anhui Province

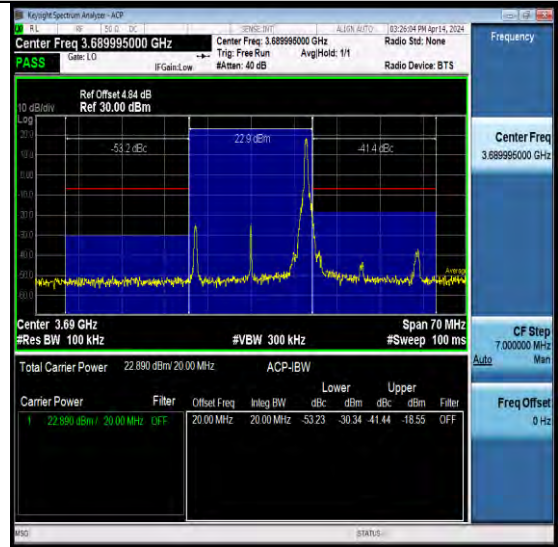
Tel: +86 (0557) 368 1008



NTNV-N48-PC2-30-20-M-DFT-QPSK-Edge_1RB_Right-Ant
t5-PASS



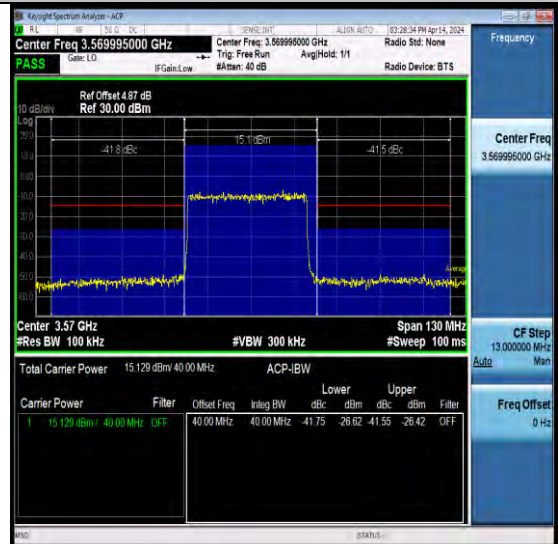
NTNV-N48-PC2-30-20-H-DFT-QPSK-Outer_Full-Ant5-PAS
S



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Right-Ant
t5-PASS

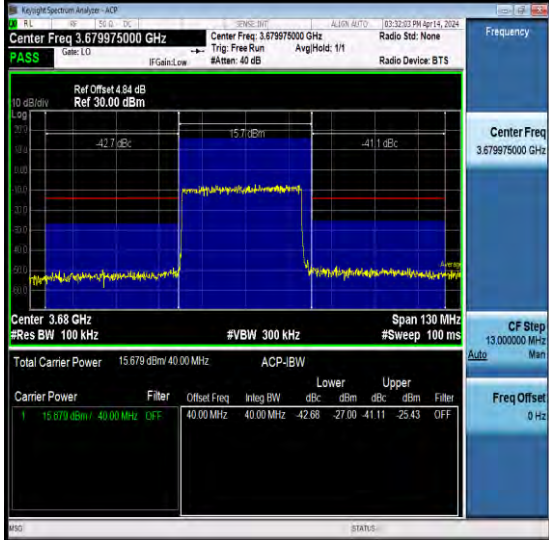
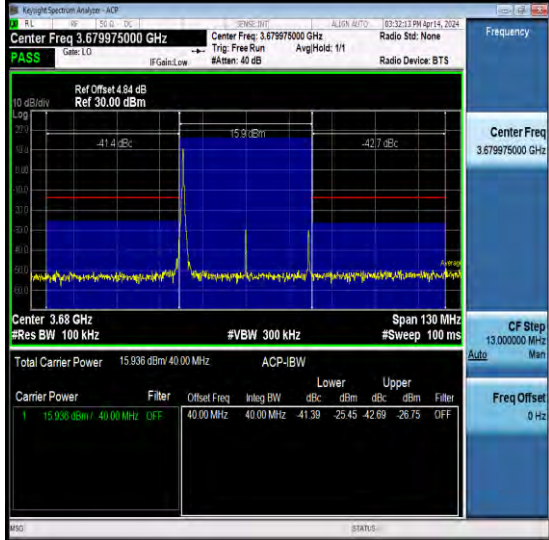
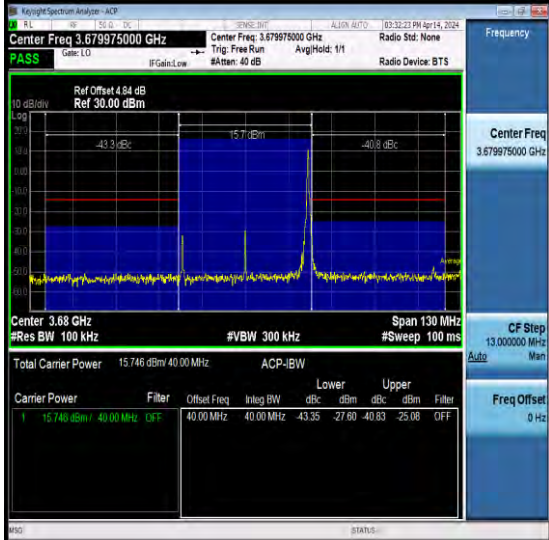


NTNV-N48-PC2-30-40-L-DFT-QPSK-Outer_Full-Ant5-PAS
S

NTNV-N48-PC2-30-40-L-DFT-QPSK-Outer_Full-Ant5-PAS
S





5-PASS	t5-PASS
	
NTNV-N48-PC2-30-40-H-DFT-QPSK-Outer_Full-Ant5-PAS S	NTNV-N48-PC2-30-40-H-DFT-QPSK-Edge_1RB_Left-Ant 5-PASS
	/
NTNV-N48-PC2-30-40-H-DFT-QPSK-Edge_1RB_Right-An t5-PASS	/

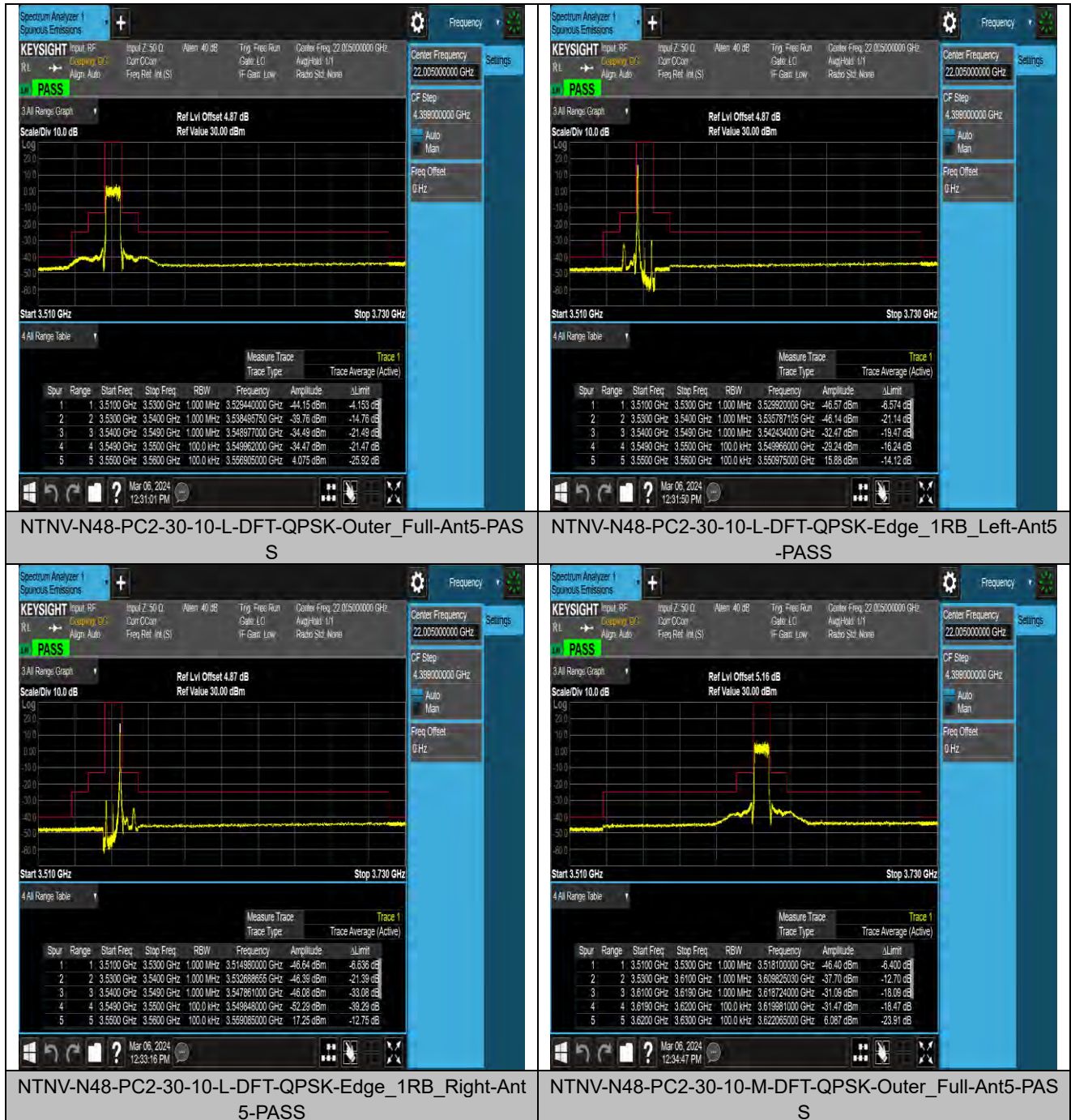


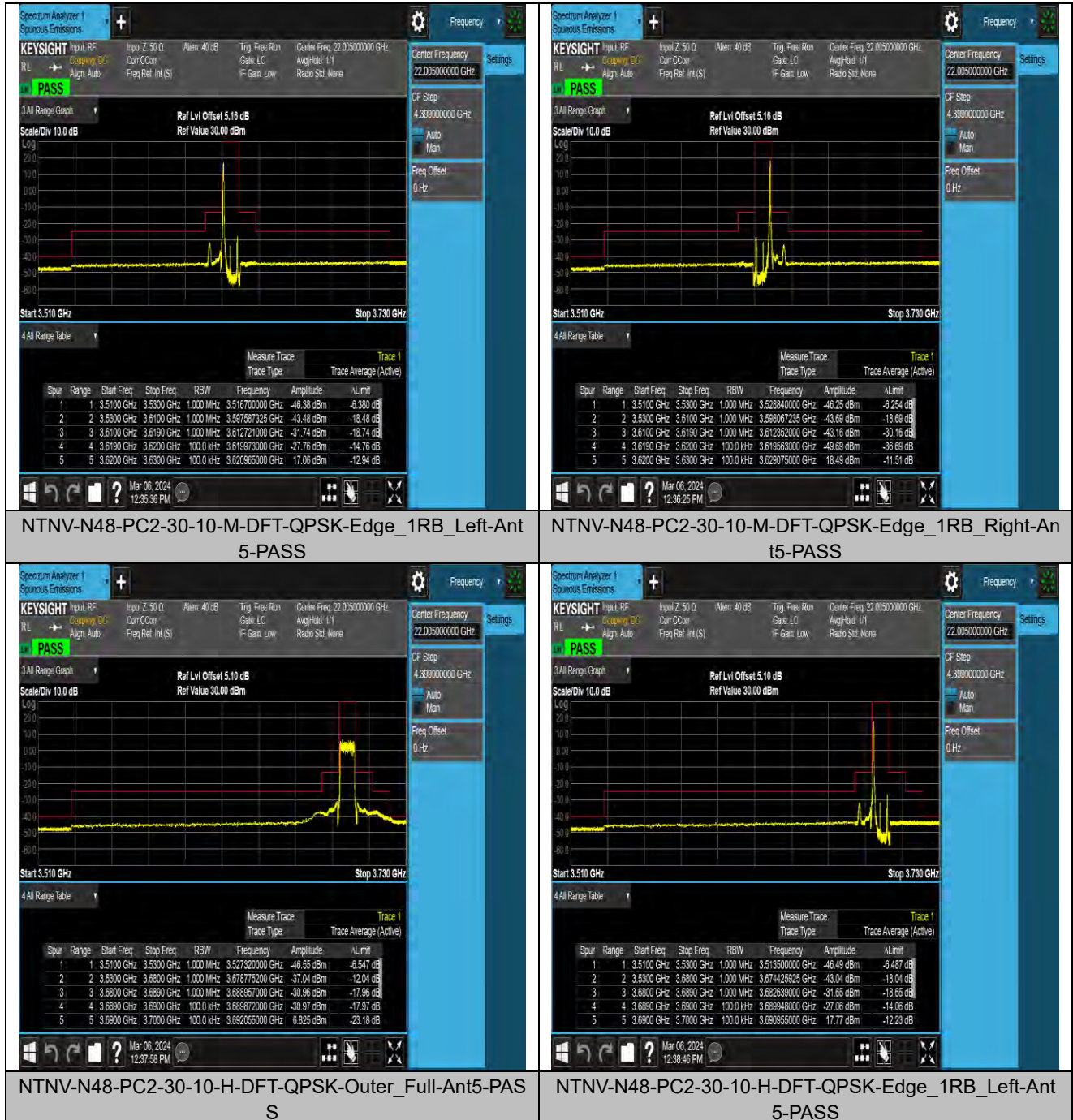
BAND EDGE FOR SA TEST RESULT

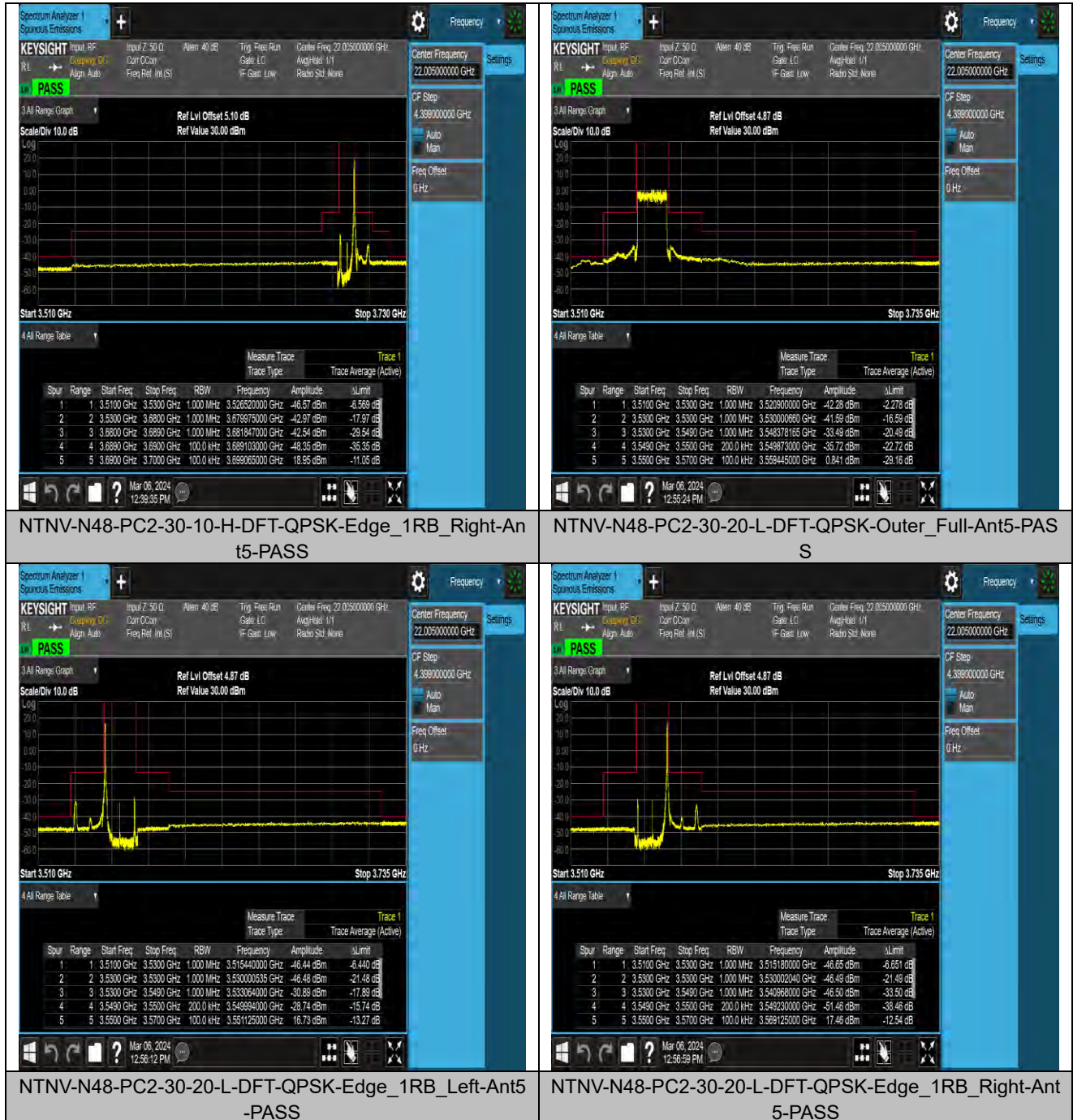
Band	SCS	Bandwidth	Modulation	Channel	RB Config	Result	Verdict
N48	30	10	DFT-QPSK	L	Outer_Full	-42.82	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Left	-42.98	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Right	-43.08	PASS
N48	30	10	DFT-QPSK	M	Outer_Full	-42.85	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Left	-42.61	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Right	-42.83	PASS
N48	30	10	DFT-QPSK	H	Outer_Full	-40.65	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Left	-42.72	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Right	-42.56	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	-42.28	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	-42.80	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Right	-43.06	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	-42.11	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	-42.77	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Right	-42.63	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	-41.96	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	-43.00	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Right	-43.08	PASS
N48	30	40	DFT-QPSK	L	Outer_Full	-49.21	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Left	-46.95	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Right	-53.66	PASS
N48	30	40	DFT-QPSK	M	Outer_Full	-44.40	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Left	-46.40	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Right	-46.23	PASS
N48	30	40	DFT-QPSK	H	Outer_Full	-46.61	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Left	-53.21	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Right	-43.00	PASS

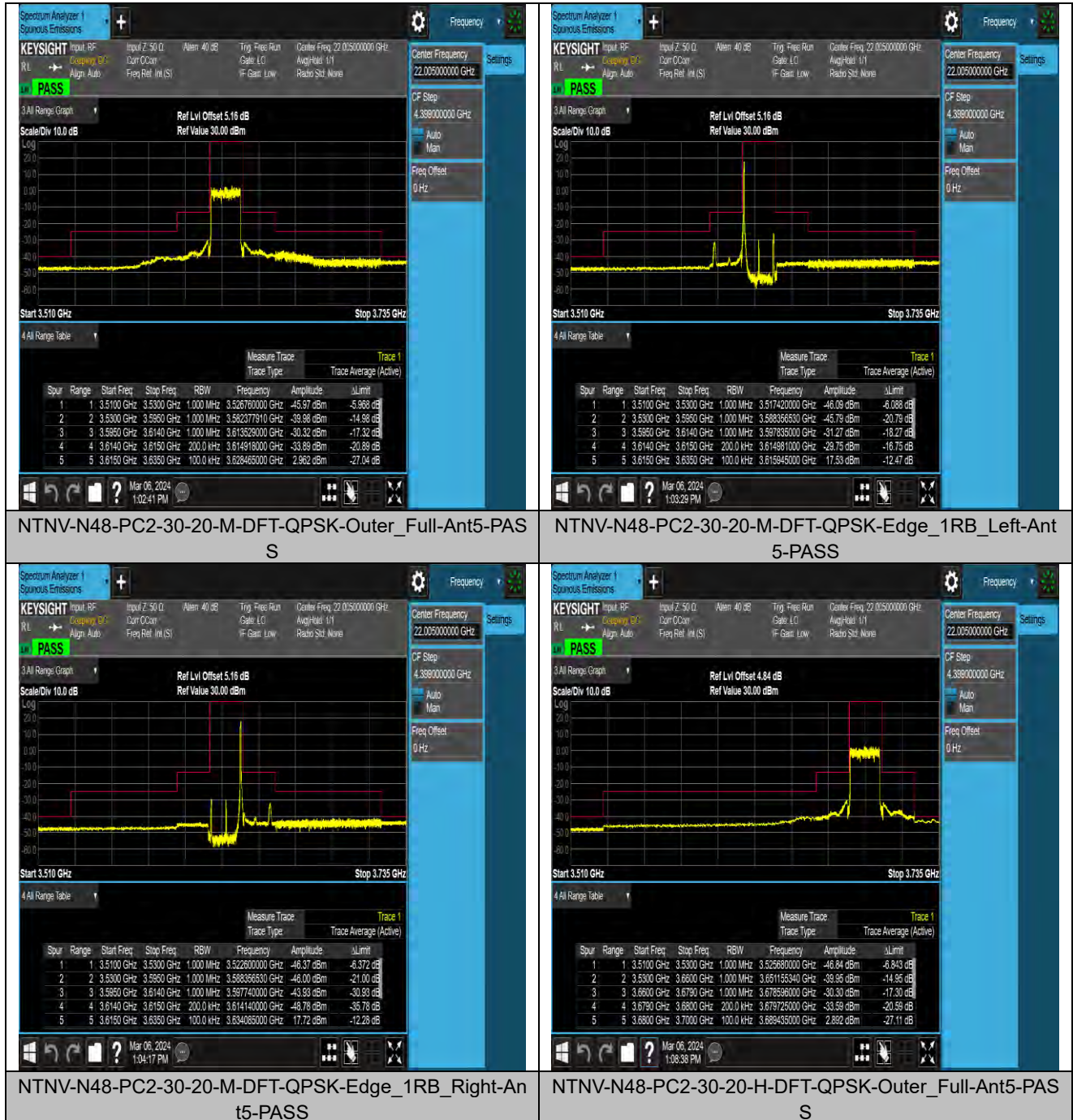


TEST GRAPHS





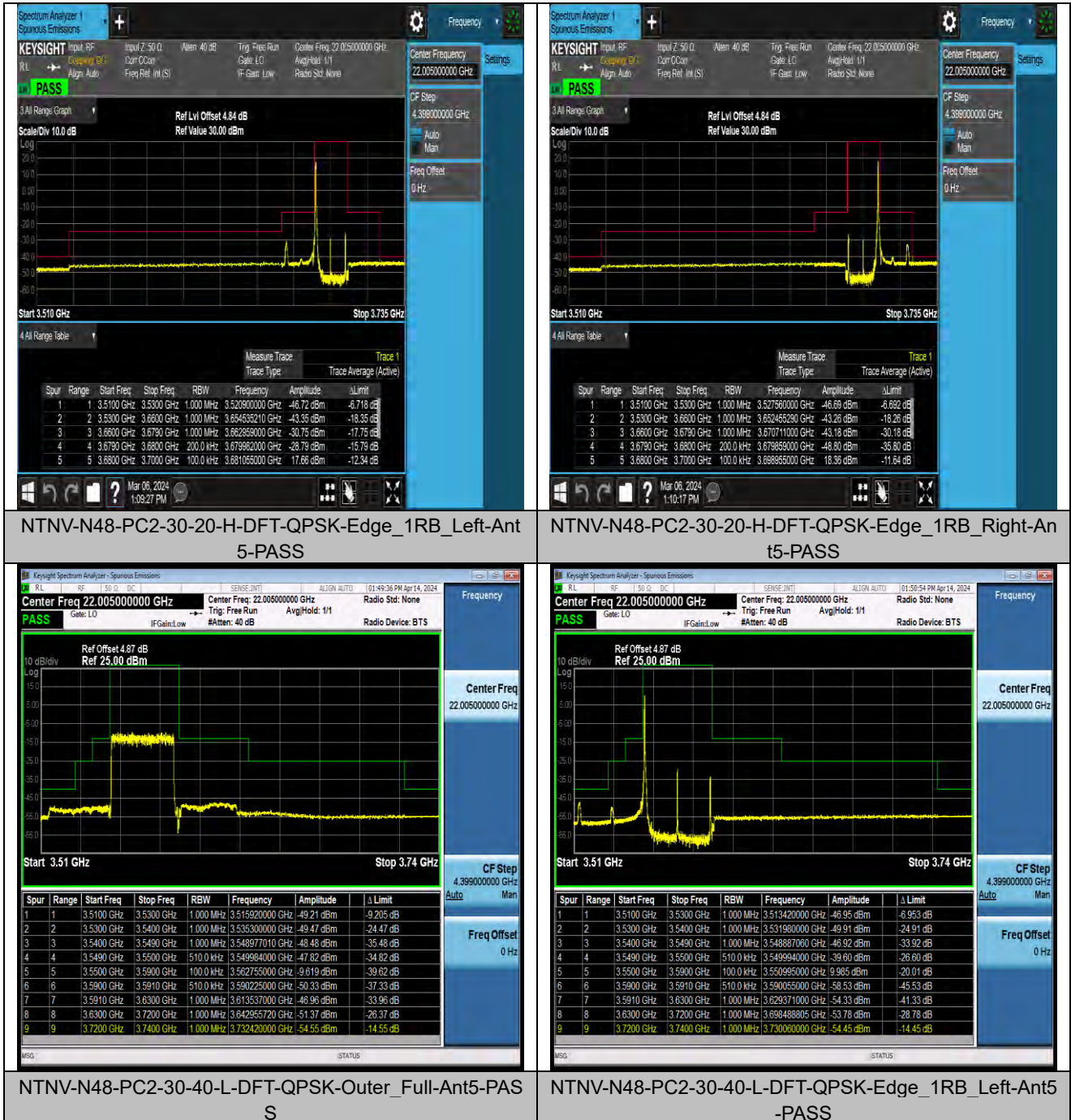






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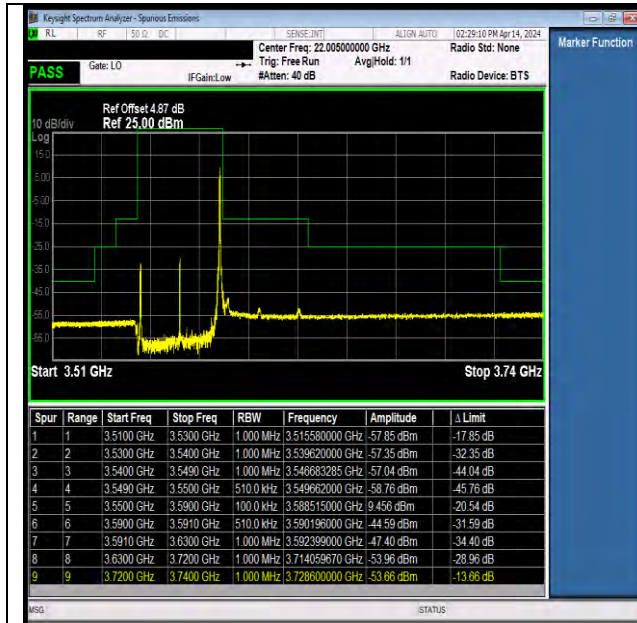
Test Report No.: PSU-QSU2312140113RF06



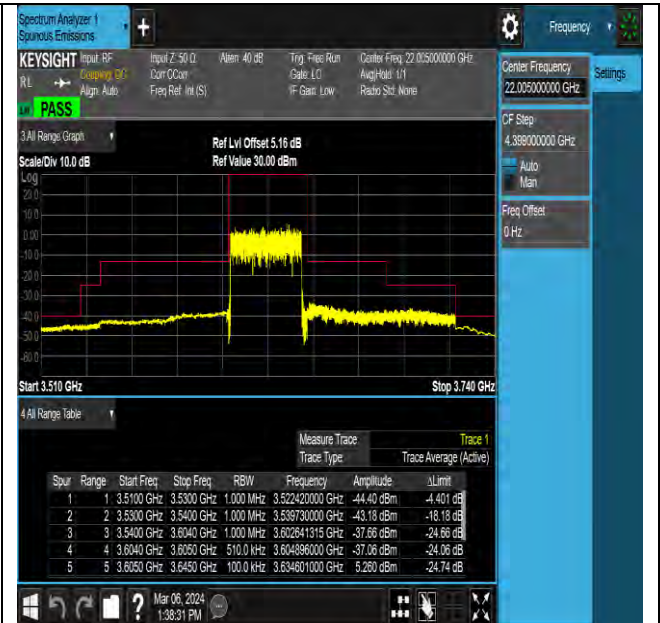


BUREAU
VERITAS

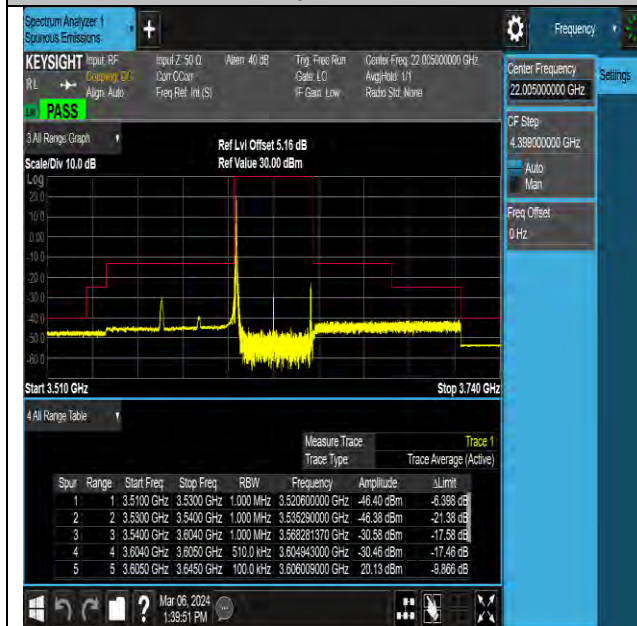
Test Report No.: PSU-QSU2312140113RF06



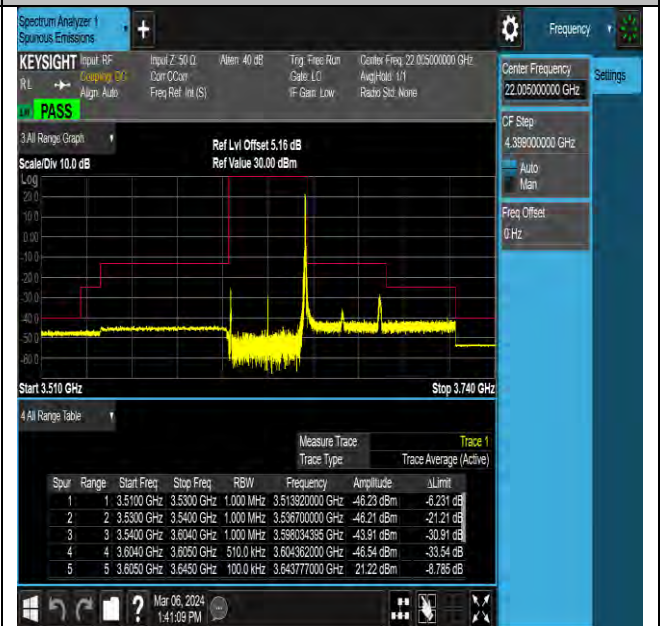
NTNV-N48-PC2-30-40-L-DFT-QPSK-Edge_1RB_Right-Ant
5-PASS



NTNV-N48-PC2-30-40-M-DFT-QPSK-Outer_Full-Ant5-PAS
S



NTNV-N48-PC2-30-40-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-40-M-DFT-QPSK-Edge_1RB_Right-Ant
t5-PASS

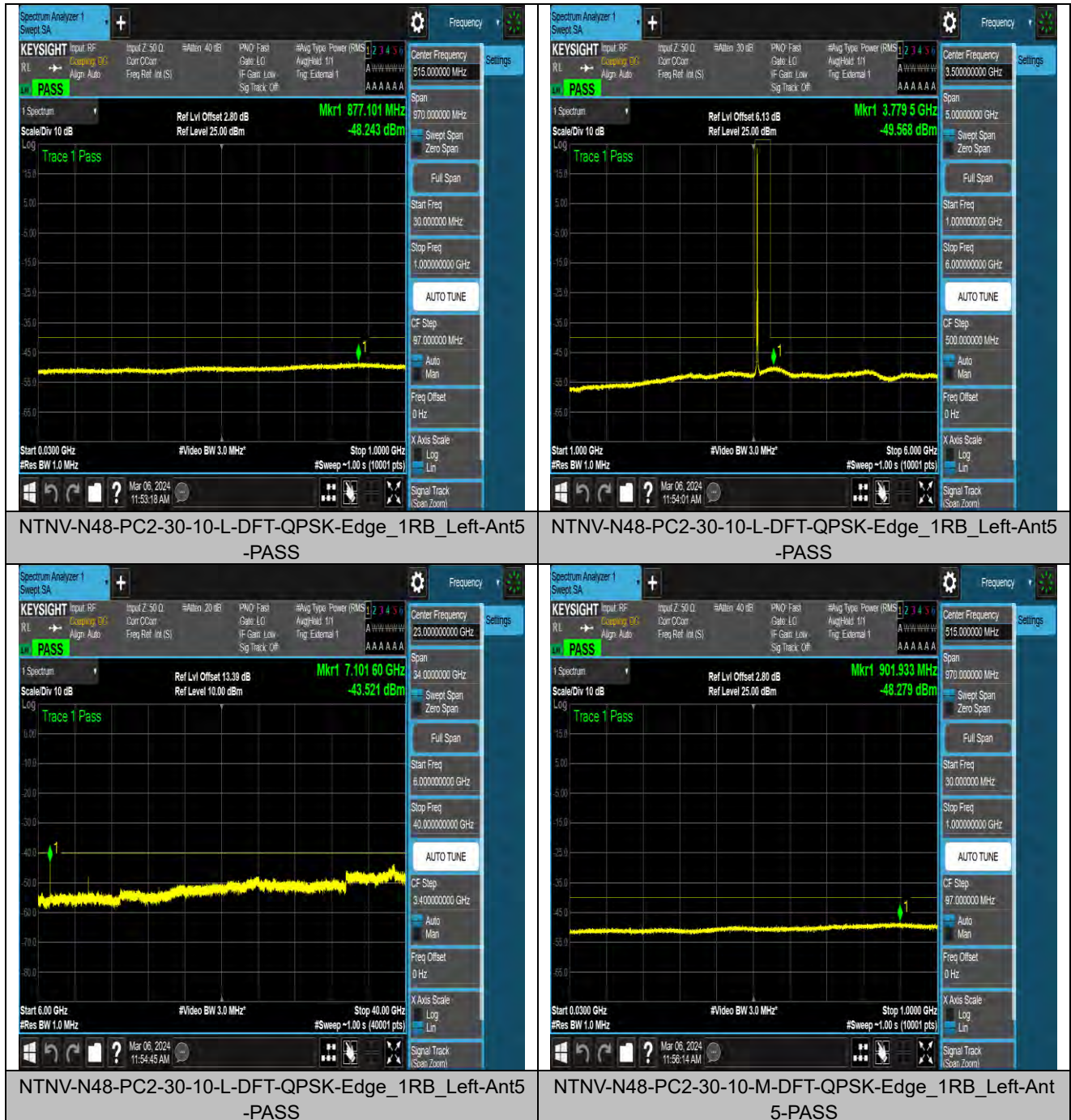


CONDUCTED SPURIOUS EMISSION FOR SA TEST RESULT

Band	SCS	Band width	Modulation	Channel	RB Config	StartFreq	StopFreq	Result	Limit	Verdict
N48	30	10	DFT-QPSK	L	Edge_1RB_Left	30	1000	-48.24	-40	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Left	1000	6000	-49.57	-40	PASS
N48	30	10	DFT-QPSK	L	Edge_1RB_Left	6000	40000	-43.52	-40	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Left	30	1000	-48.28	-40	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Left	1000	6000	-49.38	-40	PASS
N48	30	10	DFT-QPSK	M	Edge_1RB_Left	6000	40000	-44.02	-40	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Left	30	1000	-48.25	-40	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Left	1000	6000	-49.20	-40	PASS
N48	30	10	DFT-QPSK	H	Edge_1RB_Left	6000	40000	-44.04	-40	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	30	1000	-48.09	-40	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	1000	6000	-49.37	-40	PASS
N48	30	20	DFT-QPSK	L	Edge_1RB_Left	6000	40000	-43.98	-40	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	30	1000	-48.09	-40	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	1000	6000	-49.62	-40	PASS
N48	30	20	DFT-QPSK	M	Edge_1RB_Left	6000	40000	-43.20	-40	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	30	1000	-48.29	-40	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	1000	6000	-49.44	-40	PASS
N48	30	20	DFT-QPSK	H	Edge_1RB_Left	6000	40000	-43.85	-40	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Left	30	1000	-48.17	-40	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Left	1000	6000	-26.59	-40	PASS
N48	30	40	DFT-QPSK	L	Edge_1RB_Left	6000	40000	-43.60	-40	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Left	30	1000	-48.25	-40	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Left	1000	6000	-48.99	-40	PASS
N48	30	40	DFT-QPSK	M	Edge_1RB_Left	6000	40000	-43.64	-40	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Left	30	1000	-48.39	-40	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Left	1000	6000	-49.56	-40	PASS
N48	30	40	DFT-QPSK	H	Edge_1RB_Left	6000	40000	-44.00	-40	PASS



TEST GRAPHS





BUREAU
VERITAS

Test Report No.: PSU-QSU2312140113RF06



NTNV-N48-PC2-30-10-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-10-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-10-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS

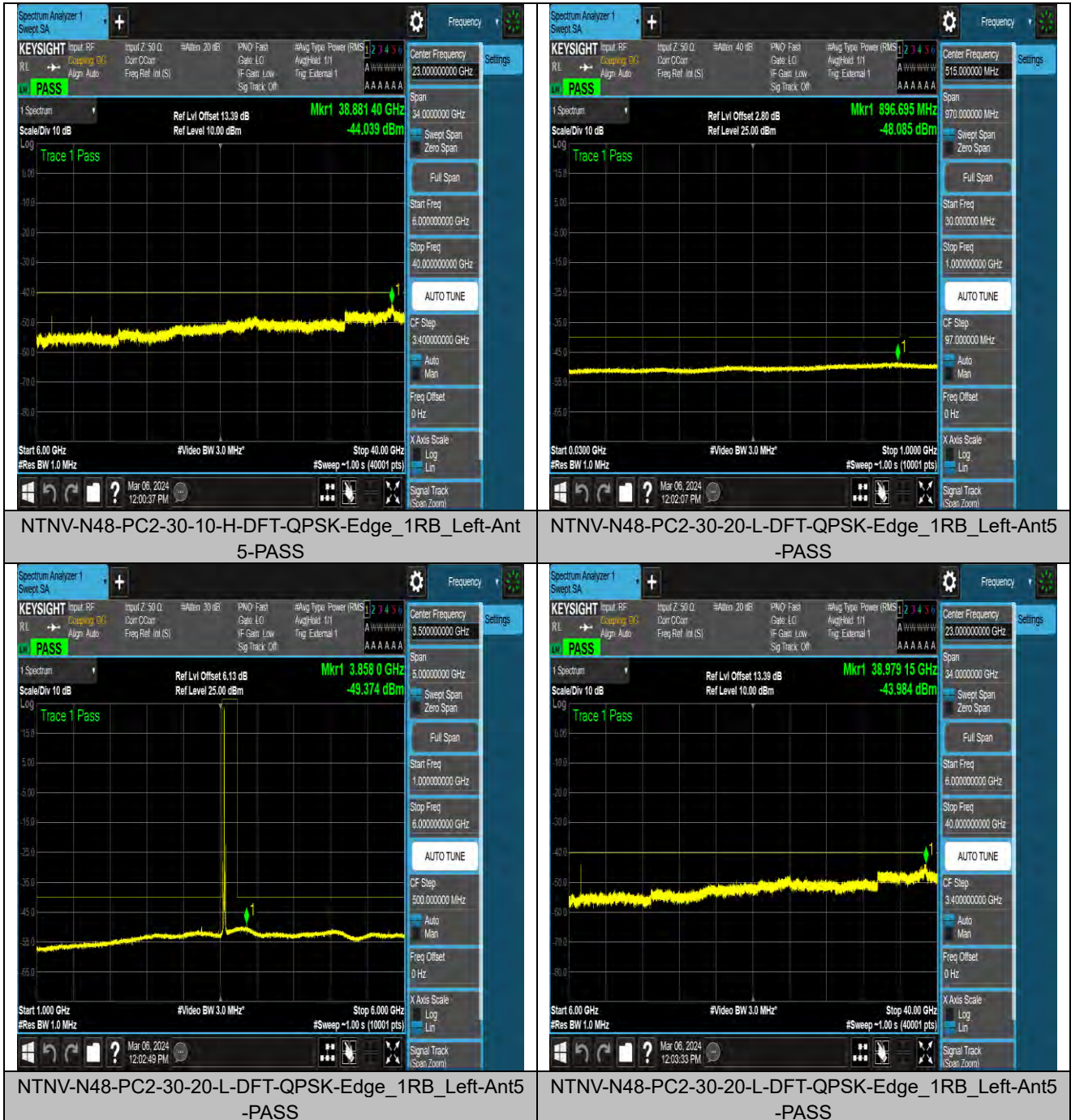


NTNV-N48-PC2-30-10-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



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VERITAS

Test Report No.: PSU-QSU2312140113RF06





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VERITAS

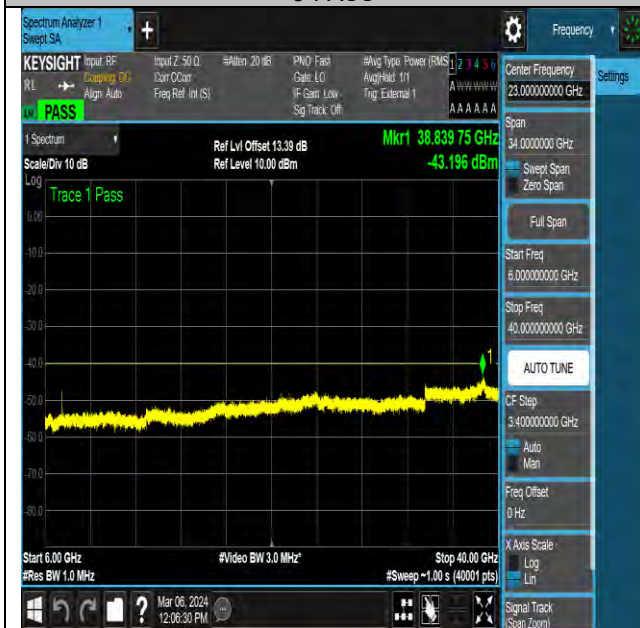
Test Report No.: PSU-QSU2312140113RF06



NTNV-N48-PC2-30-20-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-20-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-20-M-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



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VERITAS

Test Report No.: PSU-QSU2312140113RF06



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-20-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



NTNV-N48-PC2-30-40-L-DFT-QPSK-Edge_1RB_Left-Ant5
-PASS

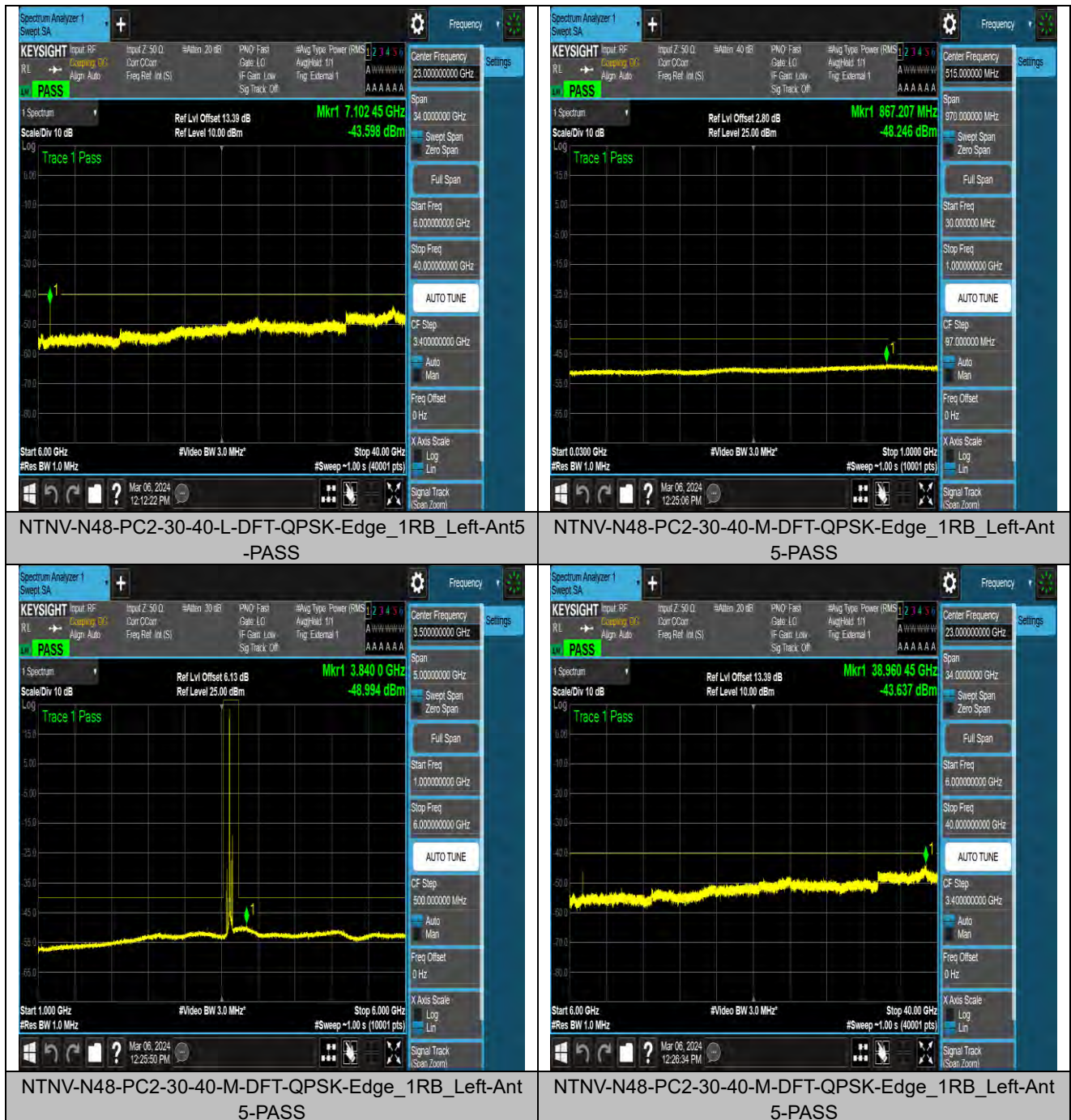


NTNV-N48-PC2-30-40-L-DFT-QPSK-Edge_1RB_Left-Ant5
-PASS



BUREAU
VERITAS

Test Report No.: PSU-QSU2312140113RF06





Test Report No.: PSU-QSU2312140113RF06

NTNV-N48-PC2-30-40-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASSNTNV-N48-PC2-30-40-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASSNTNV-N48-PC2-30-40-H-DFT-QPSK-Edge_1RB_Left-Ant
5-PASS



FREQUENCY STABILITY FOR SA TEST RESULT

Frequency Error VS. Voltage

Voltage										
Band	SCS	Bandwidth	Modulation	Channel	RB Config	Voltage	Temperature	Deviation(Hz)	Deviation (ppm)	Verdict
N48	30	20	DFT-QPSK	L	Outer_Full	VL	NT	9.000000	0.002528	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	VN	NT	11.000000	0.003090	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	VH	NT	17.000000	0.004775	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	VL	NT	2.000000	0.000552	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	VN	NT	8.000000	0.002207	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	VH	NT	1.000000	0.000276	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	VL	NT	16.000000	0.004336	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	VN	NT	3.000000	0.000813	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	VH	NT	15.000000	0.004065	PASS

Frequency Error VS. Temperature

Voltage										
Band	SCS	Bandwidth	Modulation	Channel	RB Config	Voltage	Temperature	Deviation(Hz)	Deviation (ppm)	Verdict
N48	30	20	DFT-QPSK	L	Outer_Full	NV	-30	11.000000	0.003090	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	-20	4.000000	0.001124	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	-10	7.000000	0.001966	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	0	19.000000	0.005337	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	10	3.000000	0.000843	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	20	3.000000	0.000843	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	30	13.000000	0.003652	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	40	3.000000	0.000843	PASS
N48	30	20	DFT-QPSK	L	Outer_Full	NV	50	9.000000	0.002528	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	-30	7.000000	0.001931	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	-20	13.000000	0.003586	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	-10	15.000000	0.004138	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	0	2.000000	0.000552	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	10	12.000000	0.003310	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	20	5.000000	0.001379	PASS



N48	30	20	DFT-QPSK	M	Outer_Full	NV	30	15.000000	0.004138	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	40	8.000000	0.002207	PASS
N48	30	20	DFT-QPSK	M	Outer_Full	NV	50	14.000000	0.003862	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	-30	18.000000	0.004878	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	-20	5.000000	0.001355	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	-10	17.000000	0.004607	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	0	8.000000	0.002168	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	10	8.000000	0.002168	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	20	18.000000	0.004878	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	30	1.000000	0.000271	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	40	14.000000	0.003794	PASS
N48	30	20	DFT-QPSK	H	Outer_Full	NV	50	8.000000	0.002168	PASS

--END--