

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 96 SUBPART E REQUIREMENT

OF

Applicant:	Compal Electronics, Inc No.581 & 581-1, Ruiguang Rd., Neihu District, Taipei, (114) Taiwan
Product Name:	5G M.2 Module
Brand Name:	Compal
Model No.:	RXM-G1
Model Difference:	N/A
FCC ID:	GKRRXMG1
Report Number:	E2/2019/A0030
Issue Date:	Jul. 02, 2020
Date of Test:	Nov. 28, 2019 ~ Jun. 22, 2020
Date of EUT Received:	Oct. 31, 2019
We hereby certify that:	

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.26-2015 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Approved By: \_\_\_\_ CHUN; CHIZEH, CHIEN

Chun Chieh Chen / Supervisor



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Revision History						
Report Number	Revision	Description	Issue Date	Remark		
E2/2019/A0030	Rev.00	Original.	Jul. 02, 2020	Revised By: Karen Huang		

## Note:

## 1 · Disclaimer

Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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# 1. GENERAL PRODUCT INFORMATION

# **1.1. Product Description**

General:

Product Name:	5G M.2 Module
Brand Name:	Compal
Model No.:	RXM-G1
Model Difference:	N/A
Hardware Version:	DVT-1
Software Version:	RXMG1.00.00.036
Power Supply:	DC 3.3V
IMEI:	359047100009060

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# 1.2. LTE: Cellular Phone Standards Frequency Range 3500~3700Mhz

LTE Band	BW (MHz)	Operation F	reque	ncy (MHz)
	5	3552.5	-	3697.5
40	10	3555.0	-	3695.0
48	15	3557.5	-	3692.5
	20	3560.0	-	3690.0

## **Antenna Designation**

Vendor	Туре	Model Name	Modulation	Fre	equei (MH	- <b>J</b>	Peak Antenna Gain (dBi)
Pulse	PIFA	ANT2	LTE Band 48	3550	1	3700	-2dBi

# 1.3. Type of Emission & Max ERP/EIRP Power Measurement Result:

LTE Band	BW	Frequ	iency	Modulation	ERP / E (dBm/10		(W)	99%	Type of Emission	
				QPSK	21.82	EIRP	0.152	4.5348	4M53G7D	
48	5	3552.5	3697.5	16QAM	20.86	EIRP	0.122	4.5177	4M52D7W	
40	5	3002.0	3097.5	64QAM	20.12	EIRP	0.103	4.5197	4M52D7W	
				256QAM	16.83	EIRP	0.048	4.5669	4M57D7W	
				QPSK	21.94	EIRP	0.156	9.0583	9M06G7D	
48	10	3555.0	3695.0	16QAM	21.13	EIRP	0.130	9.0627	9M06D7W	
40	10	10 0000.	3333.0	3333.0 3073.0	64QAM	20.07	EIRP	0.102	9.0342	9M03D7W
				256QAM	16.95	EIRP	0.050	9.8718	9M87D7W	
		3557.5			QPSK	22.92	EIRP	0.196	13.504	13M5G7D
48	15		3692.5	16QAM	22.04	EIRP	0.160	13.582	13M6D7W	
40	15	5557.5	3072.3	64QAM	21.00	EIRP	0.126	13.475	13M5D7W	
				256QAM	17.17	EIRP	0.052	13.609	13M6D7W	
				QPSK	22.62	EIRP	0.183	18.017	18M0G7D	
48	20	3560.0 3690.0	3690.0	16QAM	22.09	EIRP	0.162	18.044	18M0D7W	
40	20	3300.0	5070.0	64QAM	21.02	EIRP	0.126	18.039	18M0D7W	
				256QAM	16.74	EIRP	0.047	19.302	19M3D7W	

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# 1.4. Test Methodology of Applied Standards

FCC 47 CFR Part 2, Part 96E

ANSI C63.26-2015

ANSI/ITA C603-E.2016

KDB 971168 D01 Power Meas license Digital System v03r01

KDB 940660 D01 Part 96 CBRS Eqpt v02

KDB 412172 D01 Determining ERP and EIRP V01r01

Note: All test items have been performed and record as per the above standards.

# 1.5. Test Facility

SGS Taiwan Ltd. Central RF Lab (TAF code 3702)

No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333

FCC Registration Numbers: TW0028

# 1.6. Special Accessories

No special accessories were used during testing.

# **1.7. Equipment Modifications**

There were no modifications incorporated into the EUT.

# 1.8. Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*9m\*6m semi-anechoic chamber,

the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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# 2. SYSTEM TEST CONFIGURATION

# 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

# 2.2. EUT Exercise

The EUT (Transmitter) was operated in the continuous transmission mode employed with the simulator of the Base Station that fixates at test default channels to fix the Tx frequency which was for the purpose of the measurements.

# 2.3. Test Procedure

## 2.3.1 Conducted Measurement at Antenna Port

According to measurement procured ANSI C63.26-2015, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

## 2.3.2 Radiated Emissions (ERP/EIRP)

According to measurement procured ANSI C63.26-2015, The EUT is a placed on as turn table, for emission measurements below 1 GHz is 0.8 m above ground plane, for emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 8 and 13.

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# 2.4. Measurement Results Explanation Example

## For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

## Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor. Following shows an offset computation in physical test.

	RF cable loss (dB)	Attenuation factor(dB)	offset(dB)
Low Band (Below 1GHz)	3.6	10	13.6
High Band (Above 1 GHz)	3.8	10	13.8

# 2.5. Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
LTE Band B48 3625Mhz	3.3	490

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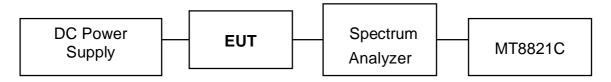
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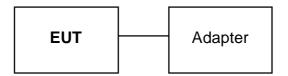


# 2.6. Configuration of Tested System

## Fig. 2-1 Configuration of Tested System (Fixed Channel-Conducted)



# Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)



## **Remote Side**



## Table 2-1 Equipment Used in

lter	n Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Radio Communication Analyer	Anritsu	MT8821C	6262044739	shielded	Un-shielded

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# 3. SUMMARY OF TEST RESULTS

## 3.1. Decision rules

Reported measurement data comply with ANSI C63.26-2015: Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

## 3.2. Summary of test results

FCC Rules	Description Of Test	Result
§2.1046(a) §96.41(b)	Maximum Power Output	Compliant
§2.1046, §96.41(b)	Maximum Power Density	Compliant
§2.1053, §96.41(e)	FIELD STRENGTH OF SPU- RIOUS RADIATION	Compliant
§2.1051 §96.41(e)	OUT OF BAND EMISSION AT ANTENNA	Compliant
§2.1049,(h)	OCCUPIED BANDWIDTH	Compliant
§2.1055(a)	Frequency Stability	Compliant
§96.41(g)	Peak to Average Ratio	Compliant

# 3.3. Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

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# 4. DESCRIPTION OF TEST MODES

# 4.1. The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X(E1)Y(E2)Z(H) axis and antenna ports. The worst case was found as listed below. Following channel(s) was (were) selected for the final test as listed below:

BAND	RADIATED EMISSION
LTE Band48	E2-plane

Note: The device does not support MIMO transmitting mode.

#### **Measurement Configuration** 4.2.

## LTE Band 48 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
	56765 to 58215	56765, 55990, 58215	5MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
EIRP	55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
EIKP	55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
	55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
FREQUENCY STABIL- ITY	55290 to 56690	55290, 55990, 56690	10MHz	QPSK	Full RB
	56765 to 58215	56765, 55990, 58215	5MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
OCCUPIED BAND-	55290 to 56690	55290, 55990, 56690	10MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
WIDTH	55315 to 56665	55315, 55990, 56665	15MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
	55340 to 56640	55340, 55990, 56640	20MHz	QPSK, 16QAM, 64QAM, 256QAM	Full RB
	56765 to 58215	56765, 55990, 58215	5MHz	256QAM	Full RB
PEAK TO AVERAGE	55290 to 56690	55290, 55990, 56690	10MHz	256QAM	Full RB
RATIO	55315 to 56665	55315, 55990, 56665	15MHz	256QAM	Full RB
	55340 to 56640	55340, 55990, 56640	20MHz	256QAM	Full RB
	56765 to 58215	56765, 58215	5MHz	QPSK	1 RB/ 0,24 RB Offest Full RB
	55290 to 56690	55290, 56690	10MHz	QPSK	1 RB/ 0,49 RB Offest Full RB
BAND EDGE	55315 to 56665	55315, 56665	15MHz	QPSK	1 RB/ 0,74 RB Offest Full RB
	55340 to 56640	55340, 56640	20MHz	QPSK	1 RB/ 0,99 RB Offest Full RB
	56765 to 58215	56765, 55990, 58215	5MHz	QPSK	1 RB, 0 RB Offest
CONDCUDETED EMIS-	55290 to 56690	55290, 55990, 56690	10MHz	QPSK	1 RB, 0 RB Offest
SION	55315 to 56665	55315, 55990, 56665	15MHz	QPSK	1 RB, 0 RB Offest
	55340 to 56640	55340, 55990, 56640	20MHz	QPSK	1 RB, 0 RB Offest
RADIATED EMISSION	56765 to 58215	56765, 55990, 58215	20MHz	QPSK	1 RB, 0 RB Offest

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## 5. MEASUREMENT UNCERTAINTY

Test Items	Uncertainty			
Maximum Power Output	+/- 1.10 dB			
Maximum Power Density	+/- 1.10 dB			
Occupied Bandwidth	+/- 5.19 Hz			
Out of Band Emissions at Antenna Terminals	+/- 0.70 dB			
Frequency Stability vs. Temperature	+/- 5.19 Hz			
Frequency Stability vs. Voltage	+/- 5.19 Hz			
Temperature	+/- 0.65 °C			
Humidity	+/- 4.6 %			
DC / AC Power Source	DC= +/- 0.13%, AC=+/- 0.2%			

Radiated Spurious Emission:

	9kHz – 30MHz: +/- 2.87 dB			
	30MHz - 180MHz: +/- 3.37dB			
Measurement uncertainty (Polarization : <b>Vertical</b> )	180MHz -417MHz: +/- 3.19dB			
	0.417GHz-1GHz: +/- 3.19dB			
	1GHz - 18GHz: +/- 4.04dB			
	18GHz - 40GHz: +/- 4.04dB			

	9kHz – 30MHz: +/- 2.87 dB			
	30MHz - 167MHz: +/- 4.22dB			
Measurement uncertainty (Polarization : <b>Horizontal</b> )	167MHz -500MHz: +/- 3.44dB			
	0.5GHz-1GHz: +/- 3.39dB			
	1GHz - 18GHz: +/- 4.08dB			
	18GHz - 40GHz: +/- 4.08dB			

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

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# 6. MAXIMUM OUTPUT POWER MEASUREMENT

## 6.1. Standard Applicable

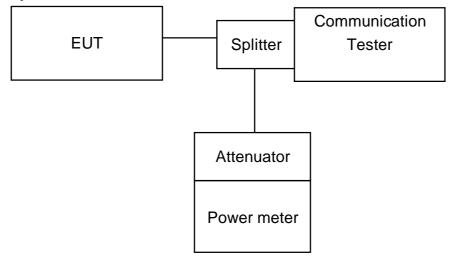
FCC §2.1046 & 96.41

- (a) FCC 96.41(a) Digital modulation. Systems operating in the Citizens Broadband Radio Service must use digital modulation techniques.
- (b) FCC 96.41(b) Power limits. Unless otherwise specified in this section, the maximum effective iso tropic radiated power (EIRP) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

Device	Maximum EIRP (dBm/10 megahertz)
End User Device	23
Category A CBSD	30
Category B CBSD <sup>1</sup>	47

Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§96.15 and 96.67.

## 6.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

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## 6.3. Measurement Procedure

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading.

# Determining ERP and/or EIRP from conducted RF output power measurements

ERP/EIRP = PMeas + GT-LC

Where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);

PMeas = measured transmitter output power or PSD, in dBm or dBW;

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

LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.2 For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

		-			
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020
Radio Communication Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020
Attenuator	enuator Marvelous		RF30	11/20/2019	11/19/2020
DC Block	C Block PASTERNACK		RF32	11/20/2019	11/19/2020
Splitter	Woken	DOM35LW1 A2	RF83	11/20/2019	11/19/2020
Coaxial Cables Woken		00100A1F1A 185C	RF229	11/20/2019	11/19/2020

## 6.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/17/2020	03/16/2021

Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.

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## 6.5. Measurement Result

## **RF Conducted Output Power**

## LTE MODE:

**Results:** 

ntenna g	ain (dBi)	-2					0700 1411		
			LIE Band 4	8_Uplink fre	quency	band : 3550 to		5100	
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average	EIRP Average	EIRP Limit	Margin (dBm/10MHz)
	Channer	(11112)					(dBm/10MHz)		
				1	0	23.01	21.01	23	-1.99
	56765	3552.5	QPSK	1	24	22.90	20.90	23	-2.1
	00/00	0002.0	QI OK	12	6	22.06	20.06	23	-2.94
				25	0	21.96	19.96	23	-3.04
				1	0	23.76	21.76	23	-1.24
	55990	3625	OPSK	1	24	23.82	21.82	23	-1.18
	33770	3023	QI SIX	12	6	22.88	20.88	23	-2.12
				25	0	22.90	20.90	23	-2.1
				1	0	23.56	21.56	23	-1.44
	58215	3697.5	QPSK	1	24	23.51	21.51	23	-1.49
	30215	3097.3	UPSK	12	6	22.61	20.61	23	-2.39
				25	0	22.63	20.63	23	-2.37
				1	0	22.26	20.26	23	-2.74
	56765	3552.5	16QAM	1	24	22.23	20.23	23	-2.77
	30703	3002.0	TOQAIVI	12	6	21.08	19.08	23	-3.92
				25	0	21.06	19.06	23	-3.94
		3625	16QAM	1	0	22.63	20.63	23	-2.37
	55000			1	24	22.63	20.63	23	-2.37
	55990			12	6	21.93	19.93	23	-3.07
				25	0	21.45	19.45	23	-3.55
		3697.5	16QAM	1	0	22.86	20.86	23	-2.14
	50045			1	24	22.79	20.79	23	-2.21
	58215			12	6	21.70	19.70	23	-3.3
-				25	0	21.63	19.63	23	-3.37
5		3552.5		1	0	22.12	20.12	23	-2.88
	F / 7 / F		( 10 11	1	24	22.08	20.08	23	-2.92
	56765		64QAM	12	6	21.08	19.08	23	-3.92
				25	0	21.02	19.02	23	-3.98
				1	0	21.84	19.84	23	-3.16
	55000	04.05	( 10 11	1	24	21.93	19.93	23	-3.07
	55990	3625	64QAM	12	6	21.36	19.36	23	-3.64
				25	0	21.34	19.34	23	-3.66
				1	0	21.59	19.59	23	-3.41
	50015	2/ 07 5	(10414	1	24	21.53	19.53	23	-3.47
	58215	3697.5	64QAM	12	6	20.80	18.80	23	-4.2
				25	0	20.75	18.75	23	-4.25
				1	0	18.57	16.57	23	-6.43
	F/7/F	25.52.5	25/0444	1	24	18.50	16.50	23	-6.5
	56765	3552.5	256QAM	12	6	18.67	16.67	23	-6.33
				25	0	18.48	16.48	23	-6.52
				1	0	18.25	16.25	23	-6.75
		0/07	05 ( 0	1	24	18.22	16.22	23	-6.78
	55990	3625	256QAM	12	6	18.45	16.45	23	-6.55
				25	0	18.29	16.29	23	-6.71
				1	0	18.77	16.77	23	-6.23
				1	24	18.79	16.79	23	-6.21
	58215	3697.5	256QAM						
				12	6	18.83	16.83	23	-6.17

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		-2	LTE Band 4	8_Uplink free	quency	band : 3550 to	3700 MHz		
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm/10MHz)	EIRP Average (dBm/10MHz)	EIRP Limit (dBm/10MHz)	Margin (dBm/10MHz)
				1	0	23.23	21.23	23	-1.77
				1	49	23.12	21.12	23	-1.88
	55290	3555	QPSK	25	12	22.37	20.37	23	-2.63
				50	0	22.38	20.38	23	-2.62
				1	0	23.86	21.86	23	-1.14
				1	49	23.94	21.94	23	-1.06
	55990	3625	QPSK	25	12	22.91	20.91	23	-2.09
				50	0	22.95	20.95	23	-2.05
				1	0	23.50	21.50	23	-1.5
	54400	0/05	0.001/	1	49	23.46	21.46	23	-1.54
	56690	3695	QPSK	25	12	22.70	20.70	23	-2.3
				50	0	22.69	20.69	23	-2.31
				1	0	22.62	20.62	23	-2.38
				1	49	22.47	20.47	23	-2.53
	55290	3555	16QAM	25	12	21.48	19.48	23	-3.52
				50	0	21.52	19.52	23	-3.48
				1	0	23.13	21.13	23	-1.87
	55000	2/25	1/0 004	1	49	22.93	20.93	23	-2.07
	55990	3625	16QAM -	25	12	22.01	20.01	23	-2.99
				50	0	21.98	19.98	23	-3.02
		3695	16QAM	1	0	23.09	21.09	23	-1.91
	F((00			1	49	22.85	20.85	23	-2.15
	56690			25	12	21.49	19.49	23	-3.51
10				50	0	21.72	19.72	23	-3.28
10				1	0	21.56	19.56	23	-3.44
	55200	2555	640 004	1	49	21.48	19.48	23	-3.52
	55290	3555	64QAM	25	12	20.45	18.45	23	-4.55
				50	0	20.49	18.49	23	-4.51
				1	0	22.07	20.07	23	-2.93
	55990	3625	64QAM	1	49	22.04	20.04	23	-2.96
	55770	3025	04QAW	25	12	21.06	19.06	23	-3.94
				50	0	21.04	19.04	23	-3.96
				1	0	21.80	19.80	23	-3.2
	56690	3695	64QAM	1	49	21.71	19.71	23	-3.29
	50090	3075	04QAIVI	25	12	20.74	18.74	23	-4.26
				50	0	20.63	18.63	23	-4.37
				1	0	18.61	16.61	23	-6.39
	55290	3555	256QAM	1	49	18.34	16.34	23	-6.66
	00270	0000	200021111	25	12	18.67	16.67	23	-6.33
				50	0	18.72	16.72	23	-6.28
				1	0	18.22	16.22	23	-6.78
	55990	3625	256QAM	1	49	18.26	16.26	23	-6.74
		3025	200 27 111	25	12	18.26	16.26	23	-6.74
				50	0	18.41	16.41	23	-6.59
				1	0	18.68	16.68	23	-6.32
	56690	3695	256QAM	1	49	18.95	16.95	23	-6.05
				25	12	18.77	16.77	23	-6.23
				50	0	18.86	16.86	23	-6.14

Antenna gain (dBi) -2

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A

Antenna ga	ain (dBi)	-2							
			LTE Band 4	8_Uplink free	quency	band : 3550 to	3700 MHz		
BW	UL	Frequency		RB	RB	Conducted	EIRP	EIRP	Margin
(MHz)	Channel	(MHz)	Modulation	Size	Offset	Average	Average	Limit	(dBm/10MHz)
(2)	onanio	(					(dBm/10MHz)		
				1	0	24.33	22.33	23	-0.67
	55315	3557.5	QPSK	1	74	24.50	22.50	23	-0.50
				36	18	23.69	21.69	23	-1.31
				75	0	22.43	20.43	23	-2.57
				1	0	24.92	22.92	23	-0.08
	55990	3625	QPSK	1	74	24.53	22.53	23	-0.47
				36	18	23.82	21.82	23	-1.18
				75	0	22.52	20.52	23	-2.48
				1	0	24.91	22.91	23	-0.09
	56665	3692.5	QPSK	1	74	24.16	22.16	23	-0.84
	00000	0072.0	QI OK	36	18	24.08	22.08	23	-0.92
				75	0	22.74	20.74	23	-2.26
				1	0	24.04	22.04	23	-0.96
	55315	3557.5	16QAM	1	74	24.01	22.01	23	-0.99
	55515	5557.5	IUCAN	36	18	22.74	20.74	23	-2.26
				75	0	21.47	19.47	23	-3.53
				1	0	23.76	21.76	23	-1.24
	55990	3625	16QAM	1	74	23.73	21.73	23	-1.27
	22440			36	18	22.82	20.82	23	-2.18
				75	0	21.64	19.64	23	-3.36
		3692.5	16QAM	1	0	23.58	21.58	23	-1.42
	56665			1	74	23.57	21.57	23	-1.43
	00000			36	18	23.20	21.20	23	-1.80
15				75	0	21.78	19.78	23	-3.22
15				1	0	22.23	20.23	23	-2.77
	55215		(10 414	1	74	23.00	21.00	23	-2.00
	55315	3557.5	64QAM	36	18	21.79	19.79	23	-3.21
				75	0	20.40	18.40	23	-4.60
				1	0	22.81	20.81	23	-2.19
		0.05	(10.11)	1	74	22.84	20.84	23	-2.16
	55990	3625	64QAM	36	18	21.91	19.91	23	-3.09
				75	0	20.38	18.38	23	-4.62
				1	0	22.22	20.22	23	-2.78
	F///F	2 ( 02 F	(10.004	1	74	22.68	20.68	23	-2.32
	56665	3692.5	64QAM	36	18	22.33	20.33	23	-2.67
				75	0	20.91	18.91	23	-4.09
				1	0	18.56	16.56	23	-6.44
				1	74	18.49	16.49	23	-6.51
	55315	3557.5	256QAM	36	18	18.59	16.59	23	-6.41
				75	0	18.62	16.62	23	-6.38
				1	0	18.29	16.29	23	-6.71
				1	74	18.51	16.51	23	-6.49
	55990	3625	256QAM	36	18	18.50	16.50	23	-6.50
				75	0	18.48	16.48	23	-6.52
				1	0	18.75	16.75	23	-6.25
				1	74	19.17	17.17	23	-5.83
	56665	3692.5	256QAM	36	18	19.09	17.09	23	-5.91
				75	0	18.88	16.88	23	-6.12
L			15	U	10.00	10.00	٤J	-0.12	

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Antenna g	ain (abi)	-2	LTE Band 48	Uplink fre	aneucv	band : 3550 to	3700 MHz		
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted	EIRP Average	EIRP Limit (dBm/10MHz)	Margin (dBm/10MHz)
				1	0	24.49	22.49	23	-0.51
	55340	3560	QPSK	1	99	24.47	22.47	23	-0.53
	00040	3500	QI OK	50	25	23.39	21.39	23	-1.61
				100	0	21.19	19.19	23	-3.81
				1	0	24.62	22.62	23	-0.38
	55990	3625	QPSK	1	99	24.57	22.57	23	-0.43
	55770	3023	QI OK	50	25	23.70	21.70	23	-1.30
				100	0	21.35	19.35	23	-3.65
				1	0	24.54	22.54	23	-0.46
	56640	3690	QPSK	1	99	24.51	22.51	23	-0.49
	50040	30 70	QFSK	50	25	23.53	21.53	23	-1.47
				100	0	21.12	19.12	23	-3.88
				1	0	23.76	21.76	23	-1.24
	EE240	25 ( 0	1/ 0 4 14	1	99	23.85	21.85	23	-1.15
	55340	3560	16QAM	50	25	22.43	20.43	23	-2.57
				100	0	20.17	18.17	23	-4.83
		3625	16QAM	1	0	23.79	21.79	23	-1.21
	55000			1	99	23.70	21.70	23	-1.30
	55990			50	25	22.74	20.74	23	-2.26
				100	0	20.27	18.27	23	-4.73
			16QAM	1	0	23.80	21.80	23	-1.20
		3690		1	99	23.77	21.77	23	-1.23
	56640			50	25	22.52	20.52	23	-2.48
				100	0	24.09	22.09	23	-0.91
20		3560		1	0	22.66	20.66	23	-2.34
			-	1	99	23.02	21.02	23	-1.98
	55340		64QAM	50	25	21.33	19.33	23	-3.67
				100	0	19.08	17.08	23	-5.92
		3625		1	0	22.81	20.81	23	-2.19
			-	1	99	22.93	20.93	23	-2.07
	55990		64QAM	50	25	21.74	19.74	23	-3.26
			-	100	0	19.39	17.39	23	-5.61
				1	0	22.68	20.68	23	-2.32
				1	99	22.76	20.76	23	-2.24
	56640	3690	64QAM	50	25	21.55	19.55	23	-3.45
				100	0	19.06	17.06	23	-5.94
				1	0	18.72	16.72	23	-6.28
				1	99	18.43	16.43	23	-6.57
	55340	3560	256QAM	50	25	18.74	16.74	23	-6.26
			-	100	0	18.74	16.74	23	-6.29
				100	0	18.33	16.33	23	-6.67
			ŀ	1	99	18.47	16.33	23	-6.53
	55990	3625	256QAM	50	25	18.53	16.47	23	-6.33
				100	25 0	18.53	16.53	23	-6.47
				100	1	18.52		23	
			ŀ		0		16.24		-6.76
	56640	3690	256QAM	1	99 25	18.31	16.31	23	-6.69
				50	25	18.32	16.32	23	-6.68
				100	0	18.38	16.38	23	-6.62

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# 7. MAXIMUM POWER DENSITY MEASUREMENT

## 7.1. Standard Applicable

FCC §2.1046 & 96.41

- (a) FCC 96.41(a) Digital modulation. Systems operating in the Citizens Broadband Radio Service must use digital modulation techniques.
- (b) FCC 96.41(b) Power limits. Unless otherwise specified in this section, the maximum effective iso tropic radiated power (EIRP) of any CBSD and End User Device must comply with the limits shown in the table in this paragraph (b):

Device	Maximum PSD (dBm/MHz)			
End User Device	n/a			
Category A CBSD	20			
Category B CBSD <sup>1</sup>	37			

Category B CBSDs will only be authorized for use after an ESC is approved and commercially deployed consistent with §§96.15 and 96.67.

- (c) Power management. CBSDs and End User Devices shall limit their operating power to the minimum necessary for successful operations
  - (1) CBSDs must support transmit power control capability and the capability to limit their maximum EIRP and the maximum EIRP of associated End User Devices in response to instructions from an SAS.
  - (2) End User Devices shall include transmit power control capability and the capability to limit their maximum EIRP in response to instructions from their associated CBSDs.

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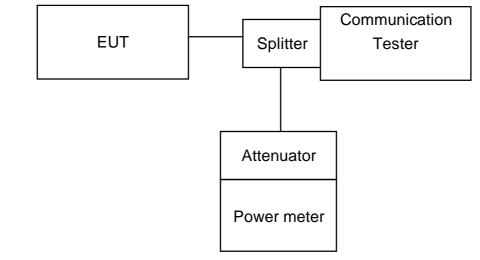
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# 7.2. Test Set-up



Note: Measurement setup for testing on Antenna connector

# 7.3. Measurement Procedure

- 1. Set instrument center frequency to OBW center frequency.
- 2. Set span to at least 1.5 times the OBW.
- 3. Set the RBW to the specified reference bandwidth (often 1 MHz).
- 4. Set VBW  $\geq$  3 × RBW.
- 5. Detector = RMS (power averaging).
- 6. Ensure that the number of measurement points in the sweep  $\geq 2 \times \text{span/RBW}$ .
- 7. Sweep time = auto couple.
- 8. Employ trace averaging (RMS) mode over a minimum of 100 traces.
- 9. Use the peak marker function to determine the maximum amplitude level within the reference bandwidth (PSD).
- 10. Determine the EIRP by adding the effective antenna gain to the adjusted power level.

# 7.4. Measurement Equipment Used

N/A

# 7.5. Measurement Result

## **Peak Power Density Results:**

## N/A, this is an End user device.

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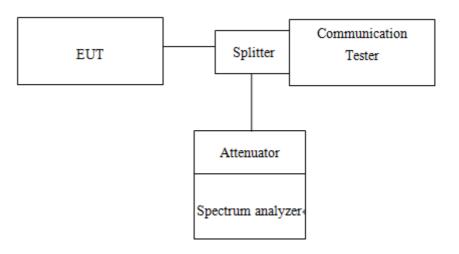
# 8. OCCUPIED BANDWIDTH MEASUREMENT

## 8.1. Standard Applicable

FCC Part 2.1049(h)

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power.

## 8.2. Test Set-up



## 8.3. Measurement Procedure

## 99% &26dB Bandwidth with detector peak

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW= 3 times RBW, -26dBc display line was placed on the screen (or 26dB bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace. Then set RBW to 99% bandwidth, RBW= 1%, VBW= 3 RBW, with span > 2 \* Signal BW, set % Power = 99%.

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## 8.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUM- BER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Ana- lyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020
Radio Commu- nication Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020
Attenuator	Marvelous	MVE2213-10	RF30	11/20/2019	11/19/2020
DC Block	PASTERNACK	PE8210	RF32	11/20/2019	11/19/2020
Splitter	Woken	DOM35LW1A2	RF83	11/20/2019	11/19/2020
Coaxial Cables	Woken	00100A1F1A185C	RF229	11/20/2019	11/19/2020

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/17/2020	03/16/2021

Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.

# 8.5. Measurement Result

	LTE BAND 48 Channel bandwidth: 5MHz												
Freq.	СН		99% B\	N (MHz)			26 dB B	W (MHz)					
(MHz)	СП	QPSK	QPSK 16QAM 64QAM 256QAM QPSK 16QAM 64QA										
3552.5	56765	4.5348	4.5035	4.4968	4.5669	4.969	4.854	4.930	7.255				
3625.0	55990	4.5134	4.5052	4.5031	4.4907	4.902	5.013	4.901	6.167				
3697.5	58215	4.4977	4977 <b>4.5177 4.5197</b> 4.4850 4.748 4.851 4.895 4.885										

LTE BAND 48 Channel bandwidth: 10MHz													
Freq.	СН	99% BW (MHz) 26 dB BW (MHz)											
(MHz)	Сп	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM				
3555.0	55290	9.0583	9.0627	9.0342	9.8718	18.600	20.0000	14.580	14.870				
3625.0	55990	8.9956	9.0397	9.0098	8.9771	9.491	9.8270	12.320	12.960				
3695.0	56690	8.9948	9.0236	9.0095	8.9703	9.542	10.6800	9.579	9.644				

	LTE BAND 48 Channel bandwidth: 15MHz										LTE BAND 48 Channel bandwidth: 20MHz									
Freq.	СН		99% BV	V (MHz)			26 dB BW (MHz)				Freq.	СН		99% BV	V (MHz)			26 dB l	BW (MHz)	
(MHz)	Сп	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM		(MHz)	Сп	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
3557.5	55315	13.504	13.582	13.475	13.609	14.280	14.300	14.410	22.040		3650.0	55340	18.017	18.044	18.039	19.302	35.690	36.050	35.950	29.460
3625.0	55990	13.468	13.509	13.474	13.498	14.540	14.140	14.320	19.080	ſ	3625.0	55990	17.927	17.953	17.986	18.066	19.090	19.340	19.140	29.280
3692.5	56665	13.470	13.417	13.425	13.486	14.200	14.530	14.630	14.300		3690.0	56640	17.944	17.885	17.999	17.959	19.080	19.520	23.060	19.400

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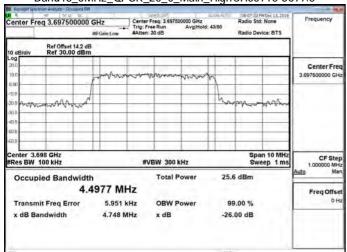
## Band48\_5MHz\_QPSK\_25\_0\_Main\_LowCH55265-3552.5

Center Freq	3.5525000		Hz FGain:Low	Center Fr Trig: Fre #Atten: 3	Frequency						
10 dB/div	Ref Offset 14. Ref 30.00 d		1	1.1							
20.0 10.0		1	mana		mm	ania	~				Center Freq 3.552500000 GHz
100 Jan-1-	mm	w.						him	mm	mm	
-30.0								-			
-60.0 Center 3,55	3 GHz								Spa	an 10 MHz	05.01-0
#Res BW 10				#VE	300 k	Hz	_			eep 1 ms	CF Step 1.000000 MHz Auto Man
Occupie	ed Bandwi		348 MH	łz	Total P	ower		27.7	dBm		Freg Offset
Transmit x dB Ban	Freq Error dwidth		7.898 k 4.969 M		OBW P x dB	ower			9.00 % 00 dB		0 Hz
wita)								ATARU			

#### Band48\_5MHz\_QPSK\_25\_0\_Main\_MidCH55990-3625

Center Freq 3.62500	0000 GHz #FGain:Low	Center Trig: F #Atter	Frequency					
10 dB/div Ref 30.0							1	
200	howwo		mura	nan an	~			Center Freq 3.62500000 GHz
100 300	mod				700	man	rommore	
-40.0 -40.0		-						
GEO Center 3.625 GHz						Sna	an 10 MHz	1
#Res BW 100 kHz		#	VBW 300 k	Hz			eep 1 ms	CF Step 1.000000 MHz
Occupied Band	width		Total P	ower	26.	0 dBm		Auto Man
	4.5134 N	IHz						Freq Offset
Transmit Freq Err	or -36	1 Hz	OBW P	ower	9	9.00 %		0 Hz
x dB Bandwidth	4.902	MHz	x dB		-26	8b 00.		
(10)					AYAR	n.		

### Band48\_5MHz\_QPSK\_25\_0\_Main\_HighCH56715-3697.5



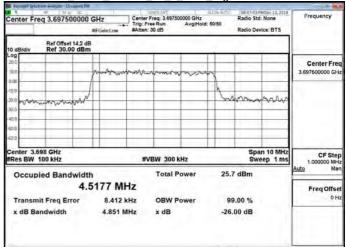
### Band48\_5MHz\_16QAM\_25\_0\_Main\_LowCH55265-3552.5

Keynigill Spectrum Analyze - Dico	append GW		1.0	CHARLEN T	-	A108			PMDec 13, 2019	
Center Freq 3.55250		lz Gain:Low	Center Freq: 3.552500000 GHz Trig: Free Run Avg/Hold: 50/50						None vice: BTS	Frequency
10 dB/div Ref 30.00			1.1							
20.0	-		-m_br	mmm	man	2				Center Free 3.552500000 GH
000 100	wind					R	-	mm	mm	
40.0						Ħ				
-50.0 -60.0					-				-	
Center 3.553 GHz #Res BW 100 kHz		-	#V	BW 300 k	Hz				eep 1 ms	CF Step 1.000000 MH
Occupied Bandy	width			Total P	ower		28.3	dBm		Auto Mar
	4.50	35 MH	łz							Freq Offse
Transmit Freq Erro	or	9.508 k	Hz	OBW P	ower		99	.00 %		0 Ha
x dB Bandwidth		4.854 M	IHz	x dB			-26.	00 dB		
AND .							ATARO			

### Band48\_5MHz\_16QAM\_25\_0\_Main\_MidCH55990-3625

Faynigilt Spec	from whilly the - Of coursed Bit	Y				
Center Fr	eq 3.625000000	Trig	ter Freq: 3.625000000 GHz ;: Free Run AvgiHo ten: 30 dB	ld: 50/50	Tole 05:18 PMDec 13, 2019 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset 14.2 d Ref 30.00 dBn					
20.0 10.0		harmon	www.www.	m		Center Free 3.625000000 GH
10.0	the way			hus	Mary Mary	
40.0						
-60.0 Center 3.6				11 1	Span 10 MHz	CF Ster
#Res BW	100 kHz	1	#VBW 300 kHz		Sweep 1 ms	1.000000 MH
Occup	ied Bandwidt 4.	h 5052 MHz	Total Power	26.2	dBm	Freq Offse
	nit Freq Error andwidth	18.298 kHz 5.013 MHz	OBW Power x dB	99. -26.0	00 %	он
		1111 C				
000				AYARUS		

### Band48\_5MHz\_16QAM\_25\_0\_Main\_HighCH56715-3697.5



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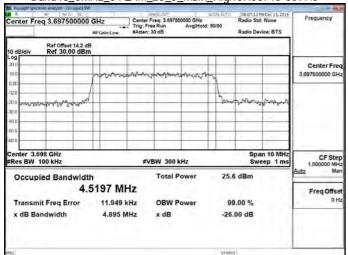
## Band48\_5MHz\_64QAM\_25\_0\_Main\_LowCH55265-3552.5

Center Fre	q 3.5525000		Hz Gain:Low	Center Fr			1044 ALTO 90/50	Radio Std		Frequency
10 dB/div	Ref Offset 14. Ref 30.00 d			12.						
20.0 10.0		~	n marine	man	min	man		-		Center Freq 3.552500000 GHz
	an man Morin	wal					hum	mun	www.mw	
-30 0 40 0 -50 0		+								
-60.0										1
Center 3.55 #Res BW 1		_	-	#VE	W 300 H	Hz			n 10 MHz ep 1 ms	CF Step 1.000000 MHz
Occupi	ed Bandwi		68 MH	١z	Total P	ower	28.3	2 dBm		Auto Man Freg Offset
Transmi x dB Bar	it Freq Error ndwidth		11.024 k 4.930 M		OBW P x dB	ower		9.00 % .00 dB		OH
(66)							ATARU	n -		

### Band48\_5MHz\_64QAM\_25\_0\_Main\_MidCH55990-3625

Famili Famili	Feynest Spottem Anlight - Grouped BW     Annie Autor (00:05:01 PM 04:01, 2019)     Annie Autor (00:05:01 PM 04:01, 2019)										
Center Fre			Hz FGain:Low	Center F	req: 3.62500 e Run	avice: BTS	Frequency				
10 dB/div	Ref Offset 1 Ref 30.00			11							
20.0 10.0 0.00 		1	-	مريضك	1	m	wy	}			Center Fre 3.625000000 GH
200 400 500 500 500	aling have a	byert'						100	(Armon	1 - march	
Center 3.62 #Res BW 1			1	#VI	BW 300 H	KHZ			Sp Sw	an 10 MHz /eep 1 ms	CF Ste 1.000000 MH
Occupi	ed Bandy				Total P	ower		25.9	dBm		Auto Ma
	t Freq Erro ndwidth		6.434 k 4.901 M	Hz	OBW P x dB	ower			9.00 % 00 dB		Freq Offs 0F
(00)								ATARU			

#### Band48\_5MHz\_64QAM\_25\_0\_Main\_HighCH56715-3697.5



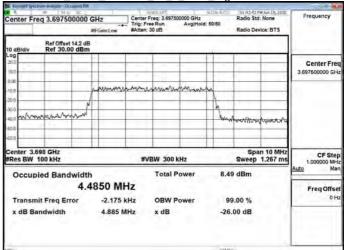
### Band48\_5MHz\_256QAM\_25\_0\_Main\_LowCH55265-3552.5

Keynigilt Spec	thum enables - O(cuped	16W	- 1	0.055.007		ALC: NO.	01-10-44	PM Nun 18, 2820		
	eq 3.55250000	MFGain:Low	Trig: I	Freq: 3.5525 Free Run : 30 dB	AvgiHold		Radio St		Frequency	
10 dB/div	Ref Offset 14.2 Ref 30.00 dE		- 11	2					-	
20.0									Center Free 3.552500000 GH	
-10.0		m	mm	mm	hain	7				
40.0		-4				1	mun	man		
-60,0									1	
Center 3.5 #Res BW			#	VBW 300	kHz			an 10 MHz 1.267 ms	CF Step 1.000000 MH	
Occup	ied Bandwid	dth		Total P	ower	10	3 dBm		Auto Mar	
	4	.5669	MHz						Freq Offse	
Transm	nit Freq Error	-33.17	8 kHz	OBW P	ower	9	9.00 %		0 H	
x dB Ba	andwidth	7.25	5 MHz	x dB		-26	8.00 dB			
100						AYAO	0			

#### Band48\_5MHz\_256QAM\_25\_0\_Main\_MidCH55990-3625

Center Fre	q 3.625000000		Freq: 3.625000000 G	Hz Hold: 50/50	Radio Std	M Jun 18, 2020 I None	Frequency
	C.A. COMPANY S		: 30 dB	1010. 00100	Radio Dev	ice: BTS	
10 dB/div	Ref Offset 14.2 dB Ref 30.00 dBm						
20.0							Center Fre 3.625000000 GH
10.0		management	mmm	min			
40.0 40.0	MaryManuel			Man			
-60.0							
Center 3.62 #Res BW 1			VBW 300 kHz			n 10 MHz 1.267 ms	CF Ste 1.000000 MH
Occupi	ed Bandwidth		Total Power	8.1	0 dBm		Auto Mar
	4.4	1907 MHz					Freq Offse
Transmi	it Freq Error	-946 Hz	OBW Power	99	9.00 %		OH
x dB Ba	ndwidth	6.167 MHz	x dB	-26.	8b 00.		
who i				ATAO	1		

### Band48\_5MHz\_256QAM\_25\_0\_Main\_HighCH56715-3697.5



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### Band48\_10MHz\_QPSK\_50\_0\_Main\_LowCH55290-3555

Center Fre	Center Freq 3.555000000 GHz Trig: Free Run AvgiHold: 50:60 #FGaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #Gaint.cow #AugiHold: 50:60 Radio Device: BTS											
10 dB/div	Ref Offset 14: Ref 30.00 d											
20.0		1	prosma	t-streets	handama	hand	-			Center Freq 3.55500000 GHz		
10.0 -10.0	and the second s	w					land		www.			
-30.0		-										
-50.0												
Center 3.55 #Res BW 2			_	#VE	3W 620 k	Hz			n 20 MHz ep 1 ms	CF Step 2.000000 MHz		
Occupi	ed Bandwi		583 MI	łz	Total P	ower	27.8	3 dBm		Auto Man Freg Offset		
Transmi x dB Bar	t Freq Error	15.706 H 18.60 N	Hz	OBW P x dB	ower		9.00 % 00 dB		0 Hz			
w86)							AYARU	i)				

### Band48\_10MHz\_QPSK\_50\_0\_Main\_MidCH55990-3625

Center Freq	3.625000000	GHz #FGain:Low	Center F			47/50	Radio St	PHDec 13, 2019 d: None evice: BTS	Frequency
10 dB/div	Ref Offset 14.2 dB Ref 30.00 dBm								
20.0 10.0		hardrochertrar	May Share	of thomas		-			Center Freq 3.62500000 GHz
10.0	monorial					hay	where	manne	
-30.0									
-60.0 Center 3.625	GHz						Sp	an 20 MHz	
#Res BW 200			#VE	BW 620 k	Hz		Sw	veep 1 ms	CF Step 2.000000 MHz
Occupied	Bandwidth	1		Total P	ower	26.	1 dBm		<u>Auto</u> Man
	8.9	9956 MH	Ηz						Freq Offset
Transmit F	Freq Error	4.551	Hz	OBW P	ower	99	9.00 %		0 Hz
x dB Band	width	9.491 N	IHz	x dB		-26.	8b 00.		
1000						STAD			

### Band48 10MHz QPSK 50 0 Main HighCH56690-3695

<b>U</b> 4 (1)	4-Myre - Grouped BW 56 G - BC 3.695000000 (	GHz #FGain:Low	Center F			0/50	Radio St	ENDec 13, 2019 d: None evice: BTS	Frequency
10 dB/div									
200 200	ware and and a strategies with a strategies with a								
100	sourced					tww	minin	warma	
40.0 50.0									
Center 3.695 #Res BW 200			#VI	BW 620 k	Hz	1	Sp Sw	an 20 MHz reep 1 ms	CF Step 2.000000 MH
Occupied	Bandwidth 8.9	948 MH	łz	Total P	ower	25.	9 dBm		Auto Mar Freg Offse
	Freq Error width			OBW Po x dB	ower		9.00 % .00 dB		0 H3
ala)						AYARD	n		

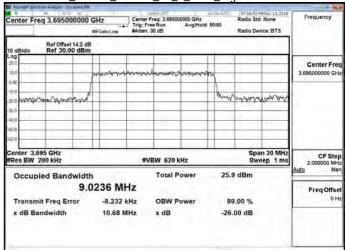
### Band48\_10MHz\_16QAM\_50\_0\_Main\_LowCH55290-3555

	(purp Grander - D)	current GW								
Center Fr	eq 3.55500	20.1.0	in:Low	Center F		GHz giHold:	50/50	Radio De		Frequency
10 dB/div	Ref Offset Ref 30.0			12						Center Freq 3.555000000 GHz
20.0 (0.0			1	malproces	harron and har	1		-		
-10.0	Manunda	an a	ia			her	40 <sup>4</sup> - 10581	Man Mar	an manya	
40.0 -50.0										
Center 3.5 #Res BW				#VE	3W 620 kHz				in 30 MHz eep 1 ms	CF Step 3.000000 MH
Occup	ied Band	width			Total Pow	er	28.	1 dBm		Auto Man
		9.195	6 M	Hz						Freq Offset
	nit Freq En andwidth		-185 22.13 M		% of OBW x dB	Powe		9.00 % .00 dB		0 Hz
witci							AYAO	0a		

### Band48\_10MHz\_16QAM\_50\_0\_Main\_MidCH55990-3625

Feynigill Specia	turn Anklyter - Cite	cupient BW	-	1	100	1	in the second		PM Dec 13, 2019	
Center Fre	aq 3.62500		SHz NFGain:Low	Center F	req: 3.62500 e Run			Radio De	i: None	Frequency
10 dB/div	Ref Offset Ref 30.0		Yes III	11						-
20.0 10.0			-	aling the second	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					Center Fre 3.625000000 GH
20.0	mar war	mat					how	man	Munn	
-50.0										
-600 Center 3.6	25 CU2							En	an 20 MHz	
#Res BW				#VE	BW 620 k	Hz			eep 1 ms	CF Ste 2.000000 MH
Occup	ied Band		397 M	Hz	Total P	ower	25.8	8 dBm		Auto Mar
	it Freq Err Indwidth		6.236 9.827 M	kHz	OBW P	ower		9.00 % .00 dB		OH
which							AYARO	a		_

### Band48\_10MHz\_16QAM\_50\_0\_Main\_HighCH56690-3695



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## Report No.: E2/2019/A0030 Page 26 of 67

## Band48\_10MHz\_64QAM\_50\_0\_Main\_LowCH55290-3555

Center Fred	Center Freq 3.555000000 GHz #FGainLow #GainLow #AugHold: 50:50 #FGainLow											
10 dB/div	Ref Offset 14.2 d Ref 30.00 dBr											
200 200 000		Maruhanan	(Landara)	basinaia	ndrawacano				Center Freq 3.55500000 GHz			
10.0	layone daar-la	ł				mon	Vennoven	Norm-Mat				
-30.0			-			-						
-60.0												
Center 3.55 #Res BW 20			#VE	BW 620 k	Hz			eep 1 ms	CF Step 2.000000 MHz			
Occupie	d Bandwidt 9.	th .0342 MI	Hz	Total P	ower	28.3	2 dBm		Auto Man Freg Offset			
Transmit x dB Ban	Freq Error dwidth	15.646 14.58 M		OBW Po x dB	ower		9.00 % 00 dB		OHz			
witten						AYARO	n)-					

#### Band48\_10MHz\_64QAM\_50\_0\_Main\_MidCH55990-3625

Feynigill Specifi	um énelide · D(cu	percil GW	-	1	WE SWE		NO ALTO			
Center Fre	q 3.625000		iHz IFGain:Low	Center F	req: 3.62500 e Run			Radio S	textoe: 13, 2019 td: None evice: BTS	Frequency Center Freq 3.62500000 GHz
10 dB/div	Ref Offset 1 Ref 30.00			11						
20.0 10.0			and the second second	Providence -	W. Warming	perturbation of the second	4			
10.0 AgAnga	manhage	mut					the	manga	unitation	1
-50.0 -50.0										
Center 3.6				#VE	SW 6201	(Hz	1	Sp	an 20 MHz veep 1 ms	CF Step 2.000000 MHz
Occupi	ed Bandy	vidth	-		Total P	ower	26.	2 dBm		Auto Man
		9.0	098 MI	Ηz						FreqOffset
	it Freq Erro ndwidth		-3.094				99.00 %			0 Hz
х ов ва	nawiath		12.32 N	IHZ	x dB		-20	3.00 dB		
(and							STAT	un		-

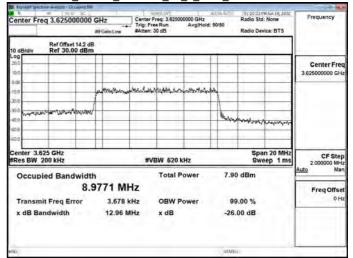
## Band48 10MHz 64QAM 50 0 Main HighCH56690-3695

Center Freq 3.695		GHz #FGain:Low	Center F			30/50	Radio Dev		Frequency
10 dB/div Ref 3									
200 200 000		Center Free 3.695000000 GH							
100 200 RWD What - 100	wayaw					fren	where	(Jay many )	
40.0 50.0								-	_
Center 3.695 GHz #Res BW 200 kHz			#V	BW 6201	kHz	1		n 20 MHz eep 1 ms	CF Ste 2.000000 MH
Occupied Ba		095 MH	łz	Total P	ower	25.6	5 dBm		Auto Ma
Transmit Freq x dB Bandwidt	Error	28.173 k 9.579 M	Hz	OBW P x dB	ower		0.00 % 00 dB		он
(96)						AYARU	n)-		

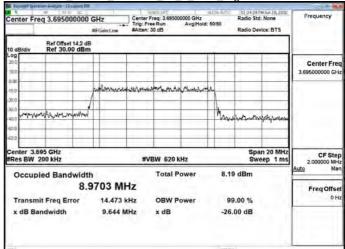
#### Band48\_10MHz\_256QAM\_50\_0\_Main\_LowCH55290-3555

Feynigilt Specif	tram Grander - D(copied	6W		1045-197		ion Auto		PM Jun 18, 2020				
Center Fre	Center Freq 3.555000000 GHz Center Freq 3.555000000 GHz Radio 3td: None #FGalm.Low #Atten: 30 dB Radio 2td: 9000 Radio Device: BTS											
10 dB/div	Ref Offset 14.2 Ref 30.00 dE											
200									Center Free 3.555000000 GH			
-10.0		man				1	-		1			
30.0		w				L	harment	almande				
-50.0												
Center 3.5 #Res BW				VBW 620 k	Hz	-	Sp: Sw	an 20 MHz eep 1 ms	CF Step			
Occup	ied Bandwid	ith		Total P	ower	10.	1 dBm		Auto Mar			
	9	.8718	MHz						Freq Offsel			
	it Freq Error		80 kHz	OBW P	ower	99.00 %			0 Ha			
x dB Ba	indwidth	14.8	7 MHz	x dB		-26	.00 dB					
waci						AYAR	n					

#### Band48\_10MHz\_256QAM\_50\_0\_Main\_MidCH55990-3625



### Band48\_10MHz\_256QAM\_50\_0\_Main\_HighCH56690-3695



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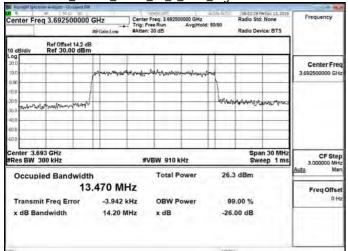
## Band48\_15MHz\_QPSK\_75\_0\_Main\_LowCH55315-3557.5

Feynigill Specia	rem énelőer - D(copert 6W	1	1.00	100 100	1	ion Autor	(an and a	PMDec 13, 2019	
Center Fre	q 3.557500000	GHz #FGain:Low	Center F	req: 3.55750			Radio St		Frequency
10 dB/div	Ref Offset 14.2 de Ref 30.00 dBm								
20.0		indensos	thank the	-	an Anthenica	4			Center Fred 3.557500000 GHz
10.0		1				1			
	-up my and the way	£ ]				Uner	mething	shame	
30.0		1				-	-	-	
40.0				-		+	-	-	
50.0		-	-	-		-	-		
-60.0		11					1	-	
Center 3.5 #Res BW 3			#VI	BW 910 k	Hz			an 30 MHz reep 1 ms	CF Step 3.000000 MHz
Occupi	ied Bandwidt	h		Total P	ower	28	5 dBm		Auto Mar
occupi		.504 M	17						
			12		1.1.1				Freq Offsel
	it Freq Error	68.076		OBW P	ower		9.00 %		
x dB Ba	ndwidth	14.28 M	IHZ	x dB		-26	.00 dB		
45G)						STAD	on .		

### Band48\_15MHz\_QPSK\_75\_0\_Main\_MidCH55990-3625

Center Freq	3.625000000	GHz NFGain:Low	Center Fr	req: 3.62500 e Run 0 dB		100 M.TO	Radio St	PMDec 13, 2019 d: None evice: BTS	Frequency
10 dB/div	Ref Offset 14.2 dB Ref 30.00 dBm		11						
20.0 (0.0		howarenaria	n-m-hillorhi	the second second	ang the state of the	-			Center Freq 3.62500000 GHz
-10.0						har		www.	
300 	ware way to all the stand						1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and Desinder Area	
-50.0					-				
-60.0 Center 3.625 #Res BW 30			#VF	SW 9101	kH7			an 30 MHz reep 1 ms	CF Step
	d Bandwidth	-		Total P		26.	7 dBm	cep this	3.000000 MHz Auto Man
		468 MH	łz						Freq Offset
Transmit	Freq Error	12.573 k	Hz	OBW P	ower	99	99.00 %		0 Hz
x dB Band	dwidth	14.54 M	Hz	x dB		-26.	86 00		
w80)						AYARD	a]-		

#### Band48\_15MHz\_QPSK\_75\_0\_Main\_HighCH56665-3692.5



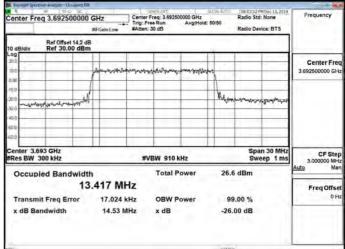
### Band48\_15MHz\_16QAM\_75\_0\_Main\_LowCH55315-3557.5

Feynigill Specifium Analyze - Occupied BW		-	WE SWE		ou Autros		PM Dec 13, 2019	100	
Center Freq 3.557500000	Frequency								
10 dB/div Ref 30.00 dBm									
200	a munduar dan un printing mandel an								
100 -000 -000 -000 -000 -000					here	N-sharanter	www.web		
-30.0									
-60.0									
Center 3.558 GHz #Res BW 300 kHz		#VI	BW 910 k	Hz			an 30 MHz reep 1 ms	CF Step 3.000000 MHz	
Occupied Bandwidth	h		Total P	ower	27.9	9 dBm		Auto Mar	
13	.582 MI	Hz						Freq Offsel	
Transmit Freq Error	7.504	kHz	OBW P	ower	99	9.00 %		0 Ha	
x dB Bandwidth	14.30 N	tHz	x dB		-26.	8b 00.			
M621					ATARO	n [		_	

### Band48\_15MHz\_16QAM\_75\_0\_Main\_MidCH55990-3625

Center Fr	eq 3.62500000	0 GHz #FGain:Low	Center F	req: 3.62500 e Run 30 dB		10% AUTO 5/50	Radio St	ENDec 13, 2019 d: None evice: BTS	Frequency	
10 dB/div										
20.0 10.0		runnana	fich guilloury	- And and and a	and and a stand and a stand of the				Center Free 3.625000000 GH	
0.0	malannontainn	1				Hand	And Annall	Maryhurdy	1	
40.0										
-60.0 Center 3.6	525 GHz						Sn	an 30 MHz		
#Res BW			#VI	BW 910 k	Hz			eep 1 ms	CF Ster 3.000000 MH	
Occup	ied Bandwid	th 3.509 MI	U.7	Total P	ower	26.	9 dBm		Auto Mar	
Transm	ransmit Freq Error -13.598 kHz		100	Contraction of the second second			9.00 %		Freq Offse 0 H	
x dB Ba	andwidth	14.14 M	AHz	x dB		-26.	8b 00.			
(60)						AYARU	a		_	

### Band48\_15MHz\_16QAM\_75\_0\_Main\_HighCH56665-3692.5



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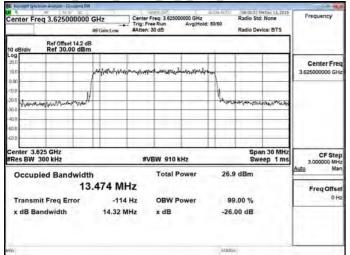
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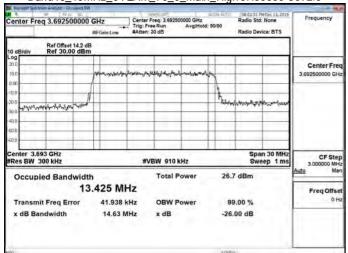
## Band48\_15MHz\_64QAM\_75\_0\_Main\_LowCH55315-3557.5

Feynigill Specia	norm Gradition - Diff content BW		1	vel ant		IN ALTO		PM Dec 13, 2019	
Center Fre	Frequency								
10 dB/div									
200 200 000		nan apana	dunan	ethology	metersulta				Center Freq 3.557500000 GHz
-10.0 -20.0 May 114	washingan					Harm	ungan	minter	
-30.0									
-60.0 Center 3.5	58 GH2						Sni	an 30 MHz	
#Res BW			#VE	3W 910 k	Hz			eep 1 ms	CF Step 3.000000 MHz
Occup	ied Bandwidth 13	.475 MI	Hz	Total P	ower	28.	3 dBm		Auto Man Freg Offset
	it Freq Error ndwidth	9.616 14.41 M		OBW P	ower		9.00 % .00 dB		0H
Miles						aYAM			

### Band48\_15MHz\_64QAM\_75\_0\_Main\_MidCH55990-3625



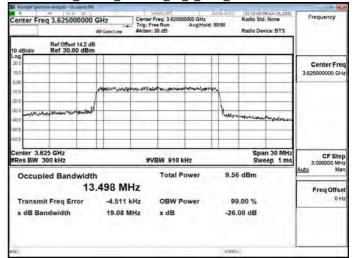
#### Band48\_15MHz\_64QAM\_75\_0\_Main\_HighCH56665-3692.5



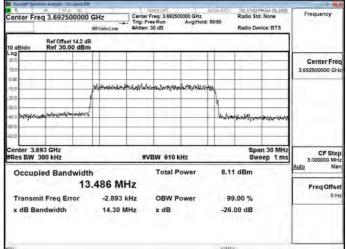
## Band48\_15MHz\_256QAM\_75\_0\_Main\_LowCH55315-3557.5

	ham Grandber - Dice	Argument GW			CARGE CANE		NICH MITC		M.Nun 18, 2020	
Center Fre	Frequency									
Ref Offset 14.2 dB 10 dB/div Ref 30.00 dBm										
20.0										Center Free 3.557500000 GH
-10.0			minimum	and the second s	n	Nenthermore	1			
-30.0	wither	na n					1	-	-	
-60.0										
Center 3.5 #Res BW			_	#V	BW 910)	KHZ		Spa Swe	n 30 MHz 2ep 1 ms	CF Step 3.000000 MH
Occup	ied Band				Total P	ower	10.	5 dBm		Auto Mar
		13.	609 M	Hz						Freq Offsel
Transm	Transmit Freq Error -32.168 kl		kHz	OBW P	ower	99.00 %			0 Ha	
x dB Ba	indwidth		22.04 1	ИНZ	x dB		-26	.00 dB		
waa j							AYAO	0n		-

### Band48\_15MHz\_256QAM\_75\_0\_Main\_MidCH55990-3625



## Band48\_15MHz\_256QAM\_75\_0\_Main\_HighCH56665-3692.5



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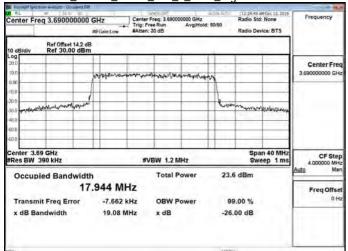
### Band48\_20MHz\_QPSK\_100\_0\_Main\_LowCH55340-3560

Center Fre	q 3.560000		GHz #FGain:Low	Center F			044170 0/50	Radio De		Frequency
Ref Offset 14.2 dB 10 dB/div Ref 30.00 dBm										
200 100			-	yester and the second second	valerine inter	Spanialphon	-			Center Freq 3.56000000 GHz
10.0 -10.0	Warnensky Kryk	stend					Lin	engune.	anteniente	
-30.0										
-50.0										
Center 3.5 #Res BW 3				#VE	3W 1.2 M	Hz			an 40 MHz eep 1 ms	CF Step 4.000000 MHz
Occupi	ied Bandw		017 M	47	Total P	ower	28.4	dBm		Auto Man
	Transmit Freq Error 35.971 k x dB Bandwidth 35.69 N		cHz	Hz OBW Power		99.00 % -26.00 dB			Freq Offset 0 Hz	
webba							STATE	i.		

#### Band48\_20MHz\_QPSK\_100\_0\_Main\_MidCH55990-3625PNG

Center Fre	eq 3.625000000 G	iHz IFGain:Low	Center F			0/50	Radio St	INDec 13, 2019 d: None wice: BTS	Frequency
Ref Offset 14.2 dB 10 dB/div Ref 30.00 dBm									
20.0 10.0		handhalden	janfandiferingen och stateringen la						Center Freq 3.62500000 GHz
000 100 200 - Maryan	ectomy general					have	ar darian	permanipu	
-30 0					-				
-60.0					-			-	
Center 3.6 #Res BW 3			#VI	BW 1.2 MH	Hz			an 40 MHz eep 1 ms	CF Step 4.000000 MHz
Occupi	ied Bandwidth			Total Po	ower	27.	dBm		Auto Man
	17.	927 MI	Ηz						Freq Offset
Transmi	it Freq Error	4.014	cHz	OBW Po	wer	99	.00 %		0 Hz
x dB Ba	ndwidth	19.09 N	IHz	x dB		-26.	8b 00.		
(%G)						aYAO	4		

### Band48\_20MHz\_QPSK\_100\_0\_Main\_HighCH56640-3690



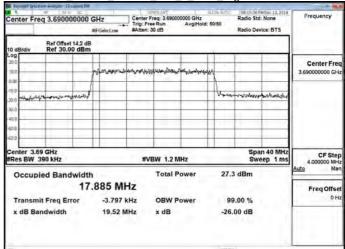
## Band48\_20MHz\_16QAM\_100\_0\_Main\_LowCH55340-3560

Keynigill Spectrum Gradube - D(current BW			100.00		CALIFIC .		MDec 13, 2019	
Center Freq 3.56000000	Frequency							
10 dB/div Ref 30.00 dBm								
20.0	horsection	ant allow	engen wie	y-Meensoly-upo	-			Center Fred 3.56000000 GH
0.00 1000					harris	and states	yanathan	
-30.0								
-50.0								
Center 3.56 GHz #Res BW 390 kHz		#VE	SW 1.2 M	IHz		Spa Sw	eep 1 ms	CF Step 4.000000 MHz
Occupied Bandwidth			Total P	ower	28.4	dBm	Auto Man	
18	.044 MH	Iz						Freq Offset
Transmit Freq Error 39.536 H		Hz	OBW P	ower	99	.00 %		0 Hz
x dB Bandwidth	36.05 M	IHz	x dB		-26.	00 dB		
with:					ATATO			_

#### Band48\_20MHz\_16QAM\_100\_0\_Main\_MidCH55990-3625PNG

Center F	req 3.6250000	00 GHz #FGain:Low	Center F			N\$0	Radio Dev		Frequency
10 dB/div									
200		-	and the second	mentalange	-	1			Center Free 3.625000000 GH
1.1	le reversion (secondered	1				hu	-	wellance in the	
-30.0					_			-	
-60.0	.625 GHz						- Cros	n 40 MHz	
	390 kHz		#VE	SW 1.2 MH2				ep 1 ms	CF Ster 4.000000 MH
Occu	pied Bandwid	ith 7.953 M	Hz	Total Pov	ver	27.	6 dBm		Auto Mar Freg Offse
	Transmit Freq Error 24.473 kł x dB Bandwidth 19.34 Mł		and a second				9.00 % .00 dB		OH
(60)						AYACO	n.		

### Band48\_20MHz\_16QAM\_100\_0\_Main\_HighCH56640-3690



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## Report No.: E2/2019/A0030 Page 30 of 67

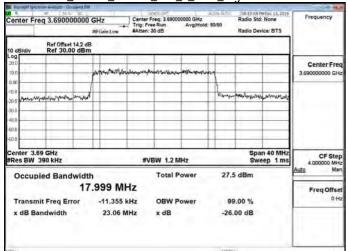
### Band48\_20MHz\_64QAM\_100\_0\_Main\_LowCH55340-3560

Feynigill Specia	nem énaliste - Or(cupert BV	Ý.	1	10.00	1	COLUMN C	Tables Stre	MDec 13, 2019		
Center Fre	nter Freq 3.56000000 GHz #FGalnLow #FGalnLow Center Freq 3.56000000 GHz AvgiHold: 50:50 Radio Std: None Radio Std: None Radio Std: None Radio Std: None									
10 dB/div										
20.0		or and sources	nsymbolik	ownerPorts	man				Center Freq 3.56000000 GHz	
10.00 -10.0 -30.0	uhakarpakrasiaran	1				have		ober martine		
40.0										
-600 Center 3.5	4.04-			_						
#Res BW 3			#VB	W 1.2 M	Hz			eep 1 ms	CF Step 4.000000 MHz	
Occupi	ied Bandwidt	h		Total Po	ower	28.	5 dBm		Auto Man	
	18	3.039 MH	Hz						Freq Offset	
Transmi	it Freq Error	27.704	cHz	OBW Po	ower	99	9.00 %		0 Hz	
x dB Ba	ndwidth	35.95 N	1Hz	x dB		-26.	80 00.			
within						AYARU	n		-	

### Band48\_20MHz\_64QAM\_100\_0\_Main\_MidCH55990-3625PNG

Center Freq 3.62500	Frequency						
10 dB/div Ref 30.00							
200 200 000	printan	sangaran	- Annesdampery	many		-	Center Freq 3.625000000 GHz
10.0 -30.0 martinenerget, martinenerge	man	-			hearings	ntabilition	
40.0							
-60.0							
Center 3.625 GHz #Res BW 390 kHz		#	VBW 1.2 MHz			Span 40 MHz Sweep 1 ms	4.000000 MHz
Occupied Band	width		Total Pow	ər	27.9 dB	3m	Auto Man
	17.986	MHz					Freq Offset
Transmit Freq Err	or 12.39	2 kHz	OBW Powe	er	99.00	%	0 Hz
x dB Bandwidth	19.1	4 MHz	x dB		-26.00	dB	
wita)					ATATON		

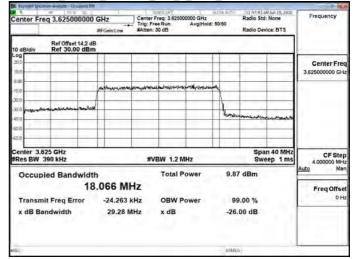
#### Band48\_20MHz\_64QAM\_100\_0\_Main\_HighCH56640-3690



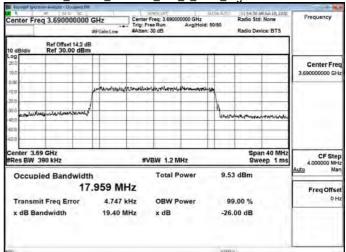
### Band48\_20MHz\_256QAM\_100\_0\_Main\_LowCH55340-3560

Keynigilt Spec	non-Analder O(cope	ni BW			0.000 SMT		MARIN MUTTER		AM fun 18, 2820	
Center Freq 3.56000000 GHz Center Freq: 3.6600000 GHz Radio Std: No IFGeintLow ArgiHold: 50:60 Radio Device: Atten: 30 dB Radio Device:										Frequency
Ref Offset 14.2 dB 10 dB/div Ref 30.00 dBm										
200								-	-	Center Free 3.56000000 GHa
10.0		r	August	hinned	to an an an an an	lapinhamicco	nu			1
300 300 <b>440 00</b> 0-	to a second second	eard	_				tur	-	مار تعاد 100 مارور.	
-50.0									-	
Center 3.5 #Res BW		1	-	#	/BW 1.2 M	AHz			an 40 MHz eep 1 ms	CF Step 4.000000 MHz
Occup	ied Bandwi	dth			Total F	ower	9.0	8 dBm		<u>Auto</u> Man
	100	19.3	02 MI	Ηz						Freq Offset
Transm	ransmit Freq Error -635.82 kHz		kHz	OBW Power			9.00 %		0 Hz	
x dB Ba	andwidth		29.46 N	IHz	x dB		-26	8b 00.		
witica							AYARO	a		_

### Band48\_20MHz\_256QAM\_100\_0\_Main\_MidCH55990-3625PNG



## Band48\_20MHz\_256QAM\_100\_0\_Main\_HighCH56640-3690



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# 9. OUT OF BAND EMISSION AT ANTENNA TERMINALS

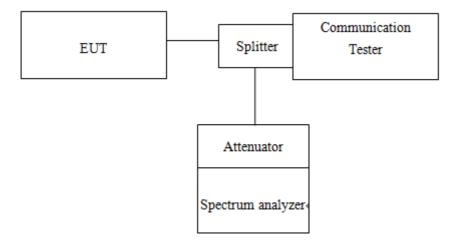
## 9.1. Standard Applicable

## FCC Part 2.1051, Part 96.41, C63.26 Clause 5.7.

For channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed -13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed -25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

For CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

## 9.2. Test SET-UP



## 9.3. Measurement Procedure

## **Conducted Emission**

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

To connect Antenna Port of EUT to Spectrum.

Set RBW = 1MHz & VBW = 1MHz on Spectrum.

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Allow trace to fully stabilize

Repeat above procedures until all default test channel measured were complete.

# **Band Edge**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The band edge of low and high channels for the highest RF powers was measured. Setting RBW  $\geq$  1% EBW.
- 3. Allow trace to fully stabilize
- 4. Repeat above procedures until all default test channel measured were complete.

EQUIPMENT TYPE	MFR	MODEL NUM- BER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020
Radio Communica- tion Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020
Attenuator	Marvelous	MVE2213-10	RF30	11/20/2019	11/19/2020
DC Block	PASTERNACK	PE8210	RF32	11/20/2019	11/19/2020
Splitter	Woken	DOM35LW1A2	RF83	11/20/2019	11/19/2020
Coaxial Cables	Woken	00100A1F1A185C	RF229	11/20/2019	11/19/2020

# 9.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/17/2020	03/16/2021

Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.

# **Measurement Result:**

NOTE: The occurrence of the spike on the conducted emission is the signal of the fundamental emi sion.

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## Report No.: E2/2019/A0030 Page 33 of 67



## **Conducted Emission:**

30MHz~3GHz\_Band48\_5MHz\_QPSK\_1\_0\_LowCH131997-1712.5

1918 0					HELDE SA	trum 4nMyper - Si	sill Spectr	Feyne
Frequency	107-29:10 PM Dec 18, 2019 TRACE 1 2 3 4 5 5 TriPE M WWWWW	Avg Type: Log-Pwr	Free Run	Trio	00000 GHz PNO: Fast	q 1.5150	er Fre	ente
Auto Tune	r1 2.688 2 GHz -44.325 dBm	Mk	1: 20 dB		IFGain:Low	Ref Offset 1		
Center Free	-44.325 dBm		-		dBm	Ref 20.00	div	
								0.0
Start Free 30.000000 MH	1 -000 alter							0.0
Stop Fre 3.00000000 GH	aller als produced	annihrt annan ag	n nonfrancia da	sector	Part of the states	nuk-ymeni	t My server	0.0
CF Ste 297.000000 MH	Span 2.970 GHz 600 ms (1001 pts)	Sweep 3.	Hz	BW 1.0 M	#VB	15 GHz .0 MHz		
<u>Auto</u> Ma	BURGHON WALLER	ON FUNCTION WOTH	dBm	-44.32	2.688 2 GHz	1		
			c soen	1100				23
								5
Freq Offse 0 H								4 5 6 7 8 9 0

#### 3GHz~10GHz\_Band48\_5MHz\_QPSK\_1\_0\_Low CH131997-1712.5

19.14						nepil Sa	trum 4mMyzer - 5	night Speck	
Frequency	45 PM Dec 13, 2019 TRACE 1 2 3 4 5 5		Type: Log-Pw	Av	Trig: Free Ru	000000 GHz	eq 11.500	ter Fre	Cen
Auto Tune	0.658 GHz		-		#Atten: 20 dB	IFGain:Low 4.4 dB	Ref Offset		10 di
Center Freq 11.50000000 GHz							Rel 20.00	1	100 0.00
Start Freq 3.000000000 GHz	-40.00 alies				3	m2			-10.0 -20.0 -30.0 -40.0
Stop Freq 20.000000000 GHz	(Destinited Action)	-	a solid contraction	interestante	Neuwinjenistra	and and and	en Alinstel	al which a la	-50.0 -50.0 70.0
CF Step 1.70000000 GHz	an 17.00 GHz ns (1001 pts)	Sp 28.33	Sweep	1	W 1.0 MHz	#VB	500 GHz 1.0 MHz		
<u>Auto</u> Man	References -	10111	EGRETONWO	RUNCTION	23.88 dBm -48.19 dBm	3.544 GHz 7.105 GHz		N N	1 2
Freq Offset 0 Hz			_	-	46.19 dBm 45.38 dBm	10.658 GHz	ł		4
									6 7 8 9 10
	C,	ratua	) AYA		- ×. · ·			-	•C

## 30MHz~3GHz\_Band48\_5MHz\_QPSK\_1\_0\_MidCH132322-1745

	claum Anklyper	Swept SA								
enter Fr	req 1.515	5000000 GHz		- Laboration	Run		e: Log-Pwr	TRAC	MDec 13, 2019 CE 1 2 3 4 5 5 FE MWWWWW	Frequency
		IFGal	:Fast	#Atten: 20	) dB	-		0	ET P NNNNN	Auto Tune
0 dB/div	Ref Offset Ref 20.0						Mk		4 4 GHz 93 dBm	Autorun
10 0					_					Center Fre
0.00										1.515000000 GH
0.0	-	_	_							
0.0							-			Start Fre
0.0	_					-	-			30.000000 MH
0.0		+		+ +		-			-40.001	
0.0	LANY IN	NUT OF BARRA	WANT	ALCONO VIEW	holes for	the stand	4.9.9.94	Nolle PH	4444	Stop Fre
50.0	1.0		-							3.00000000 GH
11			-	1.00			· · · · ·		-	
enter 1.4 Res BW	515 GHz 1.0 MHz		#VB	N 1.0 MHz			Sweep 3		2.970 GHz (1001 pts)	CF Ste 297.000000 MH
THE REAL PROPERTY.		x		Y		CTION FUR				Auto Ma
	1	2,964.4 (	SHZ	-44.593 dB	m	-				
3 4						-				Freq Offse
5			+		-					UF
7 8			=		+-					
9			-		-		_			
11							_		-	
			-	_			ATATO	1	1	

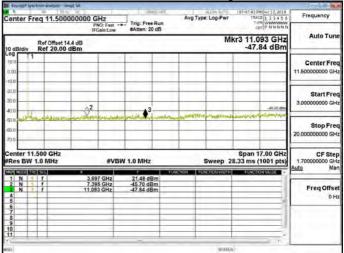
### 3GHz~10GHz\_Band48\_5MHz\_QPSK\_1\_0\_MidCH132322-1745

Expligit Spectrum Analyzer Sine	nul SA	-4465-347	2124 4070	07-45:50 PM Dec 13, 2019	1-14 <b>6</b>
Center Freq 11.5000	PNO: Fast +4	Trig: Free Run	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Frequency
Ref Offset 14		#Atten: 20 dB	M	46.09 dBm	Auto Tune
-09 1 10 0					Center Free 11.50000000 GH
10.0 20.0 30.0 40.0	0 <sup>2</sup>	3		-40,00 attes	Start Free 3,000000000 GH
530	- Martineter	and the second	In the product of the product of the second s	and the light and the light of	Stop Free 20.000000000 GH
Center 11.500 GHz #Res BW 1.0 MHz	#VBI	W 1.0 MHz		Span 17.00 GHz 3.33 ms (1001 pts)	CF Ster 1.700000000 GH Auto Ma
Marcel File         File           1         N         1           2         N         1           3         N         1           4	3,578 GHz 7,250 GHz 10.875 GHz	24,28 dBm -45,55 dBm -46,09 dBm	NCTION FUNCTION WORK	TURHIQHMALUE -	Freq Offse 0 H:
9 10 11 11		_	avadua		

#### 30MHz~3GHz\_Band48\_5MHz\_QPSK\_1\_0\_HighCH132647-1777.5

Feynesit Se	ectrum dinklyper					2.3
		0000000 GHz	Trig: Free Run	Avg Type: Log-Pwr	107-29:47 PM Dec 18, 2019 TRACE 1 2 3 4 5 5 TVPE M WWWWW DET P N N N N N	Frequency
0 dB/div	Ref Offse Ref 20.0		#Atten: 20 dB	MF	r1 2.723 8 GHz -44.954 dBm	Auto Tune
0 0 1 0 0	_					Center Fre 1.515000000 GH
00 00 00 00					1 1000 alter	Start Fre 30.009000 MH
0.0	Makana	handerson han been been been been been been been be	warralitean verm	and a second	mljongerfalklifin	Stop Fre 3.000000000 GH
Res BW	515 GHz 1.0 MHz		W 1.0 MHz		Span 2.970 GHz .600 ms (1001 pts)	CF Ste 297.000000 MH Auto Ma
	6 f	2.723 8 GHz	-44.954 dBm	UNCTION FUNCTION WOTH	FURCTON WALLS	Freq Offse 0 H
2 3 4 5 6 7 8 9 9 10		-				_
60	-			STAR	1 × 1	

### 3GHz~10GHz\_Band48\_5MHz\_QPSK\_1\_0\_HighCH132647-1777.5



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### 30MHz~3GHz\_Band48\_10MHz\_QPSK\_1\_0\_LowCH132022-1715

Center Free	1.515000	0000 GHz	Trig: Free Run	Avg Type: Log-Pwr	107-26:16 PM Del: 13, 2019 TRACE 1 2 3 4 5 6	Frequency
		PNO: Fast - IFGain:Low	#Atten: 20 dB		DET P NNNN	Auto Tun
10 dB/div	tef Offset 14.4 Ref 20.00 di			M	40.120 dBm	
10 0 0 00						Center Fre 1.515000000 GH
-10.0 -21.0 -30.0		_				Start Fre 30.000000 MH
40.0 50.0 <del>   =</del>	e not the materia	when he was	ut-standiture	yleneyen teleforunt sta	and the second	Stop Fre
Center 1.51: Res BW 3.0		VBV	/ 3.0 MHz	Sweep	Span 2.970 GHz 2.000 ms (1001 pts)	CF Ste 297.000000 MH
		2.982 2 GHz	-40.120 dBm	INCTION FUNCTION WOTH	FUNCTION WALLE	<u>Auto</u> Ma
2 3 4 5	,	2,802 2 972	-40/120 GBm			Freq Offse
6 7 8 9	-	_	-			
10			-			
maj				AYAR	a	

## 3GHz~10GHz\_Band48\_10MHz\_QPSK\_1\_0\_LowCH132022-1715

Exyright Spectrum Galdyper - 5	megil Sa				100 4
Center Freq 11.500	000000 GHz	Trig: Free Run	Avg Type: Log-Pwr	107-46/46 PM Dec 18, 2019 TRACE 1 2 3 4 5 6 Triffe www.www	Frequency
Ref Offset 1 10 dB/diy Ref 20.00	IFGain:Low	#Atten: 20 dB	Mk	r3 10.875 GHz -46.93 dBm	Auto Tun
09 1 100 0 100 0					Center Fre 11.500000000 GF
200 30.0 40.0	0 <sup>2</sup>	▲3		-40.00 attes	Start Fre 3,00000000 GH
50.0	er man and an and an	and the second second of		at an	Stop Fre 20.00000000 GF
Center 11.500 GHz Res BW 1.0 MHz	#VB	V 1.0 MHz	Sweep 28	Span 17.00 GHz .33 ms (1001 pts)	CF Ste 1.700000000 GI Auto M
Average         Filter         Serie           1         N         d         f           2         N         f         d           3         N         f         d           4         f         d         f           5         f         d         d           6         f         f         d           7         d         d         d           8         d         d         d	3.578 GHz 7.250 GHz 10.876 GHz	23.26 dBm -45.15 dBm -46.93 dBm		FUICE CORNALDE	Freq Offs 01
10 11 10			AYARUA		

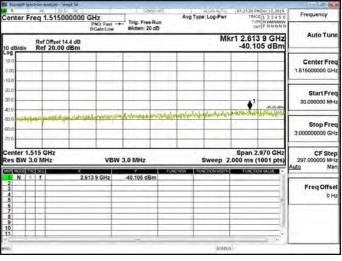
## 30MHz~3GHz\_Band48\_10MHz\_QPSK\_1\_0\_MidCH132322-1745

Feynight Spectrum Analyzer - Sk	rept SA				14
Center Freq 1.5150	00000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr	107-26-36 PM Dec 13, 2019 TRACE 1 2 3 4 5 6 Triffe M WWWWW DET P NNNNN	Frequency
Ref Offset 1	IFGain:Low	#Atten: 20 dB	Mk	r1 2.976 2 GHz -40.241 dBm	Auto Tun
10 0 0.00					Center Fre 1.515000000 GH
10.0 21.0 37.0 				-0.00 40	Start Fre 30.000000 MH
500 00 000	and the state of t	ulanten eristen erie	and and the first state of the	and an a stand of the state of	Stop Fre 3.000000000 GH
Center 1.515 GHz Res BW 3.0 MHz	VBV	V 3.0 MHz		Span 2.970 GHz 000 ms (1001 pts)	CF Ste 297.000000 MH Auto Mi
Cost Runner Fund         Fill           1         N         f           2         -         -           3         -         -           4         -         -           5         -         -           6         -         -           7         -         -           8         -         -           9         -         10           11         -         -	2,976 2 GHz	-40.241 dBm			Freq Offse 0 H
1 N T f 3 4 5 5 6 7 7 8 9	2.976 2 GHz			PROTOCOLOGY INCOME	FreqC

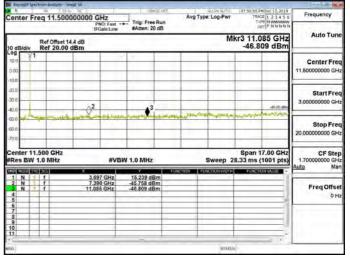
## 3GHz~10GHz\_Band48\_10MHz\_QPSK\_1\_0\_MidCH132322-1745

102-14						pil SA	Gallyzer Sm	Spectrum	yrig (	i fe
Frequency	107 50/89 PM Dec 18, 2019 TRACE 1 2 3 4 5 5 TriFE M WWWWW OPT P NNNN N	Type: Log-Pwr	n	Trig: Free R	Hz NO: Fast -	00000 G	11.5000	Freq	ter	Cen
Auto Tun	47.752 dBm	Mł		#Atten: 20 d	Gein:Low	4 dB	of Offset 14		B/div	
Center Fre 11.500000000 GH								1	Π	100 100
Start Fre 3.000000000 GH	40.00 alles			•3		7.2				10.0 20.0 30.0 40.0
Stop Fre 20.000000000 GH	han ing in particular of the design of	Rollin, period	and and a	etteren it els fars	ANT HALF AND	under	the states	Aug	A.N	50.0 50.0 70.0
CF Ste 1.700000000 GH Auto Ma	Span 17.00 GHz 3.33 ms (1001 pts)	Sweep 2	1	1.0 MHz	#VB		2001110	11.50 N 1.0	s Bl	Re
Freq Offse 0 H			FORCER	23.199 dBm -48.087 dBm -47.762 dBm	4 GHZ 0 GHZ 5 GHZ	7.11			NNN	123456
_				_						7 8 9 10 11
		ATAQUA							-	610

## 30MHz~3GHz\_Band48\_10MHz\_QPSK\_1\_0\_HighCH132622-1775



### 3GHz~10GHz\_Band48\_10MHz\_QPSK\_1\_0\_HighCH132622-1775



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## 30MHz~3GHz\_Band48\_15MHz\_QPSK\_1\_0\_LowCH132047-1717.5

Frequency	E 1 2 3 4 5 5 MWWWWW P NNNNN	TRAC	pe: Log-Pwr	Avg	Trig: Free Run #Atten: 20 dB	00 GHz PNO: Fast	.51500000	Freq 1	enter
Auto Tune	4 9 GHz 70 dBm	-44.6	Mk				Offset 14.4 dB 20.00 dBm		dB/div
Center Fre 1.515000000 GH									
Start Free 30.000000 MH	40.00 450	1						_	00 00 00
Stop Free 3.000000000 GH	Atranal .	- Andrew	- Annes	and highly shake	AND THE PARTY	NAR-AR VERMAN	dra.Antonybro	per now	00 00
CF Ste		.600 ms (	Sweep 3		W 1.0 MHz	#VB		1.515 G N 1.0 M	Res BV
	CONTRACTOR -								1 N
Auto Mar Freq Offse		PORCH			-44,670.dBm	2.414 9 GHz			2 3 4 5
297.00000 MH Auto Mar Freq Offse 0 H:					-44.670 dBm	2,414 9 GHz	3		2 3 4

## 3GHz~10GHz\_Band48\_15MHz\_QPSK\_1\_0\_LowCH132047-1717.5

Keynigill Spectrum Analyzer - S	inepil SA				15.18.6
Center Freq 11.500	PNO: Fast -	Trig: Free Run	Avg Type: Log-Pv		Frequency
Ref Offset 1 10 dB/div Ref 20.00		#Atten: 20 dB		Mkr3 10.673 GHz -43.174 dBm	Auto Tune
100 11 000 000					Center Free 11.500000000 GH
-2019 -3010 -4000	<u>∧2</u>	•3		-40.00.45m	Start Free 3.000000000 GH
-50.0 4 10 10 10 10 10 10 10 10 10 10 10 10 10	and the second second	and a second a second dama second de la	مجدون المست ومودا	aller and a first an and a second	Stop Free 20.000000000 GH
Center 11.500 GHz #Res BW 1.0 MHz	#VB	W 1.0 MHz	Sweep	Span 17.00 GHz 28.33 ms (1001 pts)	CF Ster 1.700000000 GH Auto Ma
M201         M201         FIL           1         N         f           2         N         f           3         N         f           4         f           5         f           6         f           7         g           8         g           9         10           11         11	3.544 GHz 7.115 GHz 10.673 GHz	23.348.dBm -45.288.dBm -43.174.dBm			Freq Offse 0 H:
· i			872	ma	-

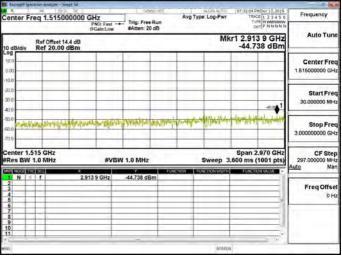
## 30MHz~3GHz\_Band48\_15MHz\_QPSK\_1\_0\_MidCH132322-1745

Keyzigilt Spectrum Analyzer - 5	inepit SA						
Center Freq 1.5150	000000 GHz	52955-310	Avg Type: Log-Pwr	107:31:44 PM Dec 13, 2019 TRACE 1 2 3 4 5 5	Frequency		
	PNO: Fast · IFGain:Low	#Atten: 20 dB		DET P NNNN	Auto Tun		
Ref Offset 14.4 dB Mkr1 2.771 3 GHz o dB/div Ref 20.00 dBm -45.005 dBm							
10 0 0.00					Center Fr 1.515000000 G		
100 310 330				▲1 co.atm	Start Fr 30.000000 M		
SO.0 TIME AND AND AND	and manufacture with	fabriqai danaa kuto sa	and manager and	12 and 12 control of the state			
Center 1.515 GHz Res BW 1.0 MHz		SW 1.0 MHz	Sweep 3	Span 2.970 GHz .600 ms (1001 pts)	3.00000000 G CF St 297.000000 M		
Center 1.515 GHz Res BW 1.0 MHz		SW 1.0 MHz		Span 2.970 GHz .600 ms (1001 pts)	3.00000000 G CF St 297.000000 M Auto M		
500 700 Center 1.515 GHz Res BW 1.0 MHz 700 10 N 4 7 3 A 4 5 6	#VB	SW 1.0 MHz	Sweep 3	Span 2.970 GHz .600 ms (1001 pts)	Stop Fr 3.00000000 G CF St 297.000000 M Auto M Freq Offe 0		
50.0         1111         1111         1111           Center 1.515 GHz         110         1112         1112           Res BW 1.0 MHz         111         1112         1112         1112           I         N         1         1         1         1         1           2         1	#VB	SW 1.0 MHz	Sweep 3	Span 2.970 GHz .600 ms (1001 pts)	3.00000000 G CF St 297.000000 M <u>Auto</u> M Freq Offs		

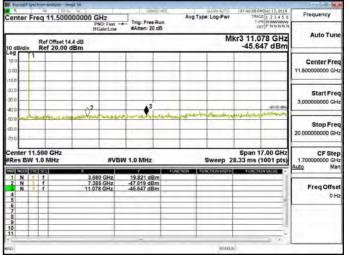
## 3GHz~10GHz\_Band48\_15MHz\_QPSK\_1\_0\_MidCH132322-1745

112.14				SA .	m GnMyzer - Sines	cynigiit Spectr	BE FO		
TRACE 1 2 3 4 5 6 TRACE 1 2 3 4 5 6 THE NWWWW SET P NNNN	e:Loo-Pwr TR	Ave	Trig: Free Run	PNO: Fast +	q 11.5000	nter Fre	Cen		
10.875 GHz Auto Tune	Ref Offset 14.4 dB Mkr3 10.875 GHz 10 dB/div Ref 20.00 dBm -48.389 dBm								
Center Freq 11.500000000 GHz							10.00		
Start Free 3,00000000 GH			•3	^2			-20.0		
Stop Free 20.000000000 GH:	Never North March 1997	wayayais	ly ly had the other state	Marin yo Wala	and the later state	and Tes	50.0 60.0 70.0		
Auto Mar	Sweep 28.33 ms	1	V 1.0 MHz	#VB	0 MHz	nter 11.5 s BW 1.	#Re		
Freq Offse 0 H:	ACTION WOTH	SUMCTION.	22.145 dBm -47.878 dBm -48.389 dBm	3,612 GHz 7,250 GHz 10.875 GHz	1 1 1		1 2 3 4 5 6		
							7 8 9 10 11		
	AYATUN						8 9 10		

## 30MHz~3GHz\_Band48\_15MHz\_QPSK\_1\_0\_HighCH132597-1772.5



### 3GHz~10GHz\_Band48\_15MHz\_QPSK\_1\_0\_HighCH132597-1772.5



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## 30MHz~3GHz\_Band48\_20MHz\_QPSK\_1\_0\_LowCH132072-1720

Center Fred	1.515000000 G	Hz NO: Fast	Trig: Free Run		Log-Pwr	TRAC	#Dec 13, 2019 E 1 2 3 4 5 5 E MWWWWW	Frequency	
Pro Fact								Auto Tune	
10 dB/div R									
100								Center Fre 1.515000000 GH	
20.0			_	-			_	Start Fre	
30.0. 40.0 50.0					1	and a data	<b>♦</b> <sup>1</sup> 100.000	30.000000 MH	
60.0 FT WAT	and the ship of the second	they we will be	and the second second	with a large with the second	NAME OF A	J. Sund.	1.161 E	Stop Fre	
70.0								3.00000000 GH	
Center 1.515 Res BW 1.0	0 MHz	#VBW 1				.600 ms (		CF Ste 297.000000 MH	
Center 1.515 Res BW 1.0	0 MHz	and in such		UNCTION			1001 pts)	CF Ste 297.000000 MH	
Center 1.515 #Res BW 1.0 1 N 1 2 3 4 5	0 MHz	-	Y			.600 ms (	1001 pts)	CF Ste 297.000000 Mr Auto Mi Freq Offsi	
2 3 4 5 6 7 8	0 MHz	-	Y			.600 ms (	1001 pts)	3.00000000 GH CF Ste 297.000000 MH Auto Ma Freq Offse 0 H	
Center 1.515 #Res BW 1.0 1 N 1 2 3 4 5 6 7	0 MHz	-	Y			.600 ms (	1001 pts)	CF Ste 297.000000 MH Auto Ma Freq Offse	

## 3GHz~10GHz\_Band48\_20MHz\_QPSK\_1\_0\_LowCH132072-1720

100 0								HEDI SA	Geolyper - Se	<b>spectro</b>	yne to	
Frequency	E 1 2 3 4 5 5	TRAC	Log-Pwr		Run	141.00	Hz	000000 G	11.500	Fred	ter	Cen
Auto Tune	PHO: Fast								10 48			
Center Fre 11.500000000 GH									1 20.00		-	10.00
Start Fre 3.000000000 GH	-40.00 dim					03		A2		-	A4	20.0
Stop Fre 20.000000000 GH	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ne nameni	يەرەخلەر م	- Participation and	helder with a gent	haller	-	upund hirur	in falments	Pro-d	1	50 0 60.0 70 0
CF Ste 1.70000000 GH Auto Ma		8.33 ms (				V 1.0 MHz	#VB		) GHz MHz	N 1.0	s BV	Re
Freq Offse 0 H		FUncti	-ICAMONA	101 101	im Im	17.689 de -48.048 de -46.223 de -42.557 de	4 GHz 0 GHz 0 GHz 8 GHz	7.12			N N N N	123456
												7 8 9 10 11
		1	STATUS									ma

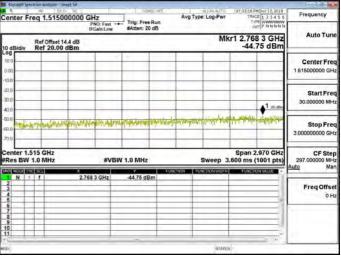
## 30MHz~3GHz\_Band48\_20MHz\_QPSK\_1\_0\_MidCH132322-1745

Feynesit Spectrum a	nallycer - Swept SA				1-1-1-4 <b>6</b>
Center Freq 1	.515000000 GHz PNO: Fast	Trig: Free Run	Avg Type: Log-Pwr	107:32:55 PM Dec 13, 2019 TRACE 1 2 3 4 5 6 Trifle M WWWWW Det P NNNNN	Frequency
10 dB/div Ref	Offset 14.4 dB 20.00 dBm	#Atten: 20 dB	Mk	r1 2.881 2 GHz -44.861 dBm	Auto Tune
100					Center Free 1.515000000 GH
-30.0 -30.0 -30.0				-m_1 a	Start Free 30.000000 MH
-60.0 60.0 (14) = 1////	millionethymetronet	unter a second	phanaliper and little	Million Bar Shapph	Stop Fre 3.00000000 GH
Center 1.515 C #Res BW 1.0 M	AHz #VE	BW 1.0 MHz		Span 2.970 GHz 600 ms (1001 pts)	CF Ste 297.000000 MH Auto Ma
1 N f 2 N f 3 N f 5 6	2,881 2 GHz	-44.861 dBm	ANCTION FUNCTION MIGTH	FUNCTON WALL	Freq Offse 0 H
7 8 9 10 11					
				E F	

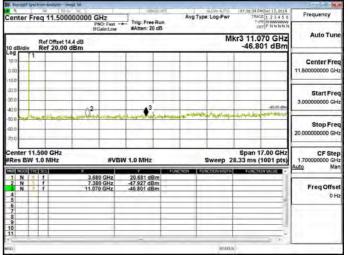
## 3GHz~10GHz\_Band48\_20MHz\_QPSK\_1\_0\_MidCH132322-1745

Keynigill Spectrum Goldyzer - Sin					
Center Freq 11.5000		Trig: Free Run	Avg Type: Log-Pwr	107-37-22 PM Dec 13, 2019 TRACE 1 2 3 4 5 5 THE MWWWW DET P N N N N N	Frequency
Ref Offset 14 10 dB/div Ref 20.00	Auto Tune				
-09 1 100					Center Free 11.500000000 GH
10.0 20.0 37.0 40.0	<u>∧2</u>	A <sup>3</sup>		-40.00 dim	Start Free 3,000000000 GH
530	and the design of the later	and the second	land and the second back	and the second second second	Stop Free 20.000000000 GH
Center 11.500 GHz Res BW 1.0 MHz	#VB	W 1.0 MHz		Span 17.00 GHz 8.33 ms (1001 pts)	CF Step 1.700000000 GH Auto Mar
Margin Haller Been           1         N         f           2         N         f           3         N         f           5	3,612 GHz 7,250 GHz 10,875 GHz	22.168 dBm -47.213 dBm -48.095 dBm	METION FUNCTION WORLD	auneran wanger -	Freq Offse 0 H
9 10 11 11		_	AYATU		

## 30MHz~3GHz\_Band48\_20MHz\_QPSK\_1\_0\_HighCH132572-1770



## 3GHz~10GHz\_Band48\_20MHz\_QPSK\_1\_0\_HighCH132572-1770



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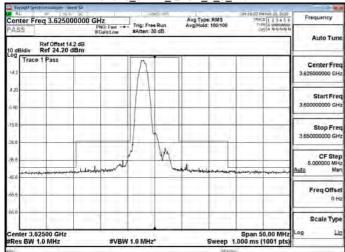
#### Band Edge: Band48 5MHz QPSK 1 0 Low-1

AL AL	req 3.55250	X7.	1 - 5965-307	Avg Type: RMS	04:55 33 PM F46 20, 2020	Frequency	
PASS	req 3.55250	PNO: Fast ++- IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg/Hold: 100/100	CET A TRANSPORT	Auto Tune	
10 dB/div	Ref Offset 14. Ref 30.00 d	2 dB Bm				Auto Tur	
20,0 Trac	e 1 Pass					Center Freq 3 552500000 GHz	
10 A			$ \rangle $			Start Freq 3.527500000 GHz	
100						Stop Free 3.577500000 GH	
30.0		4.7	M			CF Ster 5.000000 MH Auto Mar	
40.0 50.0		earnhamenter	1	Rommontentines		Freq Offse 0 H	
÷00				1		Scale Type	
Center 3. Res BW	55250 GHz 1.0 MHz	#VBW	1.0 MHz*	Sweep	Span 50.00 MHz 1.000 ms (1001 pts)	Log Lin	
ein.				AYAON	H.		

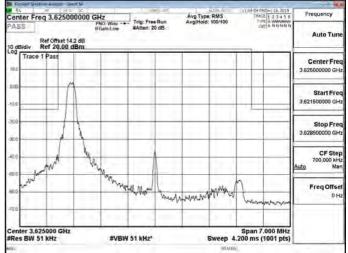
#### Band48\_5MHz\_QPSK\_1\_0\_Low-2

Ferring IT Specificant and des Swept SA				
Center Freg 3.552500000 GH	2	Avp Type RMS	105.12 PMD+: 16, 2019 TRACE 1 2 3 4 5 6	Frequency
PASS PI Ref Offset 14.2 dB 10 dB/div Ref 20.00 dBm	0: Wide - Trig: Free Run Sein-Low #Atten: 20 dB	AvgiHold; 100/100	DELA MAGAN	Auto Tune
Trace 1 Pass				Center Free 3 552500000 GH
.100				Start Free 3,549000000 GH
- 005- 0.00				Stop Free 3.556000000 GH
100 Mary Mary	sn A			CF Stej 700,000 kH Auto Mar
200	underwood the	MARINAM	Monthematic	Freq Offse 0 H
Center 3.552500 GHz #Res BW 51 kHz	#VBW 51 kH2*	S	pan 7.000 MHz ) ms (1001 pts)	

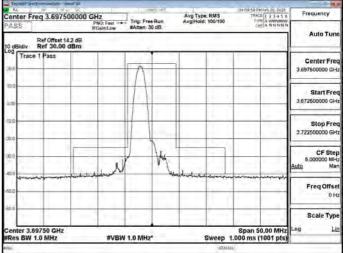
#### Band48\_5MHz\_QPSK\_1\_0\_Mid-1



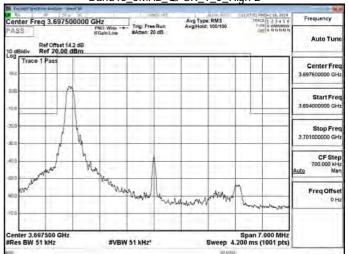
#### Band48\_5MHz\_QPSK\_1\_0\_Mid-2



#### Band48\_5MHz\_QPSK\_1\_0\_High-1



#### Band48\_5MHz\_QPSK\_1\_0\_High-2



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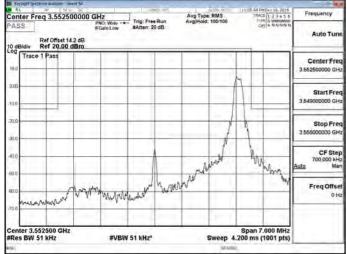
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### Band48\_5MHz\_QPSK\_1\_24\_Low-1

PC: Fast +++ Trig: Free R sain:Low #Atten: 30 c		Der A WORKIN	Auto Tune Center Freq
		1-1-1	Center Freq
		· · · · · · · · · · · · · · · · · · ·	3.552500000 GHz
			Start Freq 3.527600000 GHz
			Stop Freq 3.577500000 GHz
May	Y.		CF Step 5.000000 MH; Auto Mar
whent		home when and	Freq Offse 0 Ha
#VBW 10 MH2*	Swaan	Span 50.00 MHz	Scale Type
	#VBW 1.0 MH2*	#VBW 1.0 MHz* Sweep	span 50.00 MHz

### Band48\_5MHz\_QPSK\_1\_24\_Low-2



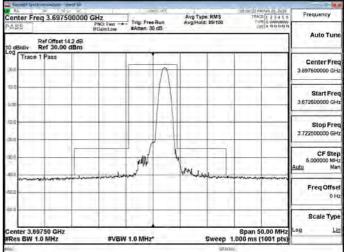
#### Band48 5MHz QPSK 1 24 Mid-1

AL .	1981 W	PNO: Fast +++	Trig: Free Ru	Avg T Avg H	ype: RMS old: 100/100	04:16 10 PM Fe6 20, 2020 TRACE 1 2 3 4 5 6 THE A WAYNEY	Frequency
ASS 0 dB/div	Ref Offset 14.2 Ref 24.20 dE	IFGain:Low dB	#Atten: 30 dB	a - 1933		OSTIA NNNNN	Auto Tune
00	e 1 Pass		1	$\gamma$			Center Fre 3.625000000 GH
5.00							Start Fre 3,50000000 GH
158			1				Stop Fre 3.650000000 GH
35.B		er-cat-furt-month	M	well.	manne		CF Ste 5.000000 Mi Auto Ma
45.8 55.9				-			Freq Offso 0 F
ton	62500 GHz				1.1	Spap 50 00 MHz	Scale Typ
	62500 GHz 1.0 MHz	#VBW	1.0 MHz*		Sweep 1	Span 50.00 MHz .000 ms (1001 pts)	Log

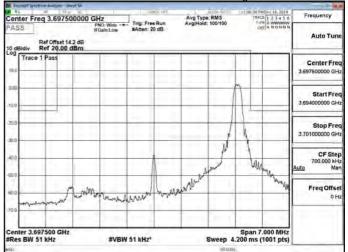
#### Band48\_5MHz\_QPSK\_1\_24\_Mid-2



#### Band48\_5MHz\_QPSK\_1\_24\_High-1



#### Band48\_5MHz\_QPSK\_1\_24\_High-2



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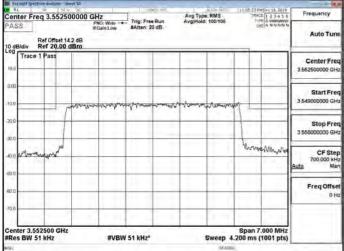
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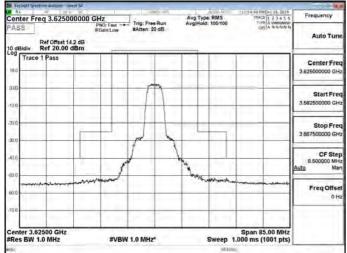
## Band48\_5MHz\_QPSK\_25\_0\_Low-1

Center F	reg 3.5525	00000 GH	-Iz	A Second Second	e=101	Avg Typ	e: RMS	1111-51 PMDec 16, 2019 TRACE 1 2 3 4 5 6	Frequency
PASS	Ref Offset 14 Ref 20.00	P IF	NO: Fast -+ Gain:Low	#Atten: 2	Run ) dB	AvgiHold	1: 100/100	GET & WANTER	Auto Tune
og Trac	e 1 Pass								Center Free 3.552500000 GH
10.0				ſ	1				Start Free 3.510000000 GH
0.0		É		m	by		F		Stop Fre 3.595000000 GH
40.0			sent for	d	1	2			CF Step 8.500000 MH Auto Mar
800 Line	المعرجوم <sub>ا</sub> متال المرجو	annesser a				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Anthogication		Freq Offse 0 H
70.6			1	-	-				
Center 3. Res BW	5250 GHz 1.0 MHz		#VBW	1.0 MHz	1.1		Sweep 1	Span 85.00 MHz ,000 ms (1001 pts)	

## Band48\_5MHz\_QPSK\_25\_0\_Low-2



#### Band48\_5MHz\_QPSK\_25\_0\_Mid-1

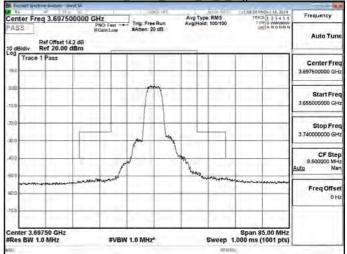


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#### Band48\_5MHz\_QPSK\_25\_0\_Mid-2

Contor D	reg 3.625	00000	O CHT		1011-29	Avp Type	RMS	11:00-3% P	MDec 16, 2019	Frequency
PASS			PNO: Wide -	Trig: Fre #Atten: 2	e Run 0 dB	AvgiHold	100/100	20	E A WWWWWW	Auto Tune
0 dB/div	Ref Offset Ref 20.0			_				_		1
10,0 Trac	e 1 Pass	-								Center Free 3.625000000 GH
10.0		14 000		maria	and and		Halmantina			Start Fre 3,621500000 GH
20.0						******	Street, Mar	1		Stop Fre 3.628500000 GH
40.0	mant							here	and the	CF Ste 700.000 kH Auto Ma
80.0	_									Freq Offse
70.0							1.11		2.2	
Center 3 Res BW	625000 GH 51 kHz	z	#VB	v 51 kHz*		. 9	Sweep 4.		.000 MHz (1001 pts)	

#### Band48\_5MHz\_QPSK\_25\_0\_High-1



#### Band48\_5MHz\_QPSK\_25\_0\_High-2

Camtar	Freq 3.697	60000	0 CHr	1	95-1KT	Avp Type	PMS	11:0	TRACE 1 2 3 4 5 1	
PASS	ried 2.0a1	50000	PNO: Wide -	Trig: Fre		AvgiHold	100/100		DIFE A WWWWW	
10 dB/div	Ref Offset Ref 20.0		IFGain:Low	antier: 2	V UD.				- and they	Auto Tune
Tra	ce 1 Pass	-						1		
18.0		+	-	-	-	-	-	-		Center Freq 3.697500000 GHz
	-	-		-			-	-		Start Free
10.0		dur	winner	NA AND M	inthe		www.and	un i		3,694000000 GH
200	- 1	1	VI, A WINCH	Anaton Mi		and drawn		11		-
30.0								11		Stop Free 3.701000000 GHz
	A						1	1	1.0	CF Step
40.0 50.0	mound		111					1	and all all all all all all all all all al	700.000 kHz Auto Mar
20.0	1.	1 2	21 1 2	11.1	1		11.			FreqOffse
111		-		-	-	1		1		0 Ha
80.0										
		-	-	-				-		
	9.697500 Gł V 51 kHz	łz		W 51 kH2*		-			an 7.000 MHz ms (1001 pts	

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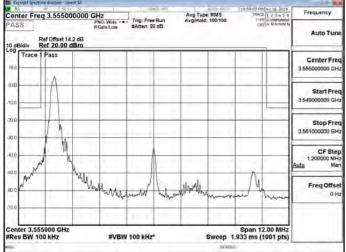
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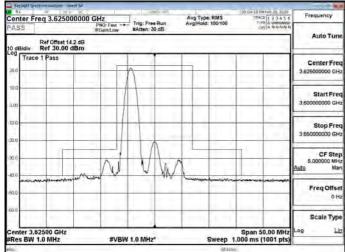
#### Band48\_10MHz\_QPSK\_1\_0\_Low-1

Center Fr	q 3.555000	000 GHz	1000	(S-1)(7)	Avg Type Avg Hold:	RMS	05-01 14 PM F46 20, 2020 TRACE 1 2 3 4 5 6	Frequency
	Ref Offset 14.2		#Atten: 3	0 dB	Avginoid;	100/100	Cet a transfer	Auto Tune
Lod	Ref 30.00 dB 1 Pass	m	h					Center Freq 3.555000000 GHz
10 0 0,00			$\bigwedge$					Start Free 3,53000000 GHz
10.0								Stop Free 3.580000000 GH:
30.0 #5.0		m.A		mr				CF Step 5.000000 MH Auto Mar
50.0	anner	mun u	-	1 de	Imisim	an a		Freq Offse 0 H
£0.0		- 199						Scale Type
Center 3.5 Res BW 1		#VE	W 1.0 MHz	-		Sweep 1	Span 50.00 MHz 1.000 ms (1001 pts)	10 <u>1</u>

## Band48\_10MHz\_QPSK\_1\_0\_Low-2



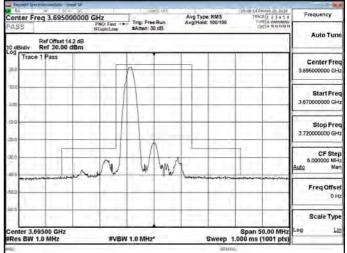
#### Band48\_10MHz\_QPSK\_1\_0\_Mid-1



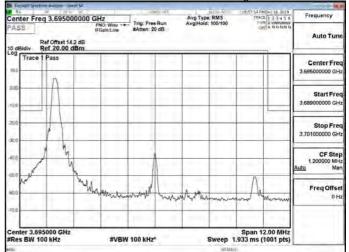
#### Band48\_10MHz\_QPSK\_1\_0\_Mid-2

Center F	reg 3.62500	00000 GH	z	A	(111) est	Avg Type	RMS	11 100 J F PM	123456	Frequency
PASS	Ref Offset 14	2 dB	lO: Wido ↔ iain:Low	#Atten: 2		Avginoid	100/100	0e	a transfer	Auto Tune
00	e 1 Pass									Center Fre 3.625000000 GH
0.0										Start Fre 3,619000000 GF
10	1									Stop Fre 3.631000000 GH
	AW	6								CF Ste 1.200000 Mi Auto Mi
ao M		man	Sharen tu	ment	Love	ANT	Wrome	A	mm	Freq Offs 0 H
enter 3.	625000 GHz 100 kHz		#VBW	100 kHz		1	Sweep 1	Span 12 .933 ms (1	2.00 MHz 1001 pts)	

#### Band48\_10MHz\_QPSK\_1\_0\_High-1



#### Band48\_10MHz\_QPSK\_1\_0\_High-2



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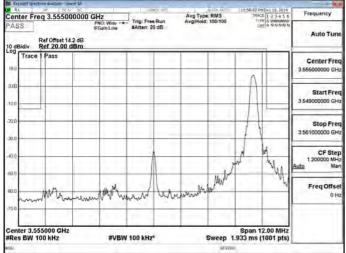
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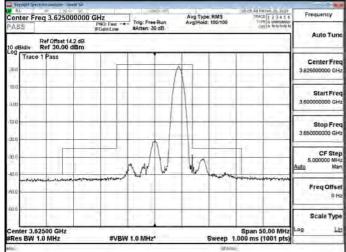
### Band48\_10MHz\_QPSK\_1\_49\_Low-1

Center Freq 3.55500000	0 GHz	Trig: Free Run	Avg Type: RMS Avg Hold: 100/100	05:06:34 PM #46:20,2020 TRACE 1 2 3 4 5 6	Frequency
PASS	IFGain:Low	Atten: 30 dB	Avginola; too too	CET A WHITEH	Auto Tune
Ref Offset 14.2 dB 0 dB/div Ref 30.00 dBm					
Trace 1 Pass					CenterFreq 3.555000000 GHz
10.00					Start Freq 3.530000000 GHz
30.0					Stop Freq 3.580000000 GHz
30.0		Ma			CF Step 5.000000 MH; Auto Mar
	······································	M.	w www.		Freq Offset 0 Hz
£0.0					Scale Type
Center 3.55500 GHz #Res BW 1.0 MHz	#VBW 1.	0 MHz	Sweep 1	Span 50.00 MHz .000 ms (1001 pts)	Log <u>Lin</u>
nu.		ACCOV -	AYAOL		

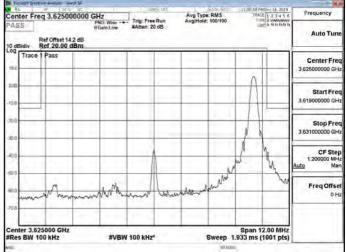
### Band48\_10MHz\_QPSK\_1\_49\_Low-2



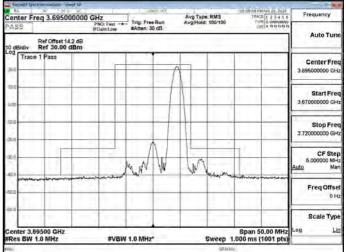
## Band48\_10MHz\_QPSK\_1\_49\_Mid-1



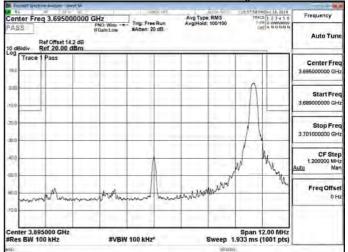
#### Band48\_10MHz\_QPSK\_1\_49\_Mid-2



#### Band48\_10MHz\_QPSK\_1\_49\_High-1



### Band48\_10MHz\_QPSK\_1\_49\_High-2



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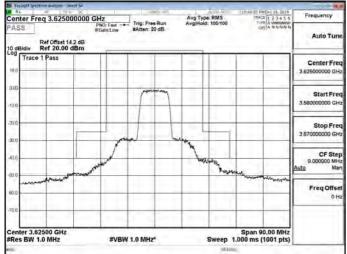
#### Band48\_10MHz\_QPSK\_50\_0\_Low-1

AL IN	SIG X	_	36	-387		ALTON ALTON	10/46/47 PM	Dec 16, 2019	Frequency
Center Freq 3.5	PN	D: Fast -+-	Trig: Free F		Avg Typ	s; 100/100	Prive Prive	1 2 3 4 5 6 A WWWWWW	1114001101
0 dB/div Ref 20	iFG aet 14.2 dB .00 dBm	ain:Low	#Atten: 20 dB			08	livannan	Auto Tune	
Trace 1 Pass		-							Center Free 3.555000000 GH
100			1	tra					Start Free 3,510000000 GH
xiā		- Andrew	~	h	m				Stop Fre 3.60000000 GH
10.0 50.0	Maryan	ent			Jus.	austania			CF Step 9.000000 MH Auto Ma
10.0		-		-	-			Municip	Freq Offse 0 H
70.0 Center 3.55500 G	HZ					1	Span 9	0.00 MHz	
Res BW 1.0 MHz		#VBW 1	.0 MHz*			Sweep 1			
10. ·						#YACO	6		

#### Band48\_10MHz\_QPSK\_50\_0\_Low-2

	(Impinister Se	HTT SA								
Center Fr	reg 3.5550	00000 GH	łz	A	e==1(1)	Avg Typ	RMS	TRA	CE 1 2 3 4 5 6	Frequency
0 dB/div	Ref Offset 14	IFI	NO: Wide + + - Gain: Low	Trig: Free #Atten: 2		AvgiHold	; 100/100		Set a minimum	Auto Tune
Trace	e 1 Pass									Center Free 3.556000000 GH
0.0	1-1-100	monto	-	****	www.	ontre shere		mary		Start Fre 3,549000000 GH
xió xió										Stop Fre 3.561000000 GH
40.0 20.0	yww.N								-ninani-s	CF Ste 1.200000 MH Auto Ma
en o						-			-	Freq Offse 0 H
Center 3.8	555000 GHz		#VBW	100 kHz			Swaan 1		12.00 MHz (1001 pts)	
MACS DAA	100 102		# * Dee	TOO KHZ			aweep 1		(noor pro)	L

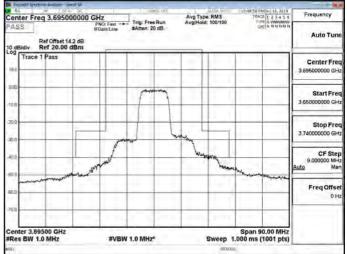
#### Band48\_10MHz\_QPSK\_50\_0\_Mid-1



#### Band48\_10MHz\_QPSK\_50\_0\_Mid-2

3.625000000	PNO: Wido			Avg Type	. eere o	1000	注127455	Frequency
Offset 14.2 dB 20.00 dBm	IFGein:Low	Trig: Free #Atten: 20		AvgiHold;	100/100	20	ET A THIRD IN	Auto Tune
								Center Free 3.625000000 GH
Manna	www.www	mmauri	Two	wormin	man	Anna		Start Fre 3,619000000 GH
								Stop Fre 3.631000000 GH
1						1	wmm	CF Ste 1 200000 MH Auto Ma
							-	Freq Offse 0 H
	-							
	355	200 GHz	00 GHz	200 GHz	00 GHz	00 GHz	200 GHz. #VBW 100 kHz* Sweep 1.933 ms	00 GHz KHz #VBW 100 kHz* Sweep 1.933 ms (1001 pts)

#### Band48\_10MHz\_QPSK\_50\_0\_High-1



#### Band48\_10MHz\_QPSK\_50\_0\_High-2

Center Freq 3.6	6000000 C	Un	1	(S= 90)	Avp Type	PMS	10:56.1	TACE 1 2 3 4 5 6	Frequency
ASS	F	NO: Wide -+-	Trig: Free		Avg Hold			THE A WARNANY	
0 dB/div Ref 20	iet 14.2 dB	Gain:Low	#Atten: 20	0 dB					Auto Tune
Trace 1 Pass			1				1		-
10.0	-					-	-		Center Free 3.695000000 GHz
60.0		-	-	-			-		Start Free
10.0							-		3,689000000 GH:
x10 /*	Mandarthan	www.	human	Man	www.	mayour	MARANY		Stop Free
0.0	-			-			10.1		
									3.701000000 GH
no month								hormour	3.701000000 GH CF Step 1.200000 MH
an kongrand								norman	3.701000000 GH: CF Step 1.200000 MH:
20.0 40.0 40.0 40.0 40.0 20.0								harmeyo	3.701000000 GH CF Step 1.200000 MH <u>Auto</u> Mar Freq Offse

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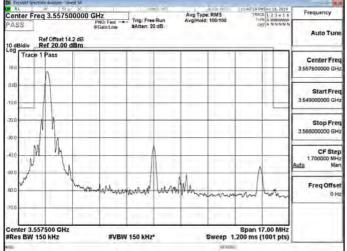
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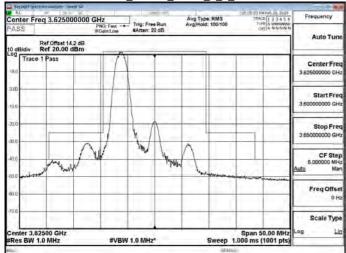
### Band48\_15MHz\_QPSK\_1\_0\_Low-1

	req 3.5575	00000 GI	-Iz	ALC: Y	Run	Avg Typ	d: 100/100	05:14-35 PM Feb 20, 20 TRACE 1 2 3 4	5.6 Frequency
PASS	Ref Offset 1	16	NO: Fast Gain:Low	#Atten: 2	0 dB		u, 100 100	CETA WINK	Auto Tune
0 dB/div	Ref 20.00	dBm	1 75	_					-
180	e 1 Pass		ΗA						Center Free 3.557500000 GHz
10.0									Start Free 3,532500000 GHz
0.0		~		$\left( \right)$					Stop Free 3.582500000 GH2
40.0	Am	44	V	When y	WAR	M			CF Step 5.000000 MH Auto Mar
60.0 0.03						-	manda	Valathan an a	Freq Offset
70.0				11.1			1		Scale Type
Center 3. Res BW	55750 GHz 1.0 MHz		#VBW	1.0 MHz			Sweep	Span 50.00 MH 1.000 ms (1001 pt	tz Log Lin s)
eu.							17100	a.	

## Band48\_15MHz\_QPSK\_1\_0\_Low-2



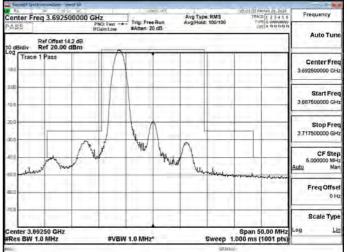
#### Band48\_15MHz\_QPSK\_1\_0\_Mid-1



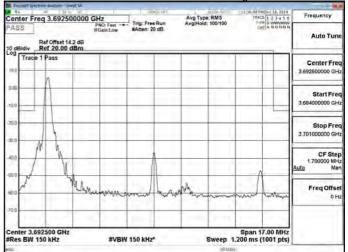
#### Band48\_15MHz\_QPSK\_1\_0\_Mid-2

Center	Frea 3.0	5250000	00 GH	z	La	NS-187	Avg Type	RMS	TRAC	E 1 2 3 4 5 6	Frequency
PASS	Ref Of	fset 14.2 d	Ph IFC	0: Fast ain:Low	Trig: Free #Atten: 2	e Run 0 dB	AvgiHold	100/100	00	EA WWWWW A TIN NON N	Auto Tune
00	ce 1 Pas										Center Fre 3.625000000 GH
10.0	1A										Start Fre 3,616500000 GH
x10 x0.0	1	1					-				Stop Fre 3.633500000 GH
40.0 20.0 - 1 P	f	Y							0		CF Ste 1.700000 MP Auto Ma
VAV 0.08		N.	MAN	many	white	how	Mhan	wome men	-	hullmen	Freq Offse 0 H
	.625000 V 150 kH		- 1	#VBW	150 kHz			Sweep 1		7.00 MHz 1001 pts)	

#### Band48\_15MHz\_QPSK\_1\_0\_High-1



### Band48\_15MHz\_QPSK\_1\_0\_High-2



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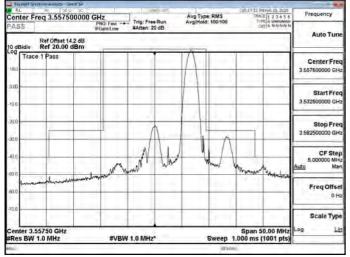
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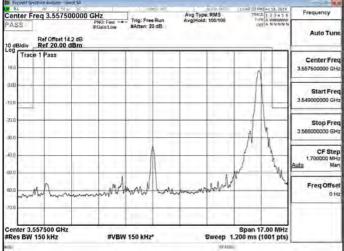
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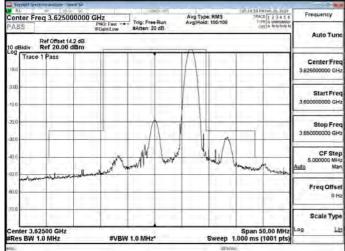
### Band48\_15MHz\_QPSK\_1\_74\_Low-1



## Band48\_15MHz\_QPSK\_1\_74\_Low-2



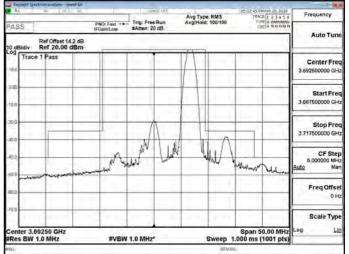
#### Band48\_15MHz\_QPSK\_1\_74\_Mid-1



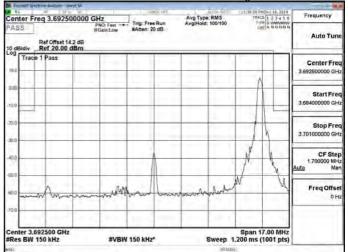
#### Band48\_15MHz\_QPSK\_1\_74\_Mid-2

Center Freq 3.625000	000 GHz	10000-000	Avg Type: RMS	11 92 10 PM Dec 16, 201 TRACE 1 2 3 4 5	6 Frequency
Ref Offset 14.2	PNO: Fast -+ IFGain:Low dB	Trig: Free Run #Atten: 20 dB	AvgiHold; 100/100	Ger A WAYNAW	Auto Tune
Trace 1 Pass				0	Center Fre 3.625000000 GH
0.00					Start Fre 3,616500000 GH
20.0					Stop Fre 3,633500000 GH
40.0		A			CF Ste 1.700000 MH Auto Ma
60.0 minuter hours	mandigut	fred from	and minder	N	Freq Offse
Center 3.625000 GHz #Res BW 150 kHz	#VPM	150 kHz*	Swaan 1	Span 17.00 MH 200 ms (1001 pts	

#### Band48\_15MHz\_QPSK\_1\_74\_High-1



#### Band48\_15MHz\_QPSK\_1\_74\_High-2



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#### Band48\_15MHz\_QPSK\_75\_0\_Low-1

Feyniget Spectrum was	BATE SHITT SA								
Center Freq 3.5	557500000 GH	Iz	1		Avp Type		TRAC	Dec 16, 2019	Frequency
PASS Ref Of Ref 2	p	NO: Fast Gain:Low	Trig: Free R #Atten: 20 d		AvgiHold	100/100	OK OK	A THIN FLOW IN	Auto Tune
Trace 1 Pas	s								Center Fre 3.557600000 GH
10.0			/*********	rat-sty					Start Fre 3.510000000 GH
20.0				1	-		1		Stop Fre 3.605000000 GH
40.0	rearing	por and				Low	with .		CF Ste 9.500000 MH Auto Ma
50.0 50.0	*			-				anna garan	Freq Offse 0 H
Center 3.55750			-			1		5.00 MHz	
#Res BW 1.0 MH	łz	#VBW	1.0 MHz*		1	and the second second	1.000 ms (	1001 pts)	
ALC: LOUIS						#YAO	11		

#### Band48\_15MHz\_QPSK\_75\_0\_Low-2

Feynesit Spectromakes	ACT SHITT SA							
Center Freq 3.	557500000	GHz		Avp Type		TRAC	Dec 16, 2019	
10 dB/dly Ref 2	ffset 14.2 dB 20.00 dBm	PNO: Fast -+-	Trig: Free Run #Atten: 20 dB	AvgiHold;	100/100	08	ANNON	Auto Tune
Trace 1 Pas	55							Center Free 3.557600000 GH:
10.0	mound	o service and a service and	manna	mannan	withhar who	mar and the		Start Free 3,549000000 GH
20.0								Stop Fre 3.566000000 GH
400 000 N							frond	CF Step 1.700000 MH Auto Mar
80.0							-	Freq Offse 0 H
-70.0			-		-			
Center 3.557500 #Res BW 150 kl		#VBW	150 kHz*		Sweep 1	Span 1 200 ms (	7.00 MHz 1001 pts)	
MID.					STATIO			

#### Band48\_15MHz\_QPSK\_75\_0\_Mid-1

enter Freg 3.625000000 G	Hz	Avg T	ype:RMS	11:10-30 PMD+: 16, 2019 TRACE 1 2 3 4 5 6	Frequency
ASS Ref Offset 14.2 dB 0 dB/div Ref 20.00 dBm	WO: Fast Trig: Fn Gain: Low #Atten:		old: 100/100	Ger A WAYNAWA	Auto Tune
Trace 1 Pass					Center Free 3.625000000 GH
000		many			Start Fre 3,577500000 GH
xiù					Stop Fre 3.672500000 GH
00	manne	prineterity	1		CF Ste 9.500000 MH Auto Ma
				Mensionimas.	Freq Offse
70.0	1.00				
Center 3.62500 GHz Res BW 1.0 MHz	#VBW 1.0 MH	z*		Span 95.00 MHz 00 ms (1001 pts)	

#### Band48\_15MHz\_QPSK\_75\_0\_Mid-2

Feyielt S	releven deuter Seener	<b>5</b> 4	SNI5-187	ALTON AUTO	11-91 (17 PMDec 16, 2019	
	reg 3.625000	000 GHz	August 6	Avp Type: RMS	TRACE 1 2 3 4 5 6	Frequency
PASS	Ref Offset 14.2 d	PNC: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	AvgiHold; 100/100	Get A NAVANA	Auto Tune
10 dB/div	Ref 20.00 dB	m				
10.0	be 1 Pass					Center Free 3.625000000 GH
-19.0						Start Free 3.616500000 GH
700	mon	marmin	whenthe	and a second second	hupowy -	Stop Free 3.633500000 GH
-30.0						CF Ste
-50.0			1		Marrow	1.700000 MH Auto Mar
80.0	-	_				Freq Offse 0 H
-70.0						
	.625000 GHz 1 150 kHz	#VBW	150 kHz*	Sweep 1	Span 17.00 MHz 1,200 ms (1001 pts)	
aniti i				#YAO	1	

#### Band48\_15MHz\_QPSK\_75\_0\_High-1



#### Band48\_15MHz\_QPSK\_75\_0\_High-2

		0.000-11(1)	Avg Type: RMS	11:00.10 PM Dec 16, 203 TRACE 1 2 3 4 5	
Center Freq 3.692500000	PNO: Fast -+-	Trig: Free Run	AvgiHold: 100/100	DITE A WWWW	<sup>2</sup>
Ref Offset 14.2 dB 0 dB/div Ref 20.00 dBm	IFGain:Low	#Atten: 20 dB		and a second	Auto Tune
Trace 1 Pass	1			1	1
10.0		-			Center Freq 3.692500000 GHz
000	-				Start Free
10.0 muntheman	man	montanterio	minim	munnin	3,684000000 GHz
20.0					Stop Free 3.701000000 GH
					CF Step
50.0 Marine				Henry	1.700000 MH: Auto Mar
0.0					Freq Offse
70.0				1	
Center 3.692500 GHz Res BW 150 kHz		50 kHz*	Swaan	Span 17.00 MH 1.200 ms (1001 pts	

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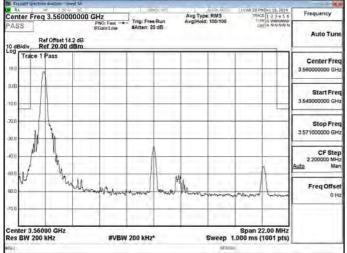
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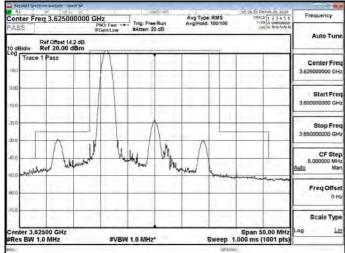
### Band48\_20MHz\_QPSK\_1\_0\_Low-1

Center Freq 3.560000000	GHZ	Trig: Free Run	Avg Type: RMS Avg Hold: 100/100	105-24 74 PM F46 20, 2020 TRACE 1 2 7 4 5 6	Frequency
PASS Ref Offset 14.2 dB	IFGain:Low	#Atten: 20 dB		OST A NUMBER	Auto Tune
O dB/div Ref 20.00 dBm	A	1			CenterFree
10.0	$\left( \right)$				3.56000000 GH
10.0					Start Free 3.535000000 GHz
		$\land$			Stop Free 3.585000000 GH
an pelannung behand	/ H,	man Why	A.		CF Step 5.000000 MH Auto Mar
500			Were Suterny	hermon	Freq Offse 0 H
70.0		1.1	1		Scale Type
Center 3.56000 GHz Res BW 1.0 MHz	#VBW	1.0 MHz'	Sweep	Span 50.00 MHz .000 ms (1001 pts)	Log <u>Lir</u>

### Band48\_20MHz\_QPSK\_1\_0\_Low-2



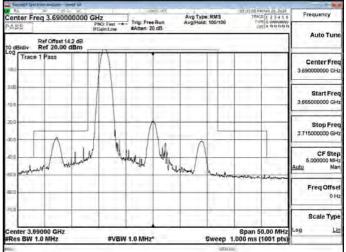
## Band48\_20MHz\_QPSK\_1\_0\_Mid-1



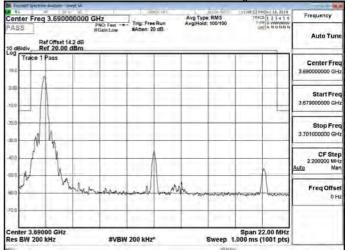
#### Band48\_20MHz\_QPSK\_1\_0\_Mid-2

Center Freq 3.625000000	GHz	Avg Type: RMS	11144-45 PMD+: 16, 2019 TRACE 1 2 3 4 5 6	Frequency
PASS Ref Offset 14.2 dB Ref 20.00 dBm	PND: Fast Trig: Free Run IFGain:Low #Atten: 20 dB	AvgiHold; 100/100	CET A WANNAWA	Auto Tune
Trace 1 Pass				Center Fre 3.625000000 GH
10.0				Start Fre 3,614000000 GH
x10				Stop Fre 3.636000000 GH
			h	CF Ste 2.200000 Mi Auto Ma
eno William	mound with hour	Murrowanter	and have	Freq Offsi 0 F
Center 3.62500 GHz Res BW 200 kHz	#VBW 200 kHz*	Sweep 1	Span 22.00 MHz .000 ms (1001 pts)	

#### Band48\_20MHz\_QPSK\_1\_0\_High-1



#### Band48\_20MHz\_QPSK\_1\_0\_High-2



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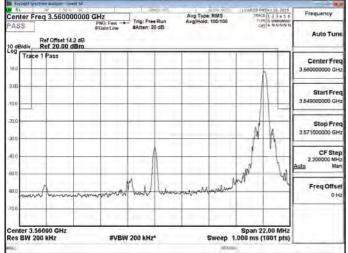
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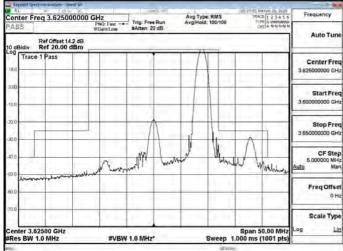
#### Band48\_20MHz\_QPSK\_1\_99\_Low-1

Center Freg 3.56000000	) GHz		Avg Type: RMS	05 29 76 PM F46 20, 2020	Frequency
PASS	PNO: Fast +++	Trig: Free Run #Atten: 20 dB	AvgiHold: 100/100	OFT A TRADUCT	Auto Tune
Ref Offset 14.2 dB Ref 20.00 dBm					Auto Tulie
Trace 1 Pass			+A+		Center Freq 3.56000000 GHz
.10.0					Start Free 3,535000000 GHz
20.0		$\wedge$			Stop Free 3.585000000 GH2
100	num	Ale	up the	ul minum	CF Step 5.000000 MH Auto Mar
and a more dense of the second					Freq Offse 0 Ha
70 0					Scale Type
Center 3.56000 GHz #Res BW 1.0 MHz	#VBW	1.0 MHz*	Sweep	Span 50.00 MHz 1.000 ms (1001 pts)	Log <u>Lin</u>

### Band48\_20MHz\_QPSK\_1\_99\_Low-2



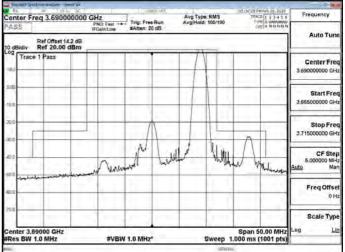
## Band48\_20MHz\_QPSK\_1\_99\_Mid-1



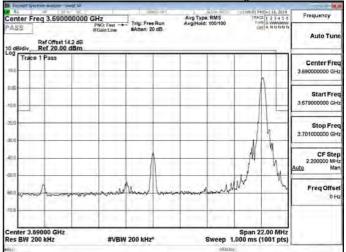
#### Band48\_20MHz\_QPSK\_1\_99\_Mid-2

Iz NO: First Trig: Free Gain: Love #Atten: 20		4; 100/100	OET		Auto Tune
					-
			0	-	Center Free 3.625000000 GH
					Start Fre 3,614000000 GH
			1		Stop Fre 3.636000000 GH
			f	A L	CF Ste 2.200000 Mi Auto Ma
man	human	Cantering	w	V	Freq Offso 0 F
			morth and an another when the	۲۰۲۵ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰ ۲۰۰۰	*VEW 200 kHz* Sweep 1.000 ms (1001 pts)

#### Band48\_20MHz\_QPSK\_1\_99\_High-1



#### Band48\_20MHz\_QPSK\_1\_99\_High-2



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#### Band48\_20MHz\_QPSK\_100\_0\_Low-1

Keyvisill Spectrum Analytics Swept SA					
Center Freq 3.5600000	0 GHz	Trig: Free Run	Avg Type RMS Avg Hold: 100/100	TRACE 1 2 3 4 5 6	
PASS Ref Offset 14.2 dB Ref 20.00 dBm	PNO: Fast	#Atten: 20 dB	Arginou, for the	Get A WHITE A	Auto Tune
Trace 1 Pass					Center Free 3.560000000 GH
10.0.		,			Start Fre 3,510000000 GH
20.0	Anna		ter some ting		Stop Free 3.610000000 GH
40.0			74	and the second states and	CF Stej 10.000000 MH Auto Mar
0.0		-			Freq Offse
Center 3.56000 GHz	#VBW	200 kHz*	Sween	Span 100.0 MHz 1,000 ms (1001 pts)	
what is a store that it is a sto	and the		ava.	and an international second second second	-

#### Band48\_20MHz\_QPSK\_100\_0\_Low-2

Feynesit Spectrum wheelder Swept SA					
Center Freq 3.5600000	DO GHZ	0000-000	Avg Type: RMS	11:97 10 PM Dec 16, 2019 TRACE 1 2 3 4 5 6	Frequency
PASS Ref Offset 142 dt Ref 20.00 dBro	PNO: Fast IFGain:Low	Trig: Free Run #Atten: 20 dB	AvgiHold; 100/100	Get A WHYNYN	Auto Tune
Trace 1 Pass					Center Fre 3.56000000 GH
10.0	m	14/1 mark mark	allynn len wrahla	uning	Start Fre 3,549000000 GH
xid /					Stop Fre 3.571000000 GH
40.0 40.0				Margary	CF Ste 2.200000 MH Auto Ma
80.0					Freq Offse 0 H
-70.0		1	100		
Center 3.56000 GHz Res BW 200 kHz	#VBW	200 kHz*	Sweep	Span 22.00 MHz 1.000 ms (1001 pts)	
Million			#YAG	11	

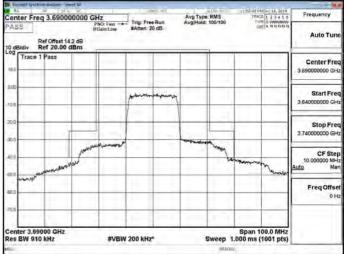
#### Band48\_20MHz\_QPSK\_100\_0\_Mid-1

Center Freq 3.6250	00000 GHz	See 187)	Avg Type: RMS	11:54-21 PM Dec 16, 2019 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 14 0 dB/div Ref 20.00	PNO: Fast IFGain:Low	#Atten: 20 dB	AvgiHold; 100/100	Ger A WHITEH	Auto Tune
Trace 1 Pass					Center Free 3.625000000 GHa
00		monter			Start Free 3,575000000 GH:
00					Stop Fre 3.675000000 GH
10.0	and marking areas		marine way	and the second and second	CF Ster 10.000000 MH Auto Mar
60.0					Freq Offse 0 H
70 0 Center 3.62500 GHz		1-1-1		Span 100.0 MHz	
Res BW 910 kHz	#VB	V 200 kHz*	Sweep	1.000 ms (1001 pts)	

#### Band48\_20MHz\_QPSK\_100\_0\_Mid-2

	+ 20 PMD+; 16, 2019	ALC: NOT				ter Swept SA	Spectrum de	Fayiel
Frequency	Avp Type: RMS TRACE 1 2 3 4 5		Freq 3.625000000 GHz					
Auto Tune	Get A WHITE A	Trig: Free Run AvgiHoid; 100/100 Triel Av #Atten: 20 dB		ASS PNO: Fast +- IFGainLow Ref Offset 14.2 dB Ref 20.00 dBm				
Center Fred 3.625000000 GHz							ice 1 Pa	d
Start Free 3,614000000 GH:	Mine	an frank an		-	warm	-	-	0
Stop Free 3.636000000 GH							1	0
CF Step 2.200000 MH Auto Mar	has						-M	0
Freq Offse 0 H								0
	an 22.00 MHz ms (1001 pts)	Swaan 1		200 kHz*	#VBW		3.62500 200 kH	
-	ma (1901 prs)	arAma		LON MILL	#VDIV		200 80	- 511

#### Band48\_20MHz\_QPSK\_100\_0\_High-1



#### Band48\_20MHz\_QPSK\_100\_0\_High-2

AL.	2 C00000		0065-500	Avg Type: RMS	1114747 PMDec 16, 2019 TRACE 1 2 3 4 5 6	Frequency
	Freq 3.690000	PNO: Fast -	Trig: Free Run	AvgiHold: 100/100	TITE A WWWWWW	1.0462.04
0 dB/div	Ref Offset 14.2 Ref 20.00 df	IFGain:Low	#Atten: 20 dB		OST A MANAGA	Auto Tune
00	ce 1 Pass		T	1		
10.0		-				Center Free 3.69000000 GH
0.00						Start Free
10.0	Annon	monoria	manus	- Anonal manual	Kinning -	3,679000000 GH
210	1				are and	Stop Fre
30.0						3.701000000 GH
100	N				herry	CF Ste
50.0						2.200000 MH Auto Ma
1		1 1 1 1	112 12 12 12 13	2 1 1 2 1	1211	FregOffse
0.06						OH
70.0						
	.69000 GHz	#VB	N 200 kHz*	Swaan 1	Span 22.00 MHz .000 ms (1001 pts)	
100 011	200 1112	110	1 200 Milz	arAm	and the second	

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# **10. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT**

#### 10.1. **Standard Applicable**

FCC Part 2.1053, Part 96.41, C63.26 Clause 5.7

- within 0 MHz to 10 MHz above and below the assigned channel ≤ -13 dBm/MHz 1.
- 2. greater than 10 MHz above and below the assigned channel ≤ -25 dBm/MHz
- any emission below 3530 MHz and above 3720 MHz ≤ -40 dBm/MHz 3.

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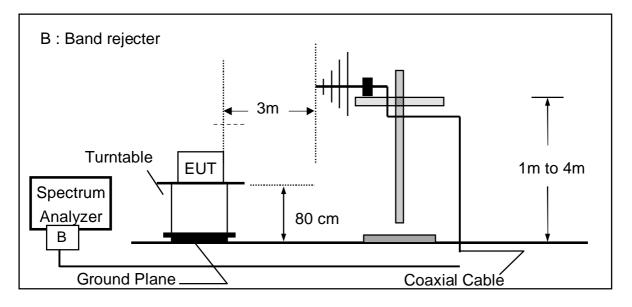
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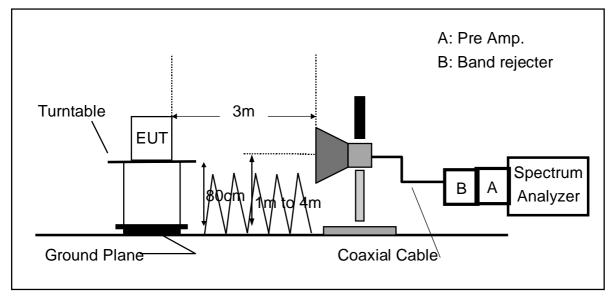


# 10.2. EUT Setup

Radiated Emission Test Set-Up, Frequency Below 1000MHz



Radiated Emission Test Set-UP Frequency Over 1 GHz



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## **10.3.** Measurement Procedure:

The EUT was placed on a non-conductive; the measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequencies (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

ERP (dBm) = SG Level(dBm) + Antenna Gain(dBd) + Cable Loss(dB)

EIRP (dBm) = SG Level(dBm) + Antenna Gain(dBi) + Cable Loss(dB)

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#### **Measurement Equipment Used:** 10.4.

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUM- BER	LAST CAL.	CAL DUE.
Broadband An- tenna	TESEQ	CBL 6112D	35240	09/09/2019	09/08/2020
Horn Antenna	Schwarzbeck	BBHA9120D	1187	01/09/2019	01/08/2020
Horn Antenna	SCHWAZBECK	BBHA9170	184	12/27/2018	12/26/2019
Loop Antenna	ETS.LINDGREN	6502	143303	04/25/2019	04/24/2020
EMI Test Receiv- er	R&S	ESU 40	100363	04/15/2019	04/14/2020
Radio Communi- cation Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020
Pre-Amplifier	<b>EMC</b> Instruments	EMC330	980096	11/20/2019	11/19/2020
Pre-Amplifier	EMC Instruments	EMC0011830	980199	11/20/2019	11/19/2020
Pre-Amplifier	EMC Instruments	EMC184045B	980135	11/20/2019	11/19/2020
Notch Filter	Woken	EWT-54-0037	RF54	11/20/2019	11/19/2020
Notch Filter	Woken	EWT-54-0038	RF55	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17388/4	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	11/20/2019	11/19/2020
Coaxial Cable	Huber Suhner	SUCOFLEX 104	MY17413/4	11/20/2019	11/19/2020

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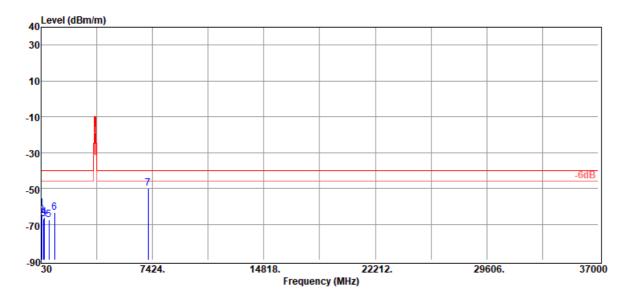
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#### 10.5. **Measurement Result:**

## Radiated Spurious Emission Measurement Result: LTE Band 48 3625MHz Mode

Report Number	:E2/2019/90045	Test Date	:2019-11-28
Operation Mode	:LTE B48	Temp./Humi.	:22.7/58
Test Mode	:TX CH LOW	Antenna Pol.	:VERTICAL
EUT Pol	:E2 Plan	Engineer	:Ashton
Test Channel	:3560 MHz		



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
53.28	-61.20	-43.38	-16.91	-0.91	-40.00	-21.20
72.68	-64.92	-52.94	-10.94	-1.04	-40.00	-24.92
203.63	-66.88	-62.84	-1.96	-2.08	-40.00	-26.88
226.91	-65.96	-62.49	-1.28	-2.19	-40.00	-25.96
539.25	-67.47	-63.04	-1.19	-3.24	-40.00	-27.47
929.19	-63.46	-56.89	-1.68	-4.89	-40.00	-23.46
7120.00	-50.14	-49.22	11.30	-12.22	-40.00	-10.14

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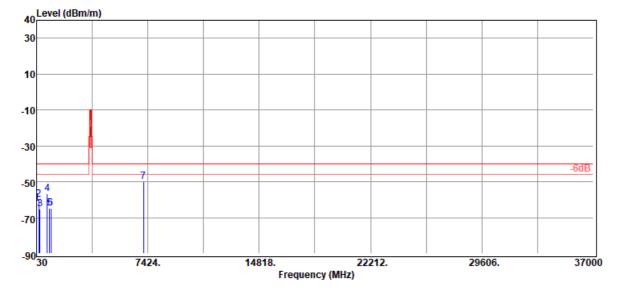
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Report Number	:E2/2019/90045
Operation Mode	:LTE B48
Test Mode	:TX CH LOW
EUT Pol	:E2 Plan
Test Channel	:3560 MHz

Test Date	:2019-11-28
Temp./Humi.	:22.7/58
Antenna Pol.	:HORIZONTAL
Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
31.94	-62.28	-41.26	-20.36	-0.66	-40.00	-22.28
164.83	-59.69	-51.38	-6.60	-1.71	-40.00	-19.69
247.28	-65.27	-61.36	-1.68	-2.23	-40.00	-25.27
729.37	-56.79	-51.05	-1.46	-4.28	-40.00	-16.79
902.03	-64.66	-58.65	-1.38	-4.63	-40.00	-24.66
984.48	-64.61	-58.22	-1.48	-4.91	-40.00	-24.61
7120.00	-49.80	-48.88	11.30	-12.22	-40.00	-9.80

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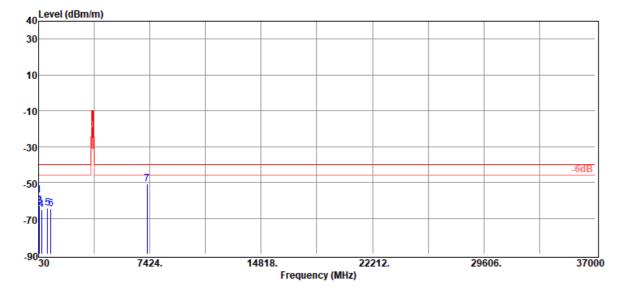
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Report Number	:E2/2019/90045
Operation Mode	:LTE B48
Test Mode	:TX CH MID
EUT Pol	:E2 Plan
Test Channel	:3625 MHz

Test Date	:2019-11-28
Temp./Humi.	:22.7/58
Antenna Pol.	:VERTICAL
Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
53.28	-57.35	-39.53	-16.91	-0.91	-40.00	-17.35
73.65	-63.32	-51.76	-10.50	-1.06	-40.00	-23.32
105.66	-62.88	-54.65	-6.83	-1.40	-40.00	-22.88
229.82	-65.38	-61.79	-1.40	-2.19	-40.00	-25.38
633.34	-64.26	-59.01	-1.50	-3.75	-40.00	-24.26
851.59	-64.65	-58.77	-1.37	-4.51	-40.00	-24.65
7250.00	-51.04	-49.84	11.20	-12.40	-40.00	-11.04

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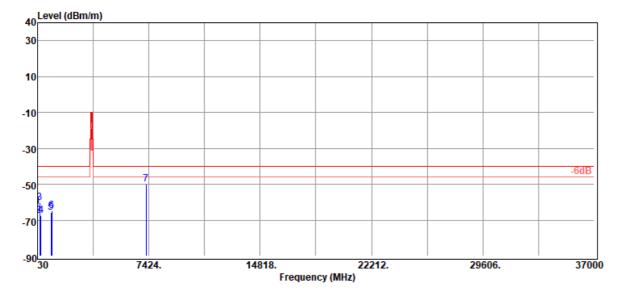
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Report Number	:E2/2019/90045
Operation Mode	:LTE B48
Test Mode	:TX CH MID
EUT Pol	:E2 Plan
Test Channel	:3625 MHz

Test Date :2019-11-28 Temp./Humi. :22.7/58 Antenna Pol. :HORIZONTAL Engineer :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
39.70	-62.52	-42.53	-19.14	-0.85	-40.00	-22.52
53.28	-67.51	-49.69	-16.91	-0.91	-40.00	-27.51
164.83	-60.22	-51.91	-6.60	-1.71	-40.00	-20.22
261.83	-67.47	-63.65	-1.55	-2.27	-40.00	-27.47
931.13	-65.83	-59.27	-1.68	-4.88	-40.00	-25.83
981.57	-65.01	-58.60	-1.50	-4.91	-40.00	-25.01
7250.00	-50.02	-48.82	11.20	-12.40	-40.00	-10.02

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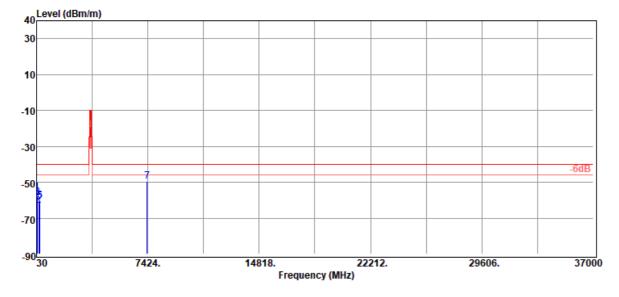
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Report Number	:E2/2019/90045
Operation Mode	:LTE B48
Test Mode	:TX CH HIGH
EUT Pol	:E2 Plan
Test Channel	:3690 MHz

Test Date	:2019-11-28
Temp./Humi.	:22.7/58
Antenna Pol.	:VERTICAL
Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
52.31	-56.00	-37.97	-17.14	-0.89	-40.00	-16.00
73.65	-59.83	-48.27	-10.50	-1.06	-40.00	-19.83
104.69	-58.66	-50.49	-6.78	-1.39	-40.00	-18.66
164.83	-63.95	-55.64	-6.60	-1.71	-40.00	-23.95
211.39	-60.88	-57.24	-1.54	-2.10	-40.00	-20.88
245.34	-60.26	-56.28	-1.75	-2.23	-40.00	-20.26
7380.00	-49.35	-47.79	11.16	-12.72	-40.00	-9.35

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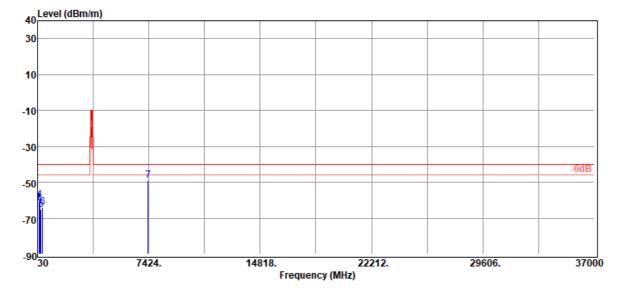
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Report Number	:E2/2019/90045
Operation Mode	:LTE B48
Test Mode	:TX CH HIGH
EUT Pol	:E2 Plan
Test Channel	:3690 MHz

Test Date	:2019-11-28
Temp./Humi.	:22.7/58
Antenna Pol.	:HORIZONTAL
Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
39.70	-61.86	-41.87	-19.14	-0.85	-40.00	-21.86
53.28	-61.76	-43.94	-16.91	-0.91	-40.00	-21.76
131.85	-61.68	-52.70	-7.32	-1.66	-40.00	-21.68
166.77	-59.71	-51.49	-6.50	-1.72	-40.00	-19.71
247.28	-65.13	-61.22	-1.68	-2.23	-40.00	-25.13
355.92	-63.83	-59.90	-1.35	-2.58	-40.00	-23.83
7380.00	-49.15	-47.59	11.16	-12.72	-40.00	-9.15

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# **11. FREQUENCY STABILITY MEASUREMENT**

# 11.1. Standard Applicabl

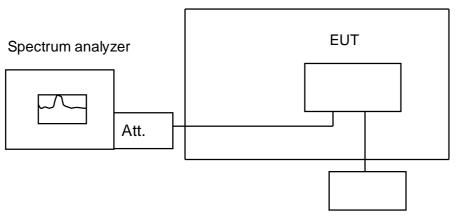
# FCC §2.1055(a)

The frequency stability shall be sufficient to ensure that the fundamental emis

sion stays within the authorized frequency band. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm ) of the center frequency.

# 11.2. Test Set-up

**Temperature Chamber** 



Variable DC Power Supply

Note: Measurement setup for testing on Antenna connector

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## 11.3. Measurement Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Set chamber temperature to  $25^{\circ}$ C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020
Radio Communica- tion Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020
Attenuator	Marvelous	MVE2213-10	RF30	11/20/2019	11/19/2020
DC Block	PASTERNACK	PE8210	RF32	11/20/2019	11/19/2020
Splitter	Woken	DOM35LW1A2	RF83	11/20/2019	11/19/2020
Coaxial Cables	Woken	00100A1F1A185C	RF229	11/20/2019	11/19/2020

## 11.4. Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/17/2020	03/16/2021

Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.

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#### 11.5. **Measurement Result**

Reference Freq.:		B48 Mid annel	3625	MHz 10M QPSK CH 55990					
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)					
	Freq. ERROR vs. VOLTAGE								
3.465	25	3625.000009	9	6488					
3.3	25	3625.000012	12	6488					
3.135	25	3625.000008	8	6488					
2.9 (End Point)	25	3625.000006	6	6488					
	Free	q. ERROR vs. <sup>-</sup>	Гетр.						
3.3	-30	3624.999987	-13	6488					
3.3	-20	3624.999991	-9	6488					
3.3	-10	3624.999996	-4	6488					
3.3	0	3625.000001	1	6488					
3.3	10	3625.000005	5	6488					
3.3	20	3625.000007	7	6488					
3.3	30	3625.000012	12	6488					
3.3	40	3625.000016	16	6488					
3.3	50	3625.000007	7	6488					

Note: The battery is rated 3.3Vdc

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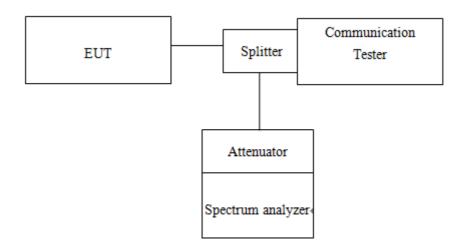


# **12. PEAK TO AVERAGE RATIO**

## 12.1. Standard Applicable

The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

## 12.2. Test SET-UP



## 12.3. Measurement Procedure

- 1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
- 2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth; & internal =1ms
- 3. Set the number of counts to a value that stabilizes the measured CCDF curve.

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#### 12.4. **Measurement Equipment Used**

Conducted Emission (measured at antenna port) Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
TYPE		NUMBER	NUMBER	CAL.			
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/06/2019	03/05/2020		
Radio Communication Analyer	Anritsu	MT8821C	6262044739	12/06/2019	12/05/2020		
Attenuator	Marvelous	MVE2213-10	RF30	11/20/2019	11/19/2020		
DC Block	PASTERNACK	PE8210	RF32	11/20/2019	11/19/2020		
Splitter	Woken	DOM35LW1 A2	RF83	11/20/2019	11/19/2020		
Coaxial Cables	Woken	00100A1F1A 185C	RF229	11/20/2019	11/19/2020		

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	KEYSIGHT	N9010A	MY57120200	03/17/2020	03/16/2021

Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.

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#### 12.5. **Measurement Result**

LTE BAND 48								
Channel bandwidth: 5MHz			Chan	nel band	lwidth: 10I	MHz		
Freq.	сц	PAPR	(dB)	Freq.	Freq.		PR (dB)	
(MHz)	CH	256QAM	Limit	(MHz)	СН	256QAM	Limit	
3552.5	56765	7.70	13	3555.0	55290	7.14	13	
3625.0	55990	7.69	13	3625.0	55990	7.70	13	
3697.5	58215	7.16	13	3695.0	56690	7.51	13	

LTE BAND 48								
Channel bandwidth: 15MHz			Chan	nel banc	lwidth: 20I	MHz		
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)	
(MHz)	СП	256QAM	Limit	(MHz)	СП	256QAM	Limit	
3557.5	55315	7.15	13	3650.0	55340	8.32	13	
3625.0	55990	7.95	13	3625.0	55990	8.11	13	
3692.5	56665	7.55	13	3690.0	56640	8.19	13	

Please refer to next page.

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Center Freq: 3.555000000 GHz Radio Std: None Trig: Free Run Counts: 100 k/100 kpt

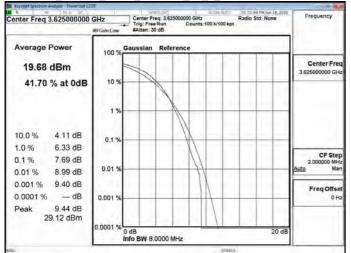
Frequency



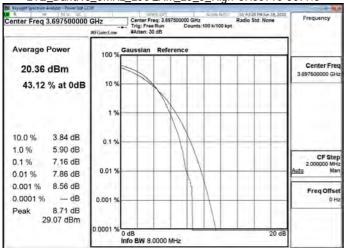
#### LTE\_Band48\_5MHz\_256QAM\_25\_0\_Low CH55265-3552.5

Center Freq 3.552500000	Trig: Free Run Counts: 100 k/100 kpt #FGainLow #Atten: 30 dB	
Average Power	100 % Gaussian Reference	
19.83 dBm		Center Freq 3.552500000 GHz
42.25 % at 0dB	10 %	
	1%	_
10.0 % 3.77 dB 1.0 % 6.13 dB	0.1 %	
0.1 % 7.70 dB 0.01 % 8.87 dB	0.01 %	CF Step 2.000000 MHa <u>Auto</u> Mar
0.001 % 9.70 dB 0.0001 % — dB	0.001 %	Freq Offset 0 Hz
Peak 11.14 dB 30.97 dBm	0.0001 % 0 dB	20 dB

#### LTE\_Band48\_5MHz\_256QAM\_25\_0\_Mid CH55990-3625



#### LTE\_Band48\_5MHz\_256QAM\_25\_0\_High CH56715-3697.5

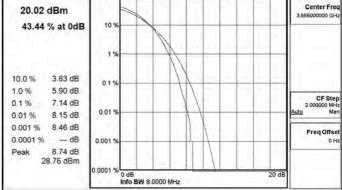


100 %

Gaussian

nter Freq 3.555000000 GHz

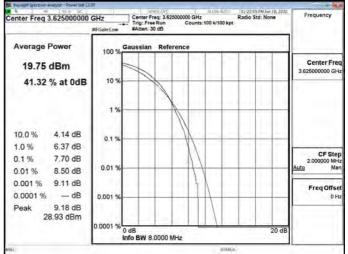
Average Power



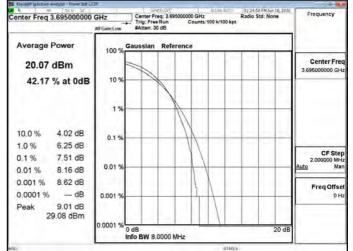
LTE\_Band48\_10MHz\_256QAM\_50\_0\_Low CH55290-3555

Reference

## LTE\_Band48\_10MHz\_256QAM\_50\_0\_Mid CH55990-3625



#### LTE\_Band48\_10MHz\_256QAM\_50\_0\_High CH56690-3695



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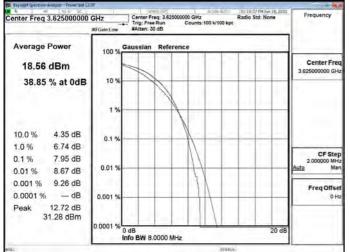
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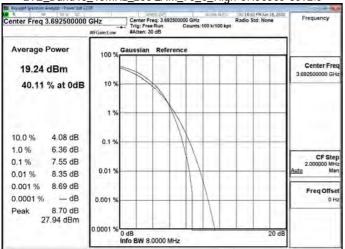
#### LTE Band48 15MHz 256QAM 75 0 Low CH55315-3557.5

Center Freq 3.557500000		FN Jun 38, 2020 f: None Frequency
Average Power	100 % Gaussian Reference	
19.19 dBm 41.24 % at 0dB	10 %	Center Freq 3.557500000 GHz
	1 %	
10.0 % 3.74 dB 1.0 % 5.95 dB	0.1 %	
0.1 % 7.15 dB 0.01 % 7.94 dB	0.01 %	CF Step 2.000000 MHz Auto Mar
0.001 % 8.32 dB 0.0001 % — dB Peak 8.57 dB	0.001 %	Freq Offse
27.76 dBm	0.0001 % 0 dB	20 dB

#### LTE Band48 15MHz 256QAM 75 0 Mid CH55990-3625



#### LTE\_Band48\_15MHz\_256QAM\_75\_0\_High CH56665-3692.5



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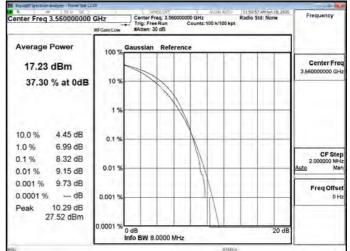
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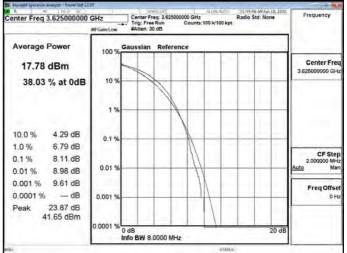
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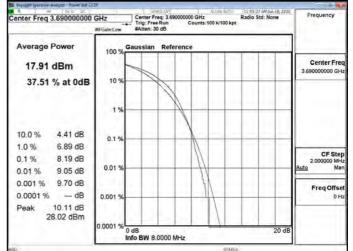
LTE\_Band48\_20MHz\_256QAM\_100\_0\_Low CH55340-3560



## LTE\_Band48\_20MHz\_256QAM\_100\_0\_Mid CH55990-3625



#### LTE\_Band48\_20MHz\_256QAM\_100\_0\_High CH56640-3690



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