



Test Report No.: PSU-NQN2505120312RF03



Certificate #6613.01

FCC TEST REPORT

(PART 27)

Applicant:	InHand Networks, Inc.
Address:	43671 Trade Center Place, Suite 100, Dulles, VA 20166 United States

Manufacturer or Supplier:	InHand Networks, Inc.
Address:	43671 Trade Center Place, Suite 100, Dulles, VA 20166 United States
Product:	Industrial Cellular Router
Brand Name:	inhand
Model Name:	IR302-FQ38-WLAN v2, IR352-FQ38-WLAN v2, IR392-FQ38-WLAN v2
FCC ID:	2BPWU-IR302
Date of tests:	Apr. 28, 2025 ~ May. 21, 2025

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

FCC Part 27 ANSI/TIA/EIA-603-D
 FCC Part 2 ANSI/TIA/EIA-603-E ANSI C63.26-2015

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: May. 21, 2025

Date: May. 21, 2025

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2505120312RF03	Original release	May. 21, 2025



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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	TEST LAB*
§2.1046	Conducted Output Power	Compliance	A
§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 71)	Compliance	A
§2.1055 §27.54	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§2.1051 §27.53(c)(2)(4) §27.53(g)	Conducted Band Edge Measurements (Band 12) (Band 13) (Band 71)	Compliance	A
§2.1051 §27.53(c)(2)(4) §27.53(g)	Conducted Spurious Emissions (Band 12) (Band 13) (Band 71)	Compliance	A
§2.1053 §27.53(c)(2)(4) §27.53(g)	Radiated Spurious Emissions (Band 12) (Band 13) (Band 71)	Compliance	A
NA	Peak to average ratio	Compliance	A



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***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, China

Accredited Test Lab Cert 6613.01

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



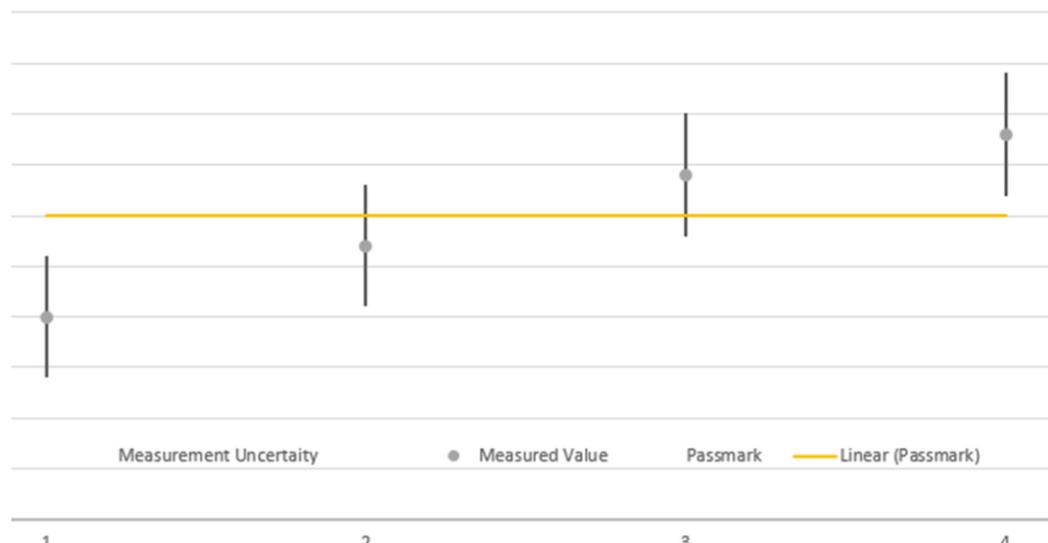
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1.1 MEASUREMENT UNCERTAINTY

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
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB

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.



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1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,23	Aug.29,25
Pre-Amplifier	R&S	SCU08F1	101028	Jan.22,24	Jan.21,26
Vector Signal Generator	R&S	SMBV100B	102176	Mar.29,24	Mar.28,26
Signal Generator	R&S	SMB100A	182185	Mar.29,24	Mar.28,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Mar.28,24	Mar.27,26
EMI TEST Receiver	R&S	ESW44	101973	Mar.28,24	Mar.27,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Dec.26,23	Dec.25,25
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,23	Aug.21,25
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Jul.15,24	Jul.14,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,23	Aug.21,25
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,25	Feb.21,27
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.19,24	Jun.18,26
Test Software	EMC32	EMC32	N/A	N/A	N/A
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,23	Aug.30,25
Hygrothermograph	DELI	20210528	SZ014	Sep.06,23	Sep.05,25
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.27,25	Apr.26,26
CABLE	R&S	W12.14	N/A	Apr.27,25	Apr.26,26
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.27,25	Apr.26,26
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.27,25	Apr.26,26
Temperature Chamber	votsch	VT4002	585660781000 50	May.30,24	May.29,26



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NOTE:

1. The calibration interval of the above test instruments is 12 / 24/ 36 months and the calibrations are traceable to CEPREI/CHINA, GRRG/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.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Industrial Cellular Router	
BRAND NAME**	inhand	
MODEL NAME*	IR302-FQ38-WLAN v2, IR352-FQ38-WLAN v2, IR392-FQ38-WLAN v2	
NOMINAL VOLTAGE*	12.0Vdc(adapter or host equipment)	
MODULATION TECHNOLOGY*	LTE	QPSK, 16QAM
FREQUENCY RANGE	LTE Band 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 71 Channel Bandwidth: 5MHz	665.5MHz ~ 695.5MHz
	LTE Band 71 Channel Bandwidth: 10MHz	668MHz ~ 693MHz
	LTE Band 71 Channel Bandwidth: 15MHz	670.5MHz ~ 690.5MHz
	LTE Band 71 Channel Bandwidth: 20MHz	673MHz ~ 688MHz
MAX. EIRP POWER	LTE Band 12 Channel Bandwidth: 10MHz	177.83mW
	LTE Band 13 Channel Bandwidth: 5MHz	172.98mW
	LTE Band 71 Channel Bandwidth: 5MHz	175.79mW
ANTENNA TYPE*	4G sucker antenna Antenna with 1.25dBi gain for LTE B12/LTE B13/LTE B71	
HW VERSION	V2.0	
SW VERSION**	V3.5	
I/O PORTS*	Refer to user's manual	
EXTREME TEMPERATURE*	-20°C~70 °C	
EXTREME VOLTAGE*	9 Vdc~36Vdc	

Please refer to Note 3 for the model description



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NOTE1: This product uses the module model EC25-AFXD; EC25-AFXD MINIPCIE and supports LTE frequency bands 2/4/5/12/13/14/66/71. Therefore, for this product, we referred to the test data reported by the EC25-AFXD; EC25-AFXD MINIPCIE module and reevaluated the spectrum of radiated emissions and EIRP.

Please Refer to Module report EC25-AFXD; EC25-AFXD MINIPCIE
(Report No.: R2203A0238-R3 FCC ID: XMR202008EC25AFXD)

NOTE2:

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 two receiver.

MODULATION MODE	TX FUNCTION
LTE	1TX/2RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
5. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

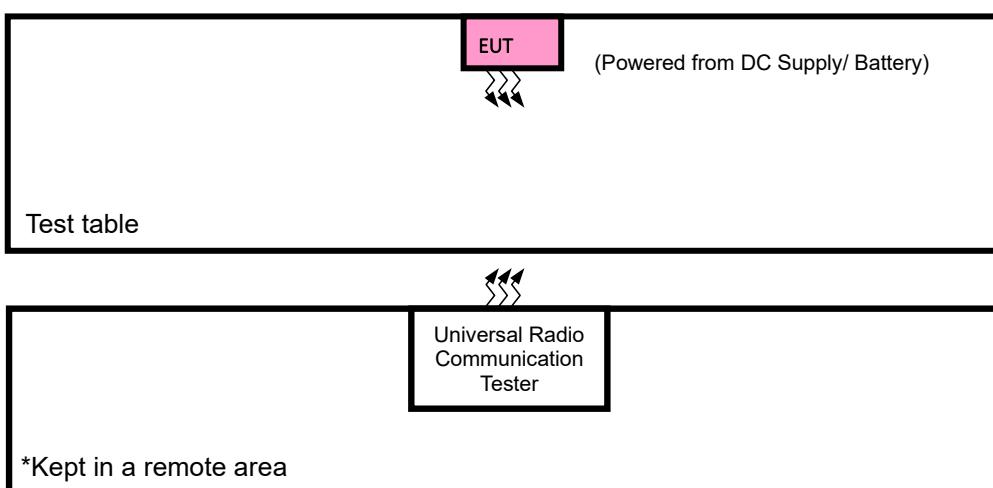
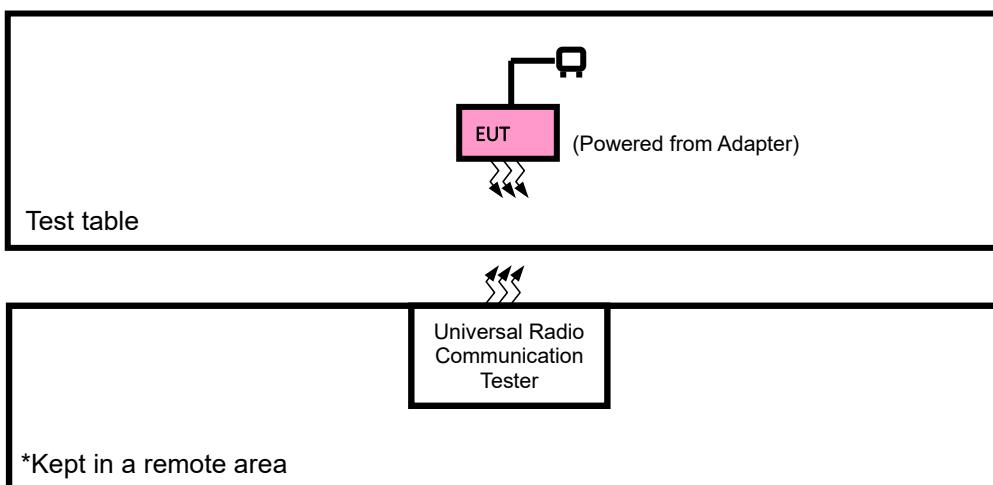
NOTE3 DIFFERENCE DESCRIPTION:

Test Model No.: IR302-FQ38-WLAN v2

Series Models NO: IR352-FQ38-WLAN v2, IR392-FQ38-WLAN v2

These three models are the same in these: appearance, PCB layout and basic software function; The only difference is that the products are used in different markets.

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST





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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	DC Source	HYELEC	HY3010B	551016	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.8m

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 LTE link
B	EUT + DC Supply with LTE link



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LTE BAND 12 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23205 to 23255	23205, 23230, 23255	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23230	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

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

LTE BAND 71

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	133147 to 133447	133147, 133297, 133447	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		133172 to 133422	133172, 133297 133422	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
		133197 to 133397	133197, 133297, 133397	15MHz	QPSK,16QAM	1 RB / 0 RB Offset
		133222 to 133372	133222, 133322, 133372	20MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	133147 to 133447	133297	5MHz	QPSK	1 RB / 0 RB Offset
		133172 to 133422	133172, 133297 133422	10MHz	QPSK	1 RB / 0 RB Offset
		133197 to 133397	133297	15MHz	QPSK	1 RB / 0 RB Offset
		133222 to 133372	133322	20MHz	QPSK	1 RB / 0 RB Offset

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

TEST CONDITION:



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BUREAU
VERITAS

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC12V By Adapter	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	DC12V 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 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

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



3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that "User stations are limited to 2 watts" and 27.50(i) specific that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage."

Fixed, 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 the specific rule Part 27.50(b)(10) and 27.50(c)(10) Fixed, mobile, and Portable stations (hand-held devices) transmitting in the 698-746 MHz, 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.

3.1.2 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;



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

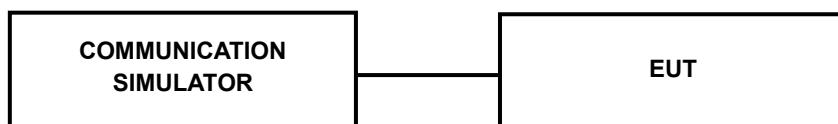
L_c = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

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

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



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



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3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Note: The gain of this product has changed, therefore Power has been reevaluated test.
Please refer to the referenced module report for other test item results

B12_1.4MHz_ERP

Modulation	Frequency (MHz)	Band: 12 / Bandwidth: 1.4MHz / NTV						Verdict	
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)			
		Size	Offset			Result	Limit		
QPSK	699.7	1	0	24.96	1.25	24.06	<=34.77	Pass	
			2	25.17	1.25	24.27	<=34.77	Pass	
			5	25.01	1.25	24.11	<=34.77	Pass	
		3	0	24.84	1.25	23.94	<=34.77	Pass	
			2	24.97	1.25	24.07	<=34.77	Pass	
			3	25.08	1.25	24.18	<=34.77	Pass	
	707.5	6	0	23.77	1.25	22.87	<=34.77	Pass	
			0	25.04	1.25	24.14	<=34.77	Pass	
			1	25.32	1.25	24.42	<=34.77	Pass	
		3	5	25.30	1.25	24.40	<=34.77	Pass	
			0	25.21	1.25	24.31	<=34.77	Pass	
			2	25.29	1.25	24.39	<=34.77	Pass	
	715.3	6	3	25.27	1.25	24.37	<=34.77	Pass	
			0	24.17	1.25	23.27	<=34.77	Pass	
			1	24.93	1.25	24.03	<=34.77	Pass	
		3	2	25.17	1.25	24.27	<=34.77	Pass	
			5	25.32	1.25	24.42	<=34.77	Pass	
			0	24.95	1.25	24.05	<=34.77	Pass	
16QAM	699.7	3	2	25.25	1.25	24.35	<=34.77	Pass	
			3	25.24	1.25	24.34	<=34.77	Pass	
			6	0	23.96	1.25	23.06	<=34.77	Pass
	707.5	1	0	23.57	1.25	22.67	<=34.77	Pass	
			2	23.74	1.25	22.84	<=34.77	Pass	
			5	23.59	1.25	22.69	<=34.77	Pass	
		3	0	23.43	1.25	22.53	<=34.77	Pass	
			2	24.08	1.25	23.18	<=34.77	Pass	
			3	23.95	1.25	23.05	<=34.77	Pass	
	715.3	6	0	22.54	1.25	21.64	<=34.77	Pass	
			1	23.64	1.25	22.74	<=34.77	Pass	
			2	23.71	1.25	22.81	<=34.77	Pass	
		3	5	23.84	1.25	22.94	<=34.77	Pass	
			0	24.16	1.25	23.26	<=34.77	Pass	
			2	24.31	1.25	23.41	<=34.77	Pass	
		6	3	24.30	1.25	23.40	<=34.77	Pass	
			0	23.16	1.25	22.26	<=34.77	Pass	
			1	0	24.04	1.25	23.14	<=34.77	Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15



BUREAU
VERITAS

Test Report No.: PSU-NQN2505120312RF03

B12_3MHz_ERP

Modulation	Frequency (MHz)	Band: 12 / Bandwidth: 3MHz / NTN							
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict		
		Size	Offset			Result			
QPSK	700.5	1	0	25.05	1.25	24.15	<=34.77	Pass	
			7	25.20	1.25	24.30	<=34.77	Pass	
			14	25.03	1.25	24.13	<=34.77	Pass	
		8	0	23.99	1.25	23.09	<=34.77	Pass	
			4	24.20	1.25	23.30	<=34.77	Pass	
			7	24.08	1.25	23.18	<=34.77	Pass	
	707.5	1	0	24.09	1.25	23.19	<=34.77	Pass	
			0	25.15	1.25	24.25	<=34.77	Pass	
			7	25.32	1.25	24.42	<=34.77	Pass	
		8	14	25.29	1.25	24.39	<=34.77	Pass	
			0	24.13	1.25	23.23	<=34.77	Pass	
			4	24.36	1.25	23.46	<=34.77	Pass	
	714.5	1	7	24.28	1.25	23.38	<=34.77	Pass	
			15	0	24.29	1.25	23.39	<=34.77	Pass
		8	0	24.86	1.25	23.96	<=34.77	Pass	
			7	25.05	1.25	24.15	<=34.77	Pass	
			14	24.95	1.25	24.05	<=34.77	Pass	
16QAM	700.5	1	0	23.91	1.25	23.01	<=34.77	Pass	
			7	24.10	1.25	23.20	<=34.77	Pass	
			15	0	24.01	1.25	23.11	<=34.77	Pass
		8	0	23.96	1.25	23.06	<=34.77	Pass	
			7	24.86	1.25	22.96	<=34.77	Pass	
			14	23.90	1.25	23.00	<=34.77	Pass	
	707.5	1	0	23.65	1.25	22.75	<=34.77	Pass	
			0	23.21	1.25	22.31	<=34.77	Pass	
			4	23.04	1.25	22.14	<=34.77	Pass	
		8	7	23.03	1.25	22.13	<=34.77	Pass	
			15	0	22.80	1.25	21.90	<=34.77	Pass
			0	23.91	1.25	23.01	<=34.77	Pass	
	714.5	1	7	23.99	1.25	23.09	<=34.77	Pass	
			14	23.98	1.25	23.08	<=34.77	Pass	
			0	23.17	1.25	22.27	<=34.77	Pass	
		8	4	23.22	1.25	22.32	<=34.77	Pass	
			7	23.21	1.25	22.31	<=34.77	Pass	
			15	0	23.21	1.25	22.31	<=34.77	Pass
Note1: ERP=Conducted Power+Antenna Gain-2.15									



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B12 5MHz ERP

Modulation	Frequency (MHz)	Band: 12 / Bandwidth: 5MHz / NTNV						
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict	
		Size	Offset			Result		
QPSK	701.5	1	0	24.94	1.25	24.04	<=34.77 Pass	
			13	24.93	1.25	24.03	<=34.77 Pass	
			24	24.80	1.25	23.90	<=34.77 Pass	
		12	0	24.14	1.25	23.24	<=34.77 Pass	
			6	24.01	1.25	23.11	<=34.77 Pass	
			13	23.87	1.25	22.97	<=34.77 Pass	
	707.5	1	0	24.07	1.25	23.17	<=34.77 Pass	
			0	25.23	1.25	24.33	<=34.77 Pass	
			13	25.40	1.25	24.50	<=34.77 Pass	
		12	24	25.19	1.25	24.29	<=34.77 Pass	
			0	24.09	1.25	23.19	<=34.77 Pass	
			6	24.20	1.25	23.30	<=34.77 Pass	
	713.5	1	13	24.23	1.25	23.33	<=34.77 Pass	
			25	0	24.13	1.25	<=34.77 Pass	
			0	24.84	1.25	23.94	<=34.77 Pass	
		12	13	24.19	1.25	23.29	<=34.77 Pass	
			24	24.85	1.25	23.95	<=34.77 Pass	
			0	23.71	1.25	22.81	<=34.77 Pass	
16QAM	701.5	1	6	23.90	1.25	23.00	<=34.77 Pass	
			13	23.87	1.25	22.97	<=34.77 Pass	
			25	0	23.79	1.25	<=34.77 Pass	
	707.5	1	0	23.78	1.25	22.88	<=34.77 Pass	
			13	23.61	1.25	22.71	<=34.77 Pass	
			24	23.51	1.25	22.61	<=34.77 Pass	
		12	0	23.04	1.25	22.14	<=34.77 Pass	
			6	23.08	1.25	22.18	<=34.77 Pass	
			13	22.88	1.25	21.98	<=34.77 Pass	
	713.5	1	0	23.05	1.25	22.15	<=34.77 Pass	
			0	23.66	1.25	22.76	<=34.77 Pass	
			13	23.75	1.25	22.85	<=34.77 Pass	
		12	24	22.81	1.25	21.91	<=34.77 Pass	
			0	22.92	1.25	22.02	<=34.77 Pass	
			6	23.01	1.25	22.11	<=34.77 Pass	
		12	13	22.93	1.25	22.03	<=34.77 Pass	
			25	0	22.93	1.25	22.03	<=34.77 Pass
			0	23.44	1.25	22.54	<=34.77 Pass	
	713.5	1	13	23.48	1.25	22.58	<=34.77 Pass	
			24	23.41	1.25	22.51	<=34.77 Pass	
			0	22.73	1.25	21.83	<=34.77 Pass	
		12	6	22.90	1.25	22.00	<=34.77 Pass	
			13	22.85	1.25	21.95	<=34.77 Pass	
			25	0	22.88	1.25	21.98	<=34.77 Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15



BUREAU
VERITAS

Test Report No.: PSU-NQN2505120312RF03

B12_10MHz_ERP

Modulation	Frequency (MHz)	Band: 12 / Bandwidth: 10MHz / NTV						
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict	
		Size	Offset			Result		
QPSK	704	1	0	25.04	1.25	24.14	<=34.77	Pass
			25	25.12	1.25	24.22	<=34.77	Pass
			49	25.32	1.25	24.42	<=34.77	Pass
		25	0	23.93	1.25	23.03	<=34.77	Pass
			13	23.94	1.25	23.04	<=34.77	Pass
			25	24.15	1.25	23.25	<=34.77	Pass
		50	0	24.00	1.25	23.10	<=34.77	Pass
		1	0	25.06	1.25	24.16	<=34.77	Pass
			25	25.35	1.25	24.45	<=34.77	Pass
			49	24.94	1.25	24.04	<=34.77	Pass
	707.5	25	0	24.04	1.25	23.14	<=34.77	Pass
			13	24.17	1.25	23.27	<=34.77	Pass
			25	24.02	1.25	23.12	<=34.77	Pass
		50	0	24.05	1.25	23.15	<=34.77	Pass
		1	0	25.07	1.25	24.17	<=34.77	Pass
			25	24.87	1.25	23.97	<=34.77	Pass
			49	25.16	1.25	24.26	<=34.77	Pass
		25	0	24.18	1.25	23.28	<=34.77	Pass
			13	23.85	1.25	22.95	<=34.77	Pass
			25	23.85	1.25	22.95	<=34.77	Pass
		50	0	24.04	1.25	23.14	<=34.77	Pass
16QAM	704	1	0	23.60	1.25	22.70	<=34.77	Pass
			25	23.47	1.25	22.57	<=34.77	Pass
			49	23.82	1.25	22.92	<=34.77	Pass
		25	0	23.03	1.25	22.13	<=34.77	Pass
			13	22.98	1.25	22.08	<=34.77	Pass
			25	23.23	1.25	22.33	<=34.77	Pass
		50	0	23.08	1.25	22.18	<=34.77	Pass
		1	0	22.93	1.25	22.03	<=34.77	Pass
			25	24.02	1.25	23.12	<=34.77	Pass
			49	23.14	1.25	22.24	<=34.77	Pass
	707.5	25	0	22.87	1.25	21.97	<=34.77	Pass
			13	23.09	1.25	22.19	<=34.77	Pass
			25	22.92	1.25	22.02	<=34.77	Pass
		50	0	23.05	1.25	22.15	<=34.77	Pass
		1	0	23.89	1.25	22.99	<=34.77	Pass
			25	23.60	1.25	22.70	<=34.77	Pass
			49	23.75	1.25	22.85	<=34.77	Pass
		25	0	23.16	1.25	22.26	<=34.77	Pass
			13	23.00	1.25	22.10	<=34.77	Pass
			25	22.99	1.25	22.09	<=34.77	Pass
		50	0	23.08	1.25	22.18	<=34.77	Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B13 5MHz ERP

Modulation	Frequency (MHz)	Band: 13 / Bandwidth: 5MHz / NTNV							
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict		
		Size	Offset			Result			
QPSK	779.5	1	0	25.14	1.25	24.24	<=34.77	Pass	
			13	24.84	1.25	23.94	<=34.77	Pass	
			24	24.89	1.25	23.99	<=34.77	Pass	
		12	0	23.96	1.25	23.06	<=34.77	Pass	
			6	23.94	1.25	23.04	<=34.77	Pass	
			13	23.95	1.25	23.05	<=34.77	Pass	
	782	1	0	23.96	1.25	23.06	<=34.77	Pass	
			0	24.95	1.25	24.05	<=34.77	Pass	
			13	24.97	1.25	24.07	<=34.77	Pass	
		12	24	24.83	1.25	23.93	<=34.77	Pass	
			0	23.97	1.25	23.07	<=34.77	Pass	
			6	23.97	1.25	23.07	<=34.77	Pass	
	784.5	1	13	24.00	1.25	23.10	<=34.77	Pass	
			25	0	23.99	1.25	23.09	<=34.77	Pass
			0	24.77	1.25	23.87	<=34.77	Pass	
		12	13	24.91	1.25	24.01	<=34.77	Pass	
			24	25.29	1.25	24.39	<=34.77	Pass	
			0	23.89	1.25	22.99	<=34.77	Pass	
16QAM	779.5	1	6	23.93	1.25	23.03	<=34.77	Pass	
			13	23.98	1.25	23.08	<=34.77	Pass	
			25	0	23.98	1.25	23.08	<=34.77	Pass
		12	0	23.16	1.25	22.26	<=34.77	Pass	
			13	23.26	1.25	22.36	<=34.77	Pass	
			24	23.52	1.25	22.62	<=34.77	Pass	
	782	1	0	22.84	1.25	21.94	<=34.77	Pass	
			6	22.56	1.25	21.66	<=34.77	Pass	
			13	22.87	1.25	21.97	<=34.77	Pass	
		12	25	0	23.04	1.25	22.14	<=34.77	Pass
			0	23.59	1.25	22.69	<=34.77	Pass	
			13	23.16	1.25	22.26	<=34.77	Pass	
	784.5	1	24	23.76	1.25	22.86	<=34.77	Pass	
			0	22.88	1.25	21.98	<=34.77	Pass	
			6	22.97	1.25	22.07	<=34.77	Pass	
		12	13	23.00	1.25	22.10	<=34.77	Pass	
			25	0	22.97	1.25	22.07	<=34.77	Pass
			0	23.46	1.25	22.56	<=34.77	Pass	
Note1: ERP=Conducted Power+Antenna Gain-2.15									



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B13_10MHz_ERP

Modulation	Frequency (MHz)	Band: 13 / Bandwidth: 10MHz / NTNV				Verdict		
		RB Allocation Size	Offset	Conducted Power (dBm)	Gain (dBi)	ERP (dBm)		
QPSK	782	1	0	25.05	1.25	24.15	<=34.77	Pass
			25	25.03	1.25	24.13	<=34.77	Pass
			49	25.07	1.25	24.17	<=34.77	Pass
		25	0	23.97	1.25	23.07	<=34.77	Pass
			13	23.86	1.25	22.96	<=34.77	Pass
			25	23.98	1.25	23.08	<=34.77	Pass
			50	0	23.96	1.25	23.06	<=34.77
16QAM	782	1	0	23.23	1.25	22.33	<=34.77	Pass
			25	23.33	1.25	22.43	<=34.77	Pass
			49	24.06	1.25	23.16	<=34.77	Pass
		25	0	22.98	1.25	22.08	<=34.77	Pass
			13	22.90	1.25	22.00	<=34.77	Pass
			25	23.08	1.25	22.18	<=34.77	Pass
			50	0	23.04	1.25	22.14	<=34.77

Note1: ERP=Conducted Power+Antenna Gain-2.15



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B71_5MHz_ERP

Modulation	Frequency (MHz)	Band: 71 / Bandwidth: 5MHz / NTNV					
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict
		Size	Offset			Result	
QPSK	665.5	1	0	24.86	1.25	23.96	<=34.77 Pass
			13	24.97	1.25	24.07	<=34.77 Pass
			24	24.72	1.25	23.82	<=34.77 Pass
		12	0	23.62	1.25	22.72	<=34.77 Pass
			6	23.87	1.25	22.97	<=34.77 Pass
			13	23.84	1.25	22.94	<=34.77 Pass
			25	0	23.65	1.25	22.75
	680.5	1	0	23.91	1.25	23.01	<=34.77 Pass
			13	24.48	1.25	23.58	<=34.77 Pass
			24	23.98	1.25	23.08	<=34.77 Pass
		12	0	23.33	1.25	22.43	<=34.77 Pass
			6	23.54	1.25	22.64	<=34.77 Pass
			13	23.51	1.25	22.61	<=34.77 Pass
			25	0	23.44	1.25	22.54
	695.5	1	0	24.25	1.25	23.35	<=34.77 Pass
			13	24.51	1.25	23.61	<=34.77 Pass
			24	24.68	1.25	23.78	<=34.77 Pass
		12	0	23.37	1.25	22.47	<=34.77 Pass
			6	23.69	1.25	22.79	<=34.77 Pass
			13	23.71	1.25	22.81	<=34.77 Pass
			25	0	23.57	1.25	22.67
16QAM	665.5	1	0	23.06	1.25	22.16	<=34.77 Pass
			13	23.37	1.25	22.47	<=34.77 Pass
			24	23.22	1.25	22.32	<=34.77 Pass
		12	0	22.60	1.25	21.70	<=34.77 Pass
			6	22.83	1.25	21.93	<=34.77 Pass
			13	23.02	1.25	22.12	<=34.77 Pass
			25	0	22.59	1.25	21.69
	680.5	1	0	23.08	1.25	22.18	<=34.77 Pass
			13	23.13	1.25	22.23	<=34.77 Pass
			24	23.27	1.25	22.37	<=34.77 Pass
		12	0	22.17	1.25	21.27	<=34.77 Pass
			6	22.21	1.25	21.31	<=34.77 Pass
			13	22.54	1.25	21.64	<=34.77 Pass
			25	0	22.38	1.25	21.48
	695.5	1	0	23.13	1.25	22.23	<=34.77 Pass
			13	23.20	1.25	22.30	<=34.77 Pass
			24	23.14	1.25	22.24	<=34.77 Pass
		12	0	22.30	1.25	21.40	<=34.77 Pass
			6	22.42	1.25	21.52	<=34.77 Pass
			13	22.41	1.25	21.51	<=34.77 Pass
			25	0	22.58	1.25	21.68

Note1: ERP=Conducted Power+Antenna Gain-2.15



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B71_10MHz_ERP

Modulation	Frequency (MHz)	Band: 71 / Bandwidth: 10MHz / NTV							
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict		
		Size	Offset			Result			
QPSK	668	1	0	24.41	1.25	23.51	<=34.77	Pass	
			25	25.21	1.25	24.31	<=34.77	Pass	
			49	24.58	1.25	23.68	<=34.77	Pass	
		25	0	23.86	1.25	22.96	<=34.77	Pass	
			13	23.92	1.25	23.02	<=34.77	Pass	
			25	23.89	1.25	22.99	<=34.77	Pass	
	680.5	1	0	23.79	1.25	22.89	<=34.77	Pass	
			0	24.64	1.25	23.74	<=34.77	Pass	
			25	24.30	1.25	23.40	<=34.77	Pass	
		25	49	24.64	1.25	23.74	<=34.77	Pass	
			0	23.14	1.25	22.24	<=34.77	Pass	
			13	23.61	1.25	22.71	<=34.77	Pass	
	693	1	25	23.58	1.25	22.68	<=34.77	Pass	
			50	0	23.52	1.25	22.62	<=34.77	Pass
			0	24.45	1.25	23.55	<=34.77	Pass	
		25	25	24.51	1.25	23.61	<=34.77	Pass	
			49	24.83	1.25	23.93	<=34.77	Pass	
			0	23.22	1.25	22.32	<=34.77	Pass	
16QAM	668	1	13	23.45	1.25	22.55	<=34.77	Pass	
			25	23.66	1.25	22.76	<=34.77	Pass	
			50	0	23.40	1.25	22.50	<=34.77	Pass
		25	0	23.47	1.25	22.57	<=34.77	Pass	
			25	22.89	1.25	21.99	<=34.77	Pass	
			49	23.09	1.25	22.19	<=34.77	Pass	
	680.5	1	0	22.67	1.25	21.77	<=34.77	Pass	
			13	22.78	1.25	21.88	<=34.77	Pass	
			25	22.92	1.25	22.02	<=34.77	Pass	
		25	50	0	22.78	1.25	21.88	<=34.77	Pass
			0	22.88	1.25	21.98	<=34.77	Pass	
			25	23.55	1.25	22.65	<=34.77	Pass	
	693	1	49	23.02	1.25	22.12	<=34.77	Pass	
			0	22.44	1.25	21.54	<=34.77	Pass	
			13	22.48	1.25	21.58	<=34.77	Pass	
		25	25	22.35	1.25	21.45	<=34.77	Pass	
			50	0	22.32	1.25	21.42	<=34.77	Pass
			0	23.24	1.25	22.34	<=34.77	Pass	

Note1: ERP=Conducted Power+Antenna Gain-2.15



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B71_15MHz_ERP

Modulation	Frequency (MHz)	Band: 71 / Bandwidth: 15MHz / NTV						
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict	
		Size	Offset			Result		
QPSK	670.5	1	0	24.57	1.25	23.67	≤ 34.77 Pass	
			38	25.15	1.25	24.25	≤ 34.77 Pass	
			74	24.50	1.25	23.60	≤ 34.77 Pass	
		36	0	23.93	1.25	23.03	≤ 34.77 Pass	
			18	23.85	1.25	22.95	≤ 34.77 Pass	
			39	23.59	1.25	22.69	≤ 34.77 Pass	
	680.5	1	0	23.73	1.25	22.83	≤ 34.77 Pass	
			0	24.53	1.25	23.63	≤ 34.77 Pass	
			38	24.79	1.25	23.89	≤ 34.77 Pass	
		36	74	24.52	1.25	23.62	≤ 34.77 Pass	
			0	23.47	1.25	22.57	≤ 34.77 Pass	
			18	23.62	1.25	22.72	≤ 34.77 Pass	
	690.5	1	39	23.57	1.25	22.67	≤ 34.77 Pass	
			75	0	23.43	1.25	22.53	≤ 34.77 Pass
			0	24.34	1.25	23.44	≤ 34.77 Pass	
		36	38	24.36	1.25	23.46	≤ 34.77 Pass	
			74	24.72	1.25	23.82	≤ 34.77 Pass	
			0	23.43	1.25	22.53	≤ 34.77 Pass	
16QAM	670.5	1	18	23.14	1.25	22.24	≤ 34.77 Pass	
			39	23.30	1.25	22.40	≤ 34.77 Pass	
			75	0	23.53	1.25	22.63	≤ 34.77 Pass
	680.5	1	0	23.64	1.25	22.74	≤ 34.77 Pass	
			38	23.58	1.25	22.68	≤ 34.77 Pass	
			74	23.06	1.25	22.16	≤ 34.77 Pass	
		36	0	22.92	1.25	22.02	≤ 34.77 Pass	
			18	22.83	1.25	21.93	≤ 34.77 Pass	
			39	22.38	1.25	21.48	≤ 34.77 Pass	
	690.5	1	75	0	22.80	1.25	21.90	≤ 34.77 Pass
			0	23.36	1.25	22.46	≤ 34.77 Pass	
			38	23.02	1.25	22.12	≤ 34.77 Pass	
		36	74	23.05	1.25	22.15	≤ 34.77 Pass	
			0	22.35	1.25	21.45	≤ 34.77 Pass	
			18	22.50	1.25	21.60	≤ 34.77 Pass	
		75	39	22.35	1.25	21.45	≤ 34.77 Pass	
			0	22.41	1.25	21.51	≤ 34.77 Pass	
			75	0	22.43	1.25	21.53	≤ 34.77 Pass

Note1: ERP=Conducted Power+Antenna Gain-2.15



Test Report No.: PSU-NQN2505120312RF03

BUREAU
VERITAS

B71_20MHz_ERP

Modulation	Frequency (MHz)	Band: 71 / Bandwidth: 20MHz / NTV						
		RB Allocation		Conducted Power (dBm)	Gain (dBi)	ERP (dBm)	Verdict	
		Size	Offset			Result		
QPSK	673	1	0	24.54	1.25	23.64	<=34.77 Pass	
			50	25.23	1.25	24.33	<=34.77 Pass	
			99	24.55	1.25	23.65	<=34.77 Pass	
		50	0	23.69	1.25	22.79	<=34.77 Pass	
			25	23.57	1.25	22.67	<=34.77 Pass	
			50	23.34	1.25	22.44	<=34.77 Pass	
	683	1	0	23.26	1.25	22.36	<=34.77 Pass	
			0	24.67	1.25	23.77	<=34.77 Pass	
			50	24.72	1.25	23.82	<=34.77 Pass	
		50	99	24.21	1.25	23.31	<=34.77 Pass	
			0	23.36	1.25	22.46	<=34.77 Pass	
			25	23.47	1.25	22.57	<=34.77 Pass	
	688	1	50	23.17	1.25	22.27	<=34.77 Pass	
			100	0	23.34	1.25	22.44	<=34.77 Pass
			0	24.65	1.25	23.75	<=34.77 Pass	
		50	50	24.27	1.25	23.37	<=34.77 Pass	
			99	24.90	1.25	24.00	<=34.77 Pass	
			0	23.41	1.25	22.51	<=34.77 Pass	
16QAM	673	1	25	23.27	1.25	22.37	<=34.77 Pass	
			50	23.28	1.25	22.38	<=34.77 Pass	
			100	0	23.18	1.25	22.28	<=34.77 Pass
		50	0	23.32	1.25	22.42	<=34.77 Pass	
			50	23.41	1.25	22.51	<=34.77 Pass	
			99	22.89	1.25	21.99	<=34.77 Pass	
	683	1	0	22.67	1.25	21.77	<=34.77 Pass	
			25	22.45	1.25	21.55	<=34.77 Pass	
			50	22.42	1.25	21.52	<=34.77 Pass	
		50	100	0	22.59	1.25	21.69	<=34.77 Pass
			0	23.10	1.25	22.20	<=34.77 Pass	
			50	23.19	1.25	22.29	<=34.77 Pass	
	688	1	99	22.75	1.25	21.85	<=34.77 Pass	
			0	22.45	1.25	21.55	<=34.77 Pass	
			25	22.51	1.25	21.61	<=34.77 Pass	
		50	50	22.36	1.25	21.46	<=34.77 Pass	
			100	0	22.30	1.25	21.40	<=34.77 Pass
			0	22.90	1.25	22.00	<=34.77 Pass	

Note1: ERP=Conducted Power+Antenna Gain-2.15

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

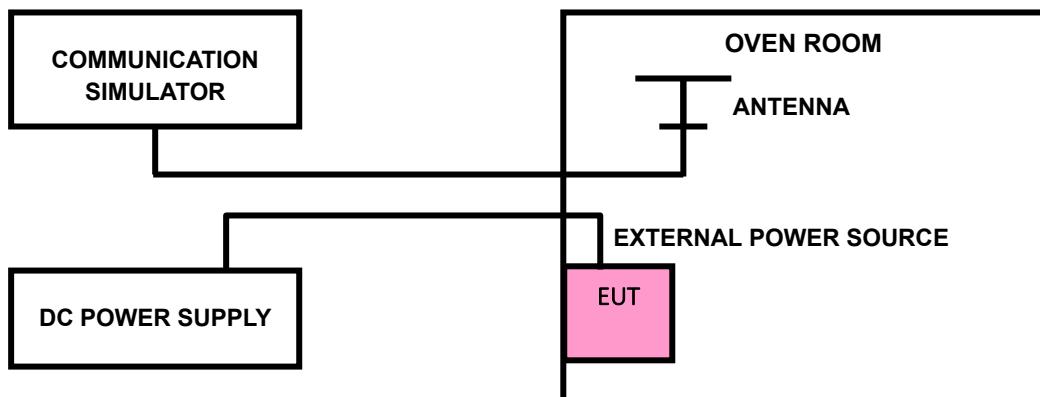
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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.

3.2.3 TEST SETUP



3.2.4 TEST RESULTS

Please Refer to module EC25-AFXD; EC25-AFXD MINI PCIe report.

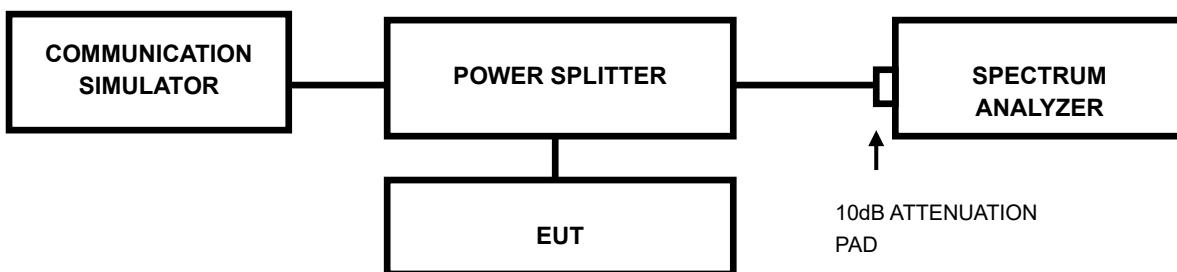
(Report No.: R2203A0238-R1 FCC ID : XMR202008EC25AFXD)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 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.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

- 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.

3.3.4 TEST RESULTS

Please Refer to module EC25-AFXD; EC25-AFXD MINI PCIe report.

(Report No.: R2203A0238-R1 FCC ID : XMR202008EC25AFXD)



3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(c) specified that For operations in the 746-758 MHz band and the 776-788 MHz band , the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emission in an 6.25kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, $P(dBW)$, by at least $65 + 10\log 10p(P)$, dB, for mobile and portable equipment.

According to FCC 27.53(g) specified that For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

According to FCC 27.53(h) specified that For operations in the 1710-1755 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(m)(4) specified that For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees. For mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

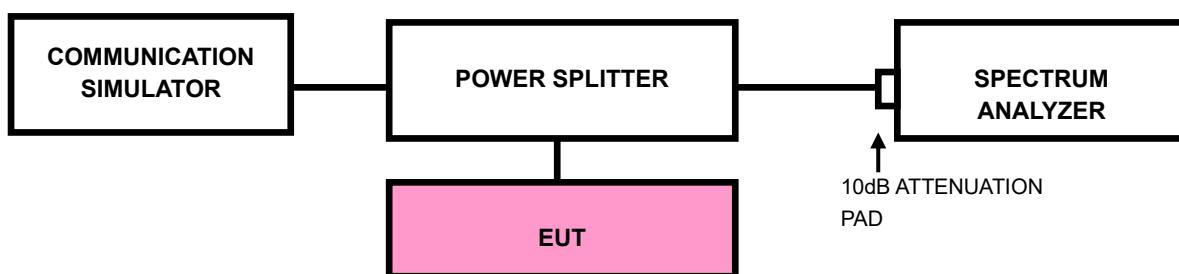


Test Report No.: PSU-NQN2505120312RF03

According to FCC 27.53(a)(4) specified that For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

- (i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;
- (ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;
- (iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

3.4.2 TEST SETUP





3.4.3 TEST PROCEDURES

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

3.4.4 TEST RESULTS

Please Refer to module EC25-AFXD; EC25-AFXD MINI PCIe report.

(Report No.: R2203A0238-R1 FCC ID : XMR202008EC25AFXD)



3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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. The emission limit equal to -13 dBm.

For: LTE Band7

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25 dBm.

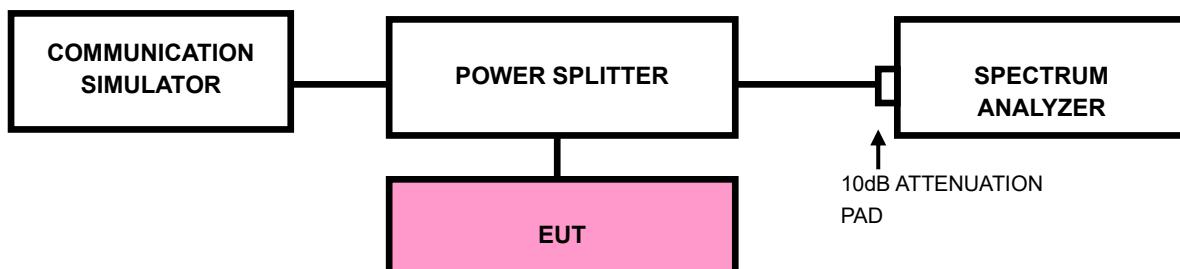
For: LTE Band30

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $70 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -40 dBm.

3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9kHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP



3.5.4 TEST RESULTS

Please Refer to module EC25-AFXD; EC25-AFXD MINI PCIe report.

(Report No.: R2203A0238-R1 FCC ID : XMR202008EC25AFXD)



3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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. The emission limit equal to -13 dBm.

For: LTE Band7/ Band41

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25 dBm.

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 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 horn 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, E.R.P power = E.I.P.R power - 2.15dBi.

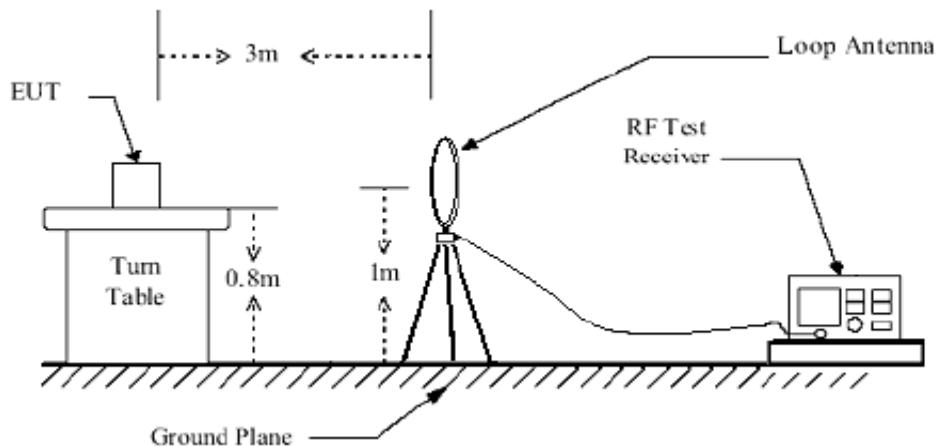
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

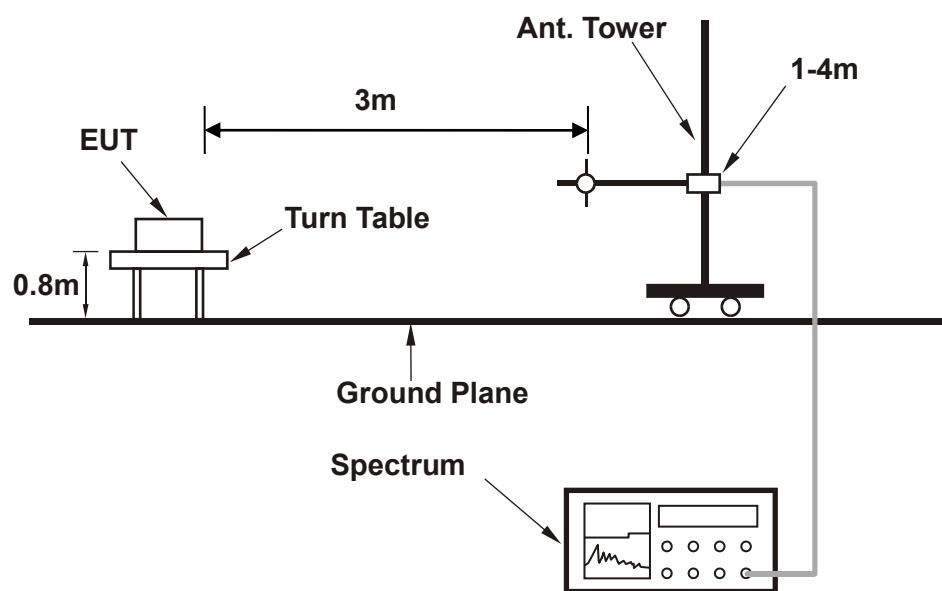
No deviation

3.6.4 TEST SETUP

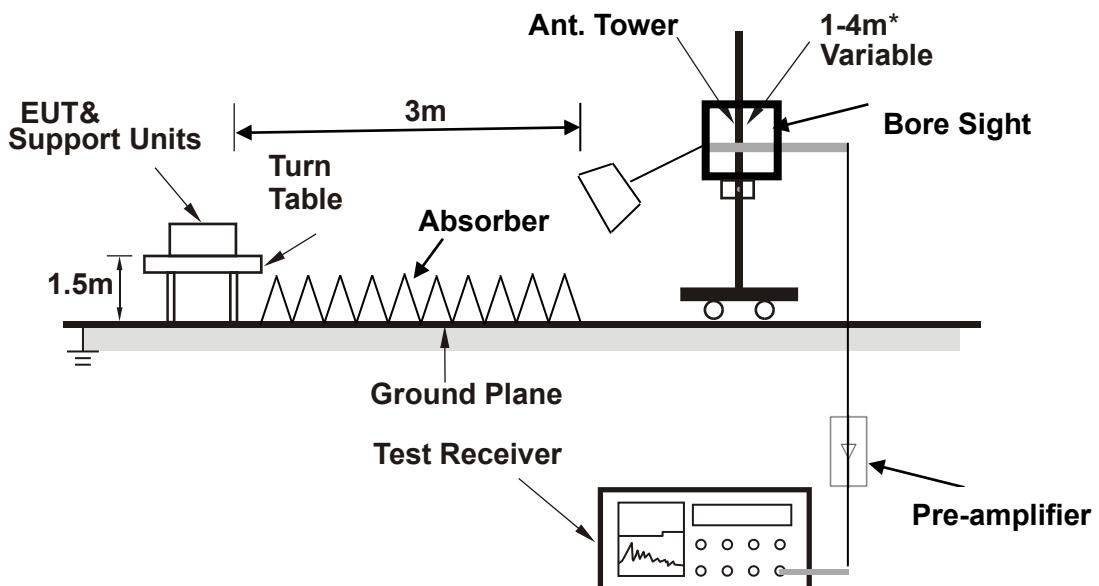
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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



3.6.5 TEST RESULTS

NOTE1 : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

NOTE2: The measurement range is 30M to the tenth harmonic of the highest fundamental frequency, For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report

LTE band 12

Test result:

ANT0 Channel : 23095

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
1149.80	-80.19	-13.00	Vertical
1737.80	-74.56	-13.00	Vertical
2409.52	-76.17	-13.00	Vertical
3129.00	-82.91	-13.00	Vertical
3582.00	-80.88	-13.00	Vertical
5166.00	-85.95	-13.00	Vertical

LTE band 13

Test result:

ANT0 Channel : 23230

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
1149.80	-80.19	-13.00	Vertical
1739.20	-75.89	-13.00	Vertical
2409.52	-76.17	-13.00	Vertical
3144.00	-82.82	-13.00	Vertical
3516.00	-80.95	-13.00	Vertical
4677.00	-87.66	-13.00	Vertical



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LTE band 71

Test result

ANT0 Channel : 133297

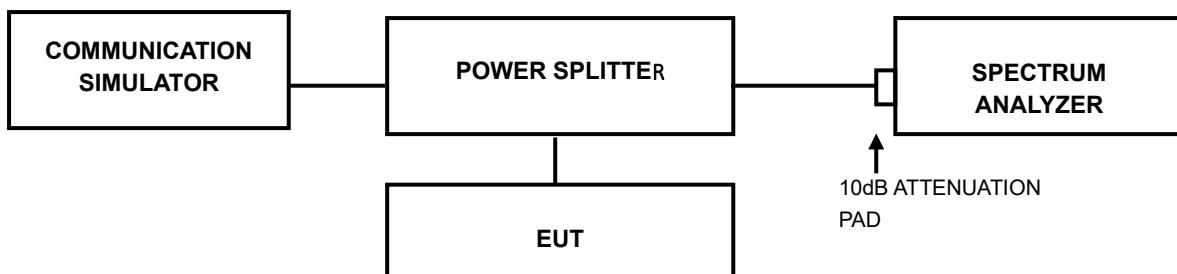
Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
1200.20	-80.54	-13.00	Vertical
1737.80	-74.56	-13.00	Vertical
2413.69	-75.99	-13.00	Vertical
3099.00	-82.66	-13.00	Vertical
3570.00	-80.63	-13.00	Vertical
4698.00	-87.51	-13.00	Vertical

3.7 PEAK TO AVERAGE RATIO

3.7.1 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

3.7.2 TEST SETUP



3.7.3 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%.

3.7.4 TEST RESULTS

Please Refer to module EC25-AFXD; EC25-AFXD MINI PCIe report.

(Report No.: R2203A0238-R1 FCC ID : XMR202008EC25AFXD)



Test Report No.: PSU-NQN2505120312RF03

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, China
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

Please Refer to module EC25-AFXD; EC25-AFXD MINIPCIE report.

---END---