

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

OF

**Applicant:** FUJITSU CONNECTED TECHNOLOGIES Ltd.  
Chuorinkan 7-10-1 Yamato, Kanagawa 242-0007, Japan

**Product Name:** Smart Phone

**Brand Name:** FUJITSU

**Model No.:** F-52A

**Model Difference:** N/A

**Report Number:** ER/2020/90015

**FCC ID** 2AQYEFMP180

**FCC Rule Part:** 2, 22H & 24E & 27 C

**Issue Date:** Sep. 29th, 2020

**Date of Test:** Sep. 14th, 2020 ~ Sep. 23nd, 2020

**Date of EUT Received:** Sep. 8th, 2020

**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:**  
Blue Yang / Asst. Manager

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## Revision History

Report Number	Revision	Description	Issue Date	Remark
ER/2020/90015	Rev.00	Original.	Sep. 29th, 2020	Revised By: Tiffany Kao

**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:	Smart Phone	
Brand Name:	FUJITSU	
Model No.:	F-52A	
Model Difference:	N/A	
Hardware Version:	V2.0.0	
Software Version:	V02R021B-UD	
Power Supply:	3.85Vdc from Rechargeable Li-ion Battery Battery: Model No.:CA54310-0081 Supplier: FUJITSU CONNECTED TECHNOLOGIES LIMITED	
IMEI:	352870330012140	

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## 1.2 Operation Frequency Range

Operating Frequency (MHz)			
GSM/GPRS 850	824.2	-	848.8
GSM/GPRS 1900	1850.2	-	1909.8
WCDMA / HSPA+ Band V	826.4	-	846.6

LTE Band	BW (MHz)	Operation Frequency (MHz)		
5	1.4	824.7	-	848.3
	3	825.5	-	847.5
	5	826.5	-	846.5
	10	829.0	-	844.0
12	1.4	699.7	-	715.3
	3	700.5	-	714.5
	5	701.5	-	713.5
	10	704.0	-	711.0

## 1.3 Antenna Designation

Vendor	Type	Antenna Part No.	Modulation	Frequency (MHz)	Peak Antenna Gain (dBi)
N/A	$\lambda/4$ Monopole Antenna	N/A	GSM / GPRS850	842.2 ~ 848.8	-8.6
			GSM / GPRS1900	1850.2 ~ 1909.8	-3.8
			WCDMA Band V	826.4 ~ 846.6	-8.6
			LTE Band 5	824 ~ 849	-8.6
			LTE Band 12	699 ~ 716	-10

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

		ERP / EIRP (dBm)		W	99%	Type of Emission
GSM 850		21.02	ERP	0.126	0.2491	249KGXW
GPRS 850		21.03	ERP	0.127	0.2472	247KGXW
GSM 1900		25.69	EIRP	0.371	0.2462	246KGXW
GPRS 1900		25.70	EIRP	0.372	0.2450	245KGXW
		ERP / EIRP (dBm)		W	99%	Type of Emission
WCDMA Band V		13.22	ERP	0.021	4.1459	4M15F9W
HSDPA Band V		12.19	ERP	0.017	4.1384	4M14F9W
HSUPA Band V		12.18	ERP	0.017	4.1419	4M14F9W

LTE Band	BW	Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
5	1.4	QPSK	12.12	ERP	0.016	1.0951	1M10G7D
		16QAM	11.02	ERP	0.013	1.0979	1M10D7W
		64QAM	11.08	ERP	0.013	1.0961	1M10D7W
5	3	QPSK	12.15	ERP	0.016	2.6969	2M70G7D
		16QAM	11.09	ERP	0.013	2.6980	2M70D7W
		64QAM	11.12	ERP	0.013	2.7038	2M70D7W
5	5	QPSK	12.19	ERP	0.017	4.4971	4M50G7D
		16QAM	11.05	ERP	0.013	4.5027	4M50D7W
		64QAM	11.15	ERP	0.013	4.4919	4M49D7W
5	10	QPSK	12.23	ERP	0.017	8.9779	8M98G7D
		16QAM	11.21	ERP	0.013	8.9603	8M96D7W
		64QAM	11.19	ERP	0.013	8.9767	8M98D7W

LTE Band	BW	Modulation	ERP / EIRP (dBm)		(W)	99%	Type of Emission
12	1.4	QPSK	10.56	ERP	0.011	1.0953	1M10G7D
		16QAM	9.77	ERP	0.009	1.0973	1M10D7W
		64QAM	9.71	ERP	0.009	1.0961	1M10D7W
12	3	QPSK	10.62	ERP	0.012	2.6959	2M70G7D
		16QAM	9.78	ERP	0.010	2.6975	2M70D7W
		64QAM	9.71	ERP	0.009	2.6986	2M70D7W
12	5	QPSK	10.64	ERP	0.012	4.4904	4M49G7D
		16QAM	9.81	ERP	0.010	4.4925	4M49D7W
		64QAM	9.70	ERP	0.009	4.4977	4M50D7W
12	10	QPSK	10.68	ERP	0.012	9.0014	9M00G7D
		16QAM	9.84	ERP	0.010	8.9548	8M95D7W
		64QAM	9.78	ERP	0.010	8.9819	8M98D7W

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## 1.5 Test Methodology of Applied Standards

FCC 47 CFR Part 2, 22H, 24E, 27C

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

KDB941225 D01 SAR test for 3G devices v03r01 (SAR Measurement Procedures for 3G Devices, WCDMA / HSPA) was used for EUT and Base station setting.

KDB412172 D01 Determining ERP and EIRP v01r01

TS 151 010-1 is used to set, and measure the output power.

## 1.6 Test Facility

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

No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803

FCC Designation number: TW0027

## 1.7 Special Accessories

No special accessories were used during testing.

## 1.8 Equipment Modifications

There was no modifications incorporated into the EUT.

## 1.9 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

The EUT is placed on a 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)

The EUT is placed on a 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.

### 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)	3.83	10	13.83
High Band (Above 1 GHz)	4.16	10	14.16

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## 2.5 Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 850	3.85	597
GSM 1900		534
WCDMA V		566
LTE Band 5		847
LTE Band 12		826

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## 2.6 Configuration of Tested System

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

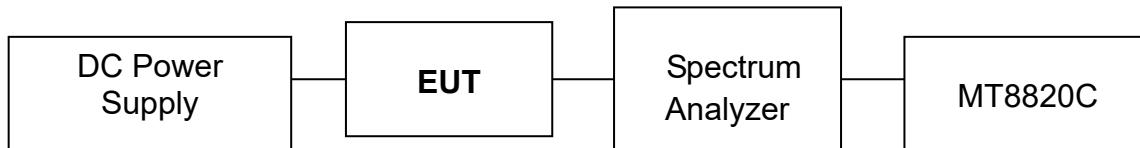


Fig. 2-2 Configuration of Tested System (Fixed Channel-Radiated)

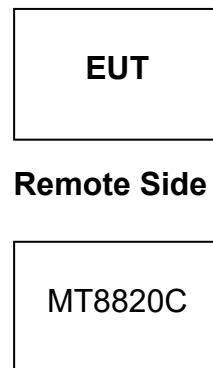


Table 2-1 Equipment Used in

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	Radio Communication Analyer	Anritsu	MT8820C	6200995019	shielded	Un-shielded
2	Radio Communication Analyer	Anritsu	MT8815B	6200711454	shielded	Un-shielded
3	DC Power Supply	Agilent	E3640A	MY40000811	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§22.913(a)(5) §24.232(c) §27.50(c)(10)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% & 26dB Occupied Bandwidth	Compliant
§2.1051 §22.917(a)(b) §24.238(a) §27.53(g)	Out of Band Emissions at Antenna Terminals and Band Edge / Emission mask requirements	Compliant
§2.1053 §2.1057(a)(1) §22.917(a) §24.238(a) §27.53(g)	Field Strength of Spurious Radiation	Compliant
§24.232(d) §27.50(B)	Peak to Average Ratio	Compliant
§2.1055(1) §22.355 §24.235 §27.54	Frequency Stability	Compliant

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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	H PLAN
GSM/GPRS 850	V
GSM/GPRS 1900	V
WCDMA/HSPA Band V	V
LTE Band 5	V
LTE Band 12	V

### 4.2 Measurement Configuration

Test Items	GSM Bands	Test Channel		
		L	M	H
ERP	850	V	V	V
EIRP	1900	V	V	V
FREQUENCY STABILITY	850	-	V	-
	1900	-	V	-
OCCUPIED BANDWIDTH	850	V	V	V
	1900	V	V	V
PEAK TO AVERAGE RATIO	850	V	V	V
	1900	V	V	V
BAND EDGE	850	V	-	V
	1900	V	-	V
CONDUCDETED EMISSION	850	V	V	V
	1900	V	V	V
RADIATED EMISSION	850	V	V	V
	1900	V	V	V

Test Items	WCDMA / HSPA Bands	Test Channel		
		L	M	H
ERP	Band V	V	V	V
FREQUENCY STABILITY	Band V	-	V	-
OCCUPIED BANDWIDTH	Band V	V	V	V
PEAK TO AVERAGE RATIO	Band V	V	V	V
BAND EDGE	Band V	V	-	V
CONDUCDETED EMISSION	Band V	V	V	V
RADIATED EMISSION	Band V	V	V	V

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Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Max. Output Power	5	V	V	V	V	V	V	V	-	-	V	V	V	V	V	V
	12	V	V	V	V	V	V	V	-	-	V	V	V	V	V	V
Frequency Stability	5	-	V	-			V		-	-	V	-	-	-	-	V
	12	-	V	-			V		-	-	V	-	-	-	-	V
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
26dB and 99% Bandwidth	5	V	V	V	V	V	V	V	-	-	V	V	V	-	-	V
	12	V	V	V	V	V	V	V	-	-	V	V	V	-	-	V
Peak-to-Average Ratio	5	V	V	V	V	V	V	V	-	-			V	-	-	V
	12	V	V	V	V	V	V	V	-	-			V	-	-	V
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Band Edge	5	V	-	V				V	-	-	V	-	-	V	V	V
	12	V	-	V				V	-	-	V	-	-	V	V	V
Conducted Emission	5	V	V	V				V	-	-	V	-	-	V	-	-
	12	V	V	V				V	-	-	V	-	-	V	-	-
Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		L	M	H	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Radiated Emission	5	V	V	V				V	-	-	V			V		
	12	V	V	V				V	-	-	V			V		

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
RF Power Output	+/- 1.10 dB
ERP/ EIRP measurement	Vertical Polarization = +/- 4.74dB Horizontal Polarization = +/- 4.62dB
99% Occupied Bandwidth	+/- 5.19 Hz
Out of Band Emissions at Antenna Terminals and Band Edge	+/- 0.70 dB
Peak to Average Ratio	+/- 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:

Measurement uncertainty (Polarization : <b>Vertical</b> )	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 180MHz: +/- 3.37dB
	180MHz -417MHz: +/- 3.19dB
	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB
Measurement uncertainty (Polarization : <b>Horizontal</b> )	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
	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 MAXMUM OUTPUT POWER

### 6.1 Standard Applicable

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals.

#### 6.1.1 ERP/EIRP LIMIT

According to FCC §2.1046

**FCC 22.913(a)**

(5) mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

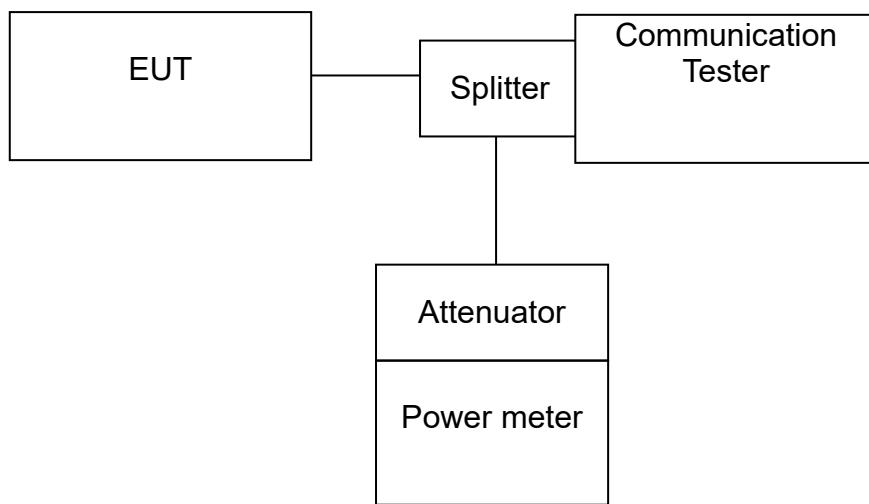
**FCC 24.232(c)**

(b) Mobile and portable stations are limited to 2W EIRP.

**FCC 27.50(c)**

(10) Portable stations (hand-held devices) are limited to 3 watts ERP.

### 6.2 Test Set-up



**Note:** Measurement setup for testing on Antenna connector

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### 6.3 Output Power Measurement Applicable Guidance

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. TS 151 010-1 is reference to conduct the test measurement of output power.

The Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, (WCD-MA/HSPA) was used for EUT and Base station setting. RMC 12.2kps is used for this testing, and KDB 971168 D01 Power Meas License Digital System as the supplemental test methodology to adjust the proper setting obtaining the measurement results.

All LTE bands conducted average power is obtained from the simulator telecommunication test set.

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

According to KDB 412172 D01 Power Approach,

$$EIRP = P_T + G_T - L_c,$$

$$ERP = EIRP - 2.15,$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power (expressed in the same units as PT, typically dBW, dBm, or power spectral density (PSD)2), relative to either a dipole antenna (ERP) or an isotropic antenna (EIRP);

$P_T$  = transmitter output power, expressed in dBW, dBm, or PSD;

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

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

### 6.5 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
DC Power Supply	Agilent	E3640A	MY40000811	Dec. 23th, 2019	Dec. 22nd, 2020
Radio Communication Analyer	Anritsu	MT8815B	6200711454	Apr. 1st, 2020	Mar. 31st, 2021
Radio Communication Analyer	Anritsu	MT8820C	6200995019	Apr. 1st, 2020	Mar. 31st, 2021
DC Power Supply	Agilent	E3640A	MY40000811	Dec. 23rd, 2019	Dec. 22nd, 2020

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## 6.6 GSM Measurement Results

GSM/GPRS/EDGE (GMSK; 8-PSK) Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
GSM 850	824.2	128	31.55	-8.60	20.80	22.95	38.50	-15.55
	836.6	190	31.77	-8.60	21.02	23.17	38.50	-15.33
	848.8	251	31.72	-8.60	20.97	23.12	38.50	-15.38
GSM 1900	1850.2	512	29.48	-3.80	23.53	25.68	33.00	-7.32
	1880.0	661	29.47	-3.80	23.52	25.67	33.00	-7.33
	1909.8	810	29.49	-3.80	23.54	25.69	33.00	-7.31
GPRS 850	824.2	128	31.51	-8.60	20.76	22.91	38.50	-15.59
	836.6	190	31.78	-8.60	21.03	23.18	38.50	-15.32
	848.8	251	31.71	-8.60	20.96	23.11	38.50	-15.39
GPRS 1900	1850.2	512	29.46	-3.80	23.51	25.66	33.00	-7.34
	1880.0	661	29.48	-3.80	23.53	25.68	33.00	-7.32
	1909.8	810	29.50	-3.80	23.55	25.70	33.00	-7.30

EUT Mode	Frequency (MHz)	CH	Average Burst Power (1DN 1UP) Class 8 (dBm)	Average Burst Power (1DN 2UP) Class 10 (dBm)	Average Burst Power (1DN 3UP) Class 12 (dBm)	Average Burst Power (1DN 4UP) Class 12 (dBm)
GPRS 850	824.2	128	31.51	28.80	27.20	25.68
	836.6	190	31.78	29.28	27.40	25.89
	848.8	251	31.71	29.17	27.48	25.85
GPRS 1900	1850.2	512	29.46	26.61	24.70	23.08
	1880.0	661	29.48	26.90	25.05	23.28
	1909.8	810	29.50	26.86	24.96	23.25

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## 6.7 WCDMA & HSPA Measurement Results:

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

### WCDMA/HSUPA/HSDPA Band V Result:

EUT Mode	Freq. (MHz)	CH	Conducted Avg. Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	Limit (dBm)	Margin (dB)
WCDMA	826.4	4132	23.89	-8.60	13.14	<b>15.29</b>	38.50	-23.21
	836.6	4183	23.97	-8.60	13.22	<b>15.37</b>	38.50	-23.13
	846.6	4233	23.90	-8.60	13.15	<b>15.30</b>	38.50	-23.20
HSDPA	826.4	4132	22.93	-8.60	12.18	<b>14.33</b>	38.50	-24.17
	836.6	4183	22.92	-8.60	12.17	<b>14.32</b>	38.50	-24.18
	846.6	4233	22.94	-8.60	12.19	<b>14.34</b>	38.50	-24.16
HSUPA	826.4	4132	22.92	-8.60	12.17	<b>14.32</b>	38.50	-24.18
	836.6	4183	22.93	-8.60	12.18	<b>14.33</b>	38.50	-24.17
	846.6	4233	22.89	-8.60	12.14	<b>14.29</b>	38.50	-24.21

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### 6.7.1 HSPA (HSDPA & HSUPA) Release 6:

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 specification. All TX RMS power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1. RMC 12.2kps is used for this testing.

### 6.7.2 HSDPA SUB-TEST Setting

Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

**Note:** The recommended HSDPA MPRs are implemented as per following sub-tests.

Mode	Sub test	Avg. Power (dBm)		
		Channel	4132.00	4183.00
HSDPA V	1	22.93	22.92	22.94
	2	22.43	22.41	22.40
	3	22.43	22.39	22.40
	4	22.42	22.41	22.43

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### 6.7.3 HSPA SUB-TEST Setting

Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Code s)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps )
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

**Note:** The recommended HSUPA MPRs are implemented as per following sub-tests.

Mode	Sub test	Avg. Power (dBm)		
		Channel		
		4132.00	4183.00	4233.00
HSUPA V	1	22.92	22.93	22.89
	2	20.90	20.90	20.84
	3	21.87	21.89	21.85
	4	20.89	20.89	20.83
	5	22.88	22.91	22.82

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## Minimum Communications Power Measurement

### PCS 1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	29.81	28.11	25.9	23.92	21.95	20.02	17.92	15.92	14.01

PCL	9	10	11	12	13	14	15
Output power (dBm)	11.9	9.94	7.9	5.91	3.97	2.05	0.6

Note: The EUT output power was controlled by simulator. Set Communication Tester **MT8820C** PCL as above, and get the mobile phone output power reading.

### 6.7.4 WCDMA/HSDPA/HSUPA band V

The EUT output power was controlled by simulator and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm then record the read. The min. power was measures by a function key “minimum power” then record the read. It is -52.3dBm. The power variation can be 0.1dB step by setting.

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## 6.8 LTE Measurement Results:

Antenna gain (dBi) -8.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
1.4	20407	824.7	QPSK	1	0	22.74	11.99	14.14	38.45	-26.46
				1	5	22.66	11.91	14.06	38.45	-26.54
				3	2	21.83	11.08	13.23	38.45	-27.37
				6	0	21.85	11.10	13.25	38.45	-27.35
	20525	836.5	QPSK	1	0	22.75	12.00	14.15	38.45	-26.45
				1	5	22.77	12.02	14.17	38.45	-26.43
				3	2	21.95	11.20	13.35	38.45	-27.25
				6	0	21.96	11.21	13.36	38.45	-27.24
	20643	848.3	QPSK	1	0	22.87	12.12	14.27	38.45	-26.33
				1	5	22.78	12.03	14.18	38.45	-26.42
				3	2	21.74	10.99	13.14	38.45	-27.46
				6	0	21.80	11.05	13.20	38.45	-27.40
	20407	824.7	16QAM	1	0	21.73	10.98	13.13	38.45	-27.47
				1	5	21.77	11.02	13.17	38.45	-27.43
				3	2	20.84	10.09	12.24	38.45	-28.36
				6	0	20.89	10.14	12.29	38.45	-28.31
	20525	836.5	16QAM	1	0	21.70	10.95	13.10	38.45	-27.50
				1	5	21.68	10.93	13.08	38.45	-27.52
				3	2	20.93	10.18	12.33	38.45	-28.27
				6	0	20.81	10.06	12.21	38.45	-28.39
	20643	848.3	16QAM	1	0	21.63	10.88	13.03	38.45	-27.57
				1	5	21.68	10.93	13.08	38.45	-27.52
				3	2	20.95	10.20	12.35	38.45	-28.25
				6	0	20.82	10.07	12.22	38.45	-28.38
	20407	824.7	64QAM	1	0	21.58	10.83	12.98	38.45	-27.62
				1	5	21.83	11.08	13.23	38.45	-27.37
				3	2	20.75	10.00	12.15	38.45	-28.45
				6	0	20.85	10.10	12.25	38.45	-28.35
	20525	836.5	64QAM	1	0	21.68	10.93	13.08	38.45	-27.52
				1	5	21.51	10.76	12.91	38.45	-27.69
				3	2	20.66	9.91	12.06	38.45	-28.54
				6	0	20.74	9.99	12.14	38.45	-28.46
	20643	848.3	64QAM	1	0	21.63	10.88	13.03	38.45	-27.57
				1	5	21.62	10.87	13.02	38.45	-27.58
				3	2	20.81	10.06	12.21	38.45	-28.39
				6	0	20.69	9.94	12.09	38.45	-28.51

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Antenna gain (dBi) -8.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
3	20415	825.5	QPSK	1	0	22.75	12.00	14.15	38.45	-26.45
				1	14	22.71	11.96	14.11	38.45	-26.49
				8	4	21.75	11.00	13.15	38.45	-27.45
				15	0	21.81	11.06	13.21	38.45	-27.39
	20525	836.5	QPSK	1	0	22.78	12.03	14.18	38.45	-26.42
				1	14	22.74	11.99	14.14	38.45	-26.46
				8	4	21.80	11.05	13.20	38.45	-27.40
				15	0	21.91	11.16	13.31	38.45	-27.29
	20635	847.5	QPSK	1	0	22.90	12.15	14.30	38.45	-26.30
				1	14	22.67	11.92	14.07	38.45	-26.53
				8	4	21.78	11.03	13.18	38.45	-27.42
				15	0	21.86	11.11	13.26	38.45	-27.34
	20415	825.5	16QAM	1	0	21.64	10.89	13.04	38.45	-27.56
				1	14	21.84	11.09	13.24	38.45	-27.36
				8	4	20.88	10.13	12.28	38.45	-28.32
				15	0	20.75	10.00	12.15	38.45	-28.45
	20525	836.5	16QAM	1	0	21.65	10.90	13.05	38.45	-27.55
				1	14	21.62	10.87	13.02	38.45	-27.58
				8	4	20.91	10.16	12.31	38.45	-28.29
				15	0	20.77	10.02	12.17	38.45	-28.43
	20635	847.5	16QAM	1	0	21.70	10.95	13.10	38.45	-27.50
				1	14	21.65	10.90	13.05	38.45	-27.55
				8	4	20.83	10.08	12.23	38.45	-28.37
				15	0	20.87	10.12	12.27	38.45	-28.33
	20415	825.5	64QAM	1	0	21.59	10.84	12.99	38.45	-27.61
				1	14	21.87	11.12	13.27	38.45	-27.33
				8	4	20.79	10.04	12.19	38.45	-28.41
				15	0	20.83	10.08	12.23	38.45	-28.37
	20525	836.5	64QAM	1	0	21.73	10.98	13.13	38.45	-27.47
				1	14	21.47	10.72	12.87	38.45	-27.73
				8	4	20.63	9.88	12.03	38.45	-28.57
				15	0	20.89	10.14	12.29	38.45	-28.31
	20635	847.5	64QAM	1	0	21.71	10.96	13.11	38.45	-27.49
				1	14	21.59	10.84	12.99	38.45	-27.61
				8	4	20.78	10.03	12.18	38.45	-28.42
				15	0	20.84	10.09	12.24	38.45	-28.36

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Antenna gain (dBi) -8.6

LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	20425	826.5	QPSK	1	0	22.80	12.05	14.20	38.45	-26.40
				1	24	22.66	11.91	14.06	38.45	-26.54
				12	6	21.89	11.14	13.29	38.45	-27.31
				25	0	21.74	10.99	13.14	38.45	-27.46
	20525	836.5	QPSK	1	0	22.61	11.86	14.01	38.45	-26.59
				1	24	22.73	11.98	14.13	38.45	-26.47
				12	6	21.82	11.07	13.22	38.45	-27.38
				25	0	21.79	11.04	13.19	38.45	-27.41
	20625	846.5	QPSK	1	0	22.94	12.19	14.34	38.45	-26.26
				1	24	22.66	11.91	14.06	38.45	-26.54
				12	6	21.86	11.11	13.26	38.45	-27.34
				25	0	21.75	11.00	13.15	38.45	-27.45
	20425	826.5	16QAM	1	0	21.66	10.91	13.06	38.45	-27.54
				1	24	21.79	11.04	13.19	38.45	-27.41
				12	6	20.82	10.07	12.22	38.45	-28.38
				25	0	20.75	10.00	12.15	38.45	-28.45
	20525	836.5	16QAM	1	0	21.80	11.05	13.20	38.45	-27.40
				1	24	21.71	10.96	13.11	38.45	-27.49
				12	6	20.80	10.05	12.20	38.45	-28.40
				25	0	20.79	10.04	12.19	38.45	-28.41
	20625	846.5	16QAM	1	0	21.65	10.90	13.05	38.45	-27.55
				1	24	21.69	10.94	13.09	38.45	-27.51
				12	6	20.84	10.09	12.24	38.45	-28.36
				25	0	20.86	10.11	12.26	38.45	-28.34
	20425	826.5	64QAM	1	0	21.61	10.86	13.01	38.45	-27.59
				1	24	21.90	11.15	13.30	38.45	-27.30
				12	6	20.85	10.10	12.25	38.45	-28.35
				25	0	20.86	10.11	12.26	38.45	-28.34
	20525	836.5	64QAM	1	0	21.71	10.96	13.11	38.45	-27.49
				1	24	21.41	10.66	12.81	38.45	-27.79
				12	6	20.70	9.95	12.10	38.45	-28.50
				25	0	20.77	10.02	12.17	38.45	-28.43
	20625	846.5	64QAM	1	0	21.61	10.86	13.01	38.45	-27.59
				1	24	21.70	10.95	13.10	38.45	-27.50
				12	6	20.83	10.08	12.23	38.45	-28.37
				25	0	20.73	9.98	12.13	38.45	-28.47

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LTE Band 5_Uplink frequency band : 824 to 849 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	20450	829	QPSK	1	0	22.86	12.11	14.26	38.45	-26.34
				1	49	22.87	12.12	14.27	38.45	-26.33
				25	12	21.93	11.18	13.33	38.45	-27.27
				50	0	21.92	11.17	13.32	38.45	-27.28
	20525	836.5	QPSK	1	0	22.82	12.07	14.22	38.45	-26.38
				1	49	22.89	12.14	14.29	38.45	-26.31
				25	12	22.00	11.25	13.40	38.45	-27.20
				50	0	21.99	11.24	13.39	38.45	-27.21
	20600	844	QPSK	1	0	22.98	12.23	14.38	38.45	-26.22
				1	49	22.84	12.09	14.24	38.45	-26.36
				25	12	21.92	11.17	13.32	38.45	-27.28
				50	0	21.91	11.16	13.31	38.45	-27.29
	20450	829	16QAM	1	0	21.74	10.99	13.14	38.45	-27.46
				1	49	21.96	11.21	13.36	38.45	-27.24
				25	12	20.96	10.21	12.36	38.45	-28.24
				50	0	20.92	10.17	12.32	38.45	-28.28
	20525	836.5	16QAM	1	0	21.86	11.11	13.26	38.45	-27.34
				1	49	21.77	11.02	13.17	38.45	-27.43
				25	12	20.96	10.21	12.36	38.45	-28.24
				50	0	20.97	10.22	12.37	38.45	-28.23
	20600	844	16QAM	1	0	21.82	11.07	13.22	38.45	-27.38
				1	49	21.80	11.05	13.20	38.45	-27.40
				25	12	20.99	10.24	12.39	38.45	-28.21
				50	0	21.00	10.25	12.40	38.45	-28.20
	20450	829	64QAM	1	0	21.65	10.90	13.05	38.45	-27.55
				1	49	21.94	11.19	13.34	38.45	-27.26
				25	12	20.95	10.20	12.35	38.45	-28.25
				50	0	20.88	10.13	12.28	38.45	-28.32
	20525	836.5	64QAM	1	0	21.76	11.01	13.16	38.45	-27.44
				1	49	21.61	10.86	13.01	38.45	-27.59
				25	12	20.83	10.08	12.23	38.45	-28.37
				50	0	20.94	10.19	12.34	38.45	-28.26
	20600	844	64QAM	1	0	21.80	11.05	13.20	38.45	-27.40
				1	49	21.78	11.03	13.18	38.45	-27.42
				25	12	20.90	10.15	12.30	38.45	-28.30
				50	0	20.89	10.14	12.29	38.45	-28.31

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Antenna gain (dBi) -10

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
1.4	23017	699.7	QPSK	1	0	22.71	10.56	12.71	34.77	-24.21
				1	5	22.68	10.53	12.68	34.77	-24.24
				3	2	21.86	9.71	11.86	34.77	-25.06
				6	0	21.79	9.64	11.79	34.77	-25.13
	23095	707.5	QPSK	1	0	22.58	10.43	12.58	34.77	-24.34
				1	5	22.59	10.44	12.59	34.77	-24.33
				3	2	21.76	9.61	11.76	34.77	-25.16
				6	0	21.89	9.74	11.89	34.77	-25.03
	23173	715.5	QPSK	1	0	22.60	10.45	12.60	34.77	-24.32
				1	5	22.69	10.54	12.69	34.77	-24.23
				3	2	21.78	9.63	11.78	34.77	-25.14
				6	0	21.72	9.57	11.72	34.77	-25.20
	23017	699.7	16QAM	1	0	21.84	9.69	11.84	34.77	-25.08
				1	5	21.77	9.62	11.77	34.77	-25.15
				3	2	20.79	8.64	10.79	34.77	-26.13
				6	0	20.86	8.71	10.86	34.77	-26.06
	23095	707.5	16QAM	1	0	21.92	9.77	11.92	34.77	-25.00
				1	5	21.84	9.69	11.84	34.77	-25.08
				3	2	20.81	8.66	10.81	34.77	-26.11
				6	0	20.91	8.76	10.91	34.77	-26.01
	23173	715.5	16QAM	1	0	21.83	9.68	11.83	34.77	-25.09
				1	5	21.83	9.68	11.83	34.77	-25.09
				3	2	20.73	8.58	10.73	34.77	-26.19
				6	0	20.85	8.70	10.85	34.77	-26.07
	23017	699.7	64QAM	1	0	21.74	9.59	11.74	34.77	-25.18
				1	5	21.86	9.71	11.86	34.77	-25.06
				3	2	20.77	8.62	10.77	34.77	-26.15
				6	0	20.71	8.56	10.71	34.77	-26.21
	23095	707.5	64QAM	1	0	21.75	9.60	11.75	34.77	-25.17
				1	5	21.79	9.64	11.79	34.77	-25.13
				3	2	20.80	8.65	10.80	34.77	-26.12
				6	0	20.75	8.60	10.75	34.77	-26.17
	23173	715.5	64QAM	1	0	21.73	9.58	11.73	34.77	-25.19
				1	5	21.78	9.63	11.78	34.77	-25.14
				3	2	20.71	8.56	10.71	34.77	-26.21
				6	0	20.67	8.52	10.67	34.77	-26.25

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Antenna gain (dBi) -10

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
3	23025	700.5	QPSK	1	0	22.73	10.58	12.73	34.77	-24.19
				1	14	22.62	10.47	12.62	34.77	-24.30
				8	4	21.87	9.72	11.87	34.77	-25.05
				15	0	21.87	9.72	11.87	34.77	-25.05
	23095	707.5	QPSK	1	0	22.71	10.56	12.71	34.77	-24.21
				1	14	22.61	10.46	12.61	34.77	-24.31
				8	4	21.76	9.61	11.76	34.77	-25.16
				15	0	21.91	9.76	11.91	34.77	-25.01
	23165	714.5	QPSK	1	0	22.58	10.43	12.58	34.77	-24.34
				1	14	22.77	10.62	12.77	34.77	-24.15
				8	4	21.78	9.63	11.78	34.77	-25.14
				15	0	21.76	9.61	11.76	34.77	-25.16
	23025	700.5	16QAM	1	0	21.80	9.65	11.80	34.77	-25.12
				1	14	21.83	9.68	11.83	34.77	-25.09
				8	4	20.83	8.68	10.83	34.77	-26.09
				15	0	20.94	8.79	10.94	34.77	-25.98
	23095	707.5	16QAM	1	0	21.93	9.78	11.93	34.77	-24.99
				1	14	21.71	9.56	11.71	34.77	-25.21
				8	4	20.88	8.73	10.88	34.77	-26.04
				15	0	20.86	8.71	10.86	34.77	-26.06
	23165	714.5	16QAM	1	0	21.76	9.61	11.76	34.77	-25.16
				1	14	21.77	9.62	11.77	34.77	-25.15
				8	4	20.81	8.66	10.81	34.77	-26.11
				15	0	20.72	8.57	10.72	34.77	-26.20
	23025	700.5	64QAM	1	0	21.58	9.43	11.58	34.77	-25.34
				1	14	21.86	9.71	11.86	34.77	-25.06
				8	4	20.80	8.65	10.80	34.77	-26.12
				15	0	20.79	8.64	10.79	34.77	-26.13
	23095	707.5	64QAM	1	0	21.62	9.47	11.62	34.77	-25.30
				1	14	21.61	9.46	11.61	34.77	-25.31
				8	4	20.68	8.53	10.68	34.77	-26.24
				15	0	20.70	8.55	10.70	34.77	-26.22
	23165	714.5	64QAM	1	0	21.56	9.41	11.56	34.77	-25.36
				1	14	21.69	9.54	11.69	34.77	-25.23
				8	4	20.78	8.63	10.78	34.77	-26.14
				15	0	20.73	8.58	10.73	34.77	-26.19

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Antenna gain (dBi) -10

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
5	23035	701.5	QPSK	1	0	22.79	10.64	12.79	34.77	-24.13
				1	24	22.79	10.64	12.79	34.77	-24.13
				12	6	21.91	9.76	11.91	34.77	-25.01
				25	0	21.96	9.81	11.96	34.77	-24.96
	23095	707.5	QPSK	1	0	22.73	10.58	12.73	34.77	-24.19
				1	24	22.71	10.56	12.71	34.77	-24.21
				12	6	21.84	9.69	11.84	34.77	-25.08
				25	0	21.73	9.58	11.73	34.77	-25.19
	23155	713.5	QPSK	1	0	22.72	10.57	12.72	34.77	-24.20
				1	24	22.71	10.56	12.71	34.77	-24.21
				12	6	21.85	9.70	11.85	34.77	-25.07
				25	0	21.88	9.73	11.88	34.77	-25.04
	23035	701.5	16QAM	1	0	21.96	9.81	11.96	34.77	-24.96
				1	24	21.83	9.68	11.83	34.77	-25.09
				12	6	20.94	8.79	10.94	34.77	-25.98
				25	0	20.93	8.78	10.93	34.77	-25.99
	23095	707.5	16QAM	1	0	21.88	9.73	11.88	34.77	-25.04
				1	24	21.87	9.72	11.87	34.77	-25.05
				12	6	20.76	8.61	10.76	34.77	-26.16
				25	0	20.90	8.75	10.90	34.77	-26.02
	23155	713.5	16QAM	1	0	21.87	9.72	11.87	34.77	-25.05
				1	24	21.87	9.72	11.87	34.77	-25.05
				12	6	20.84	8.69	10.84	34.77	-26.08
				25	0	20.82	8.67	10.82	34.77	-26.10
	23035	701.5	64QAM	1	0	21.75	9.60	11.75	34.77	-25.17
				1	24	21.85	9.70	11.85	34.77	-25.07
				12	6	20.81	8.66	10.81	34.77	-26.11
				25	0	20.62	8.47	10.62	34.77	-26.30
	23095	707.5	64QAM	1	0	21.69	9.54	11.69	34.77	-25.23
				1	24	21.70	9.55	11.70	34.77	-25.22
				12	6	20.74	8.59	10.74	34.77	-26.18
				25	0	20.66	8.51	10.66	34.77	-26.26
	23155	713.5	64QAM	1	0	21.67	9.52	11.67	34.77	-25.25
				1	24	21.69	9.54	11.69	34.77	-25.23
				12	6	20.72	8.57	10.72	34.77	-26.20
				25	0	20.74	8.59	10.74	34.77	-26.18

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Antenna gain (dBi) -10

LTE Band 12_Uplink frequency band : 699 to 716 MHz										
BW (MHz)	UL Channel	Frequency (MHz)	Modulation	RB Size	RB Offset	Conducted Average (dBm)	ERP Average (dBm)	EIRP Average (dBm)	ERP Limit (dBm)	Margin (dB)
10	23060	704	QPSK	1	0	22.83	10.68	12.83	34.77	-24.09
				1	49	22.82	10.67	12.82	34.77	-24.10
				25	12	22.00	9.85	12.00	34.77	-24.92
				50	0	21.98	9.83	11.98	34.77	-24.94
	23095	707.5	QPSK	1	0	22.79	10.64	12.79	34.77	-24.13
				1	49	22.78	10.63	12.78	34.77	-24.14
				25	12	21.93	9.78	11.93	34.77	-24.99
				50	0	21.93	9.78	11.93	34.77	-24.99
	23130	711	QPSK	1	0	22.75	10.60	12.75	34.77	-24.17
				1	49	22.83	10.68	12.83	34.77	-24.09
				25	12	21.91	9.76	11.91	34.77	-25.01
				50	0	21.92	9.77	11.92	34.77	-25.00
	23060	704	16QAM	1	0	21.99	9.84	11.99	34.77	-24.93
				1	49	21.97	9.82	11.97	34.77	-24.95
				25	12	20.97	8.82	10.97	34.77	-25.95
				50	0	20.98	8.83	10.98	34.77	-25.94
	23095	707.5	16QAM	1	0	21.98	9.83	11.98	34.77	-24.94
				1	49	21.90	9.75	11.90	34.77	-25.02
				25	12	20.93	8.78	10.93	34.77	-25.99
				50	0	20.93	8.78	10.93	34.77	-25.99
	23130	711	16QAM	1	0	21.90	9.75	11.90	34.77	-25.02
				1	49	21.97	9.82	11.97	34.77	-24.95
				25	12	20.92	8.77	10.92	34.77	-26.00
				50	0	20.89	8.74	10.89	34.77	-26.03
	23060	704	64QAM	1	0	21.79	9.64	11.79	34.77	-25.13
				1	49	21.93	9.78	11.93	34.77	-24.99
				25	12	20.91	8.76	10.91	34.77	-26.01
				50	0	20.81	8.66	10.81	34.77	-26.11
	23095	707.5	64QAM	1	0	21.78	9.63	11.78	34.77	-25.14
				1	49	21.81	9.66	11.81	34.77	-25.11
				25	12	20.84	8.69	10.84	34.77	-26.08
				50	0	20.76	8.61	10.76	34.77	-26.16
	23130	711	64QAM	1	0	21.74	9.59	11.74	34.77	-25.18
				1	49	21.85	9.70	11.85	34.77	-25.07
				25	12	20.88	8.73	10.88	34.77	-26.04
				50	0	20.85	8.70	10.85	34.77	-26.07

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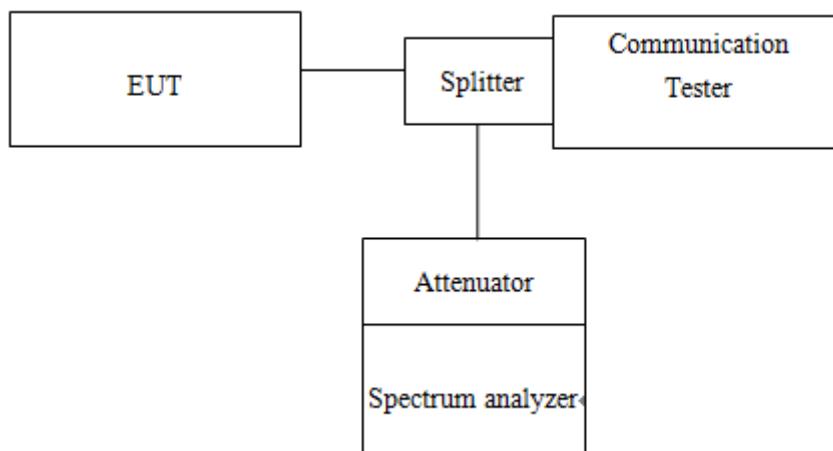
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## 7 OCCUPIED BANDWIDTH MEASUREMENT

### 7.1 Standard Applicable

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.

### 7.2 Test Set-up



### 7.3 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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## 7.4 Measurement Equipment Used

Conducted Emission (measured at antenna port) Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	Apr. 21st, 2020	Apr. 20th, 2021
DC Power Supply	Agilent	E3640A	MY40000811	Dec. 23rd, 2019	Dec. 22nd, 2020
Temperature Chamber	TERCHY	MHG-120LF	911009	May 20th, 2020	May 19th, 2021
Radio Communication Analyer	Anritsu	MT8815B	6200711454	Apr. 1st, 2020	Mar. 31st, 2021
Attenuator	Mini-Circuit	BW-S10W2+	2	Jan. 2nd, 2020	Jan. 1st, 2021
DC Block	Mini-Circuits	BLK-18-S+	1	Jan. 2nd, 2020	Jan. 1st, 2021
Splitter	RF-LAMBAD	RFLT2W1G1-8G	11-JSPF412-018	Jan. 2nd, 2020	Jan. 1st, 2021

## 7.5 Measurement Result

Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 850	GPRS 850	GSM 850	GPRS 850
824.2	128	0.24446	0.24718	0.3245	0.3201
836.6	190	0.24905	0.24376	0.3200	0.3205
848.8	251	0.24736	0.24644	0.3187	0.3190
Freq. (MHz)	CH	99% BW (MHz)		26 dB BW (MHz)	
		GSM 1900	GPRS 1900	GSM 1900	GPRS 1900
1850.2	512	0.24623	0.24159	0.3156	0.3240
1880.0	661	0.24431	0.24500	0.3161	0.3182
1909.8	810	0.24553	0.24210	0.3149	0.3176

Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		WCDMA V	HSDPA V	HSUPA V	WCDMA V	HSDPA V	HSUPA V
826.40	4132	4.14400	4.13840	4.13630	4.708	4.689	4.690
836.60	4183	4.14430	4.13720	4.14190	4.708	4.684	4.690
846.60	4233	4.14590	4.13730	4.13460	4.710	4.673	4.670

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LTE BAND 5 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
824.7	20407	1.0951	1.0963	1.0960	1.246	1.235	1.236
836.5	20525	1.0947	1.0979	1.0931	1.235	1.241	1.233
848.3	20643	1.0951	1.0972	1.0961	1.237	1.240	1.236

LTE BAND 5 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
825.5	20415	2.6962	2.6980	2.7013	2.987	2.997	2.999
836.5	20525	2.6969	2.6976	2.7035	2.998	3.006	3.014
847.5	20635	2.6964	2.6975	2.7038	2.986	3.006	2.985

LTE BAND 5 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
826.5	20425	4.4927	4.5027	4.4888	4.980	4.974	4.962
836.5	20525	4.4971	4.4941	4.4919	4.973	4.972	4.934
846.5	20625	4.4936	4.4907	4.4872	5.000	4.958	4.931

LTE BAND 12 Channel bandwidth: 1.4MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
699.7	23017	1.0953	1.0973	1.0961	1.235	1.239	1.233
707.5	23095	1.0917	1.0956	1.0952	1.212	1.238	1.239
715.3	23173	1.0922	1.0968	1.0950	1.219	1.237	1.233

LTE BAND 5 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
829.0	20450	8.9696	8.9603	8.9595	9.767	9.766	9.778
836.5	20525	8.9779	8.9446	8.9629	9.790	9.760	9.817
844.0	20600	8.9693	8.9310	8.9767	9.800	9.760	9.827

LTE BAND 12 Channel bandwidth: 3MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
700.5	23025	2.6935	2.6975	2.6961	2.990	3.011	2.990
707.5	23095	2.6939	2.6965	2.6986	2.986	3.010	2.990
714.5	23165	2.6959	2.6952	2.6967	2.996	3.000	2.986

LTE BAND 12 Channel bandwidth: 5MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
701.5	23035	4.4887	4.4918	4.4950	4.979	4.973	4.952
707.5	23095	4.4904	4.4925	4.4977	4.999	4.965	4.973
713.5	23155	4.4876	4.4906	4.4907	4.971	4.977	4.934

LTE BAND 12 Channel bandwidth: 10MHz							
Freq. (MHz)	CH	99% BW (MHz)			26 dB BW (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
704.0	23060	9.0014	8.9491	8.9735	9.824	9.776	9.835
707.5	23095	9.0010	8.9548	8.9819	9.825	9.730	9.830
711.0	23130	8.9832	8.9490	8.9761	9.788	9.772	9.802

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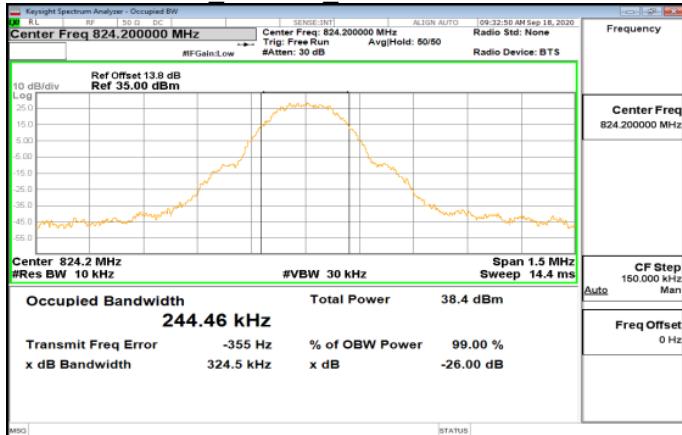
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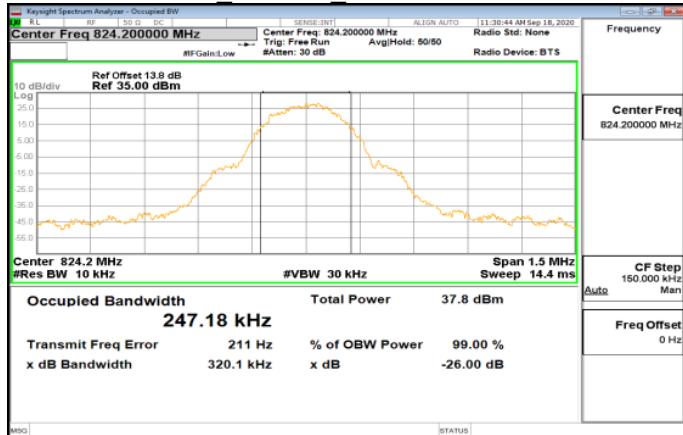
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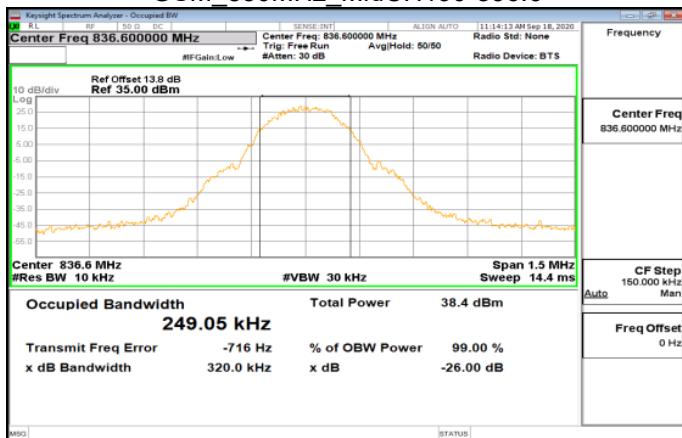
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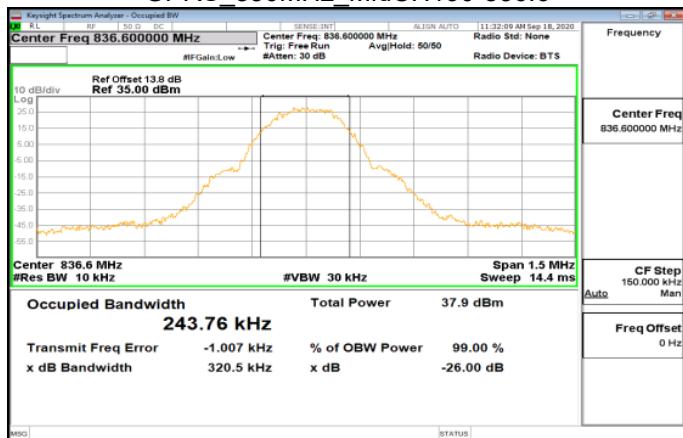
GPRS 850MHz LowCH128-824.2



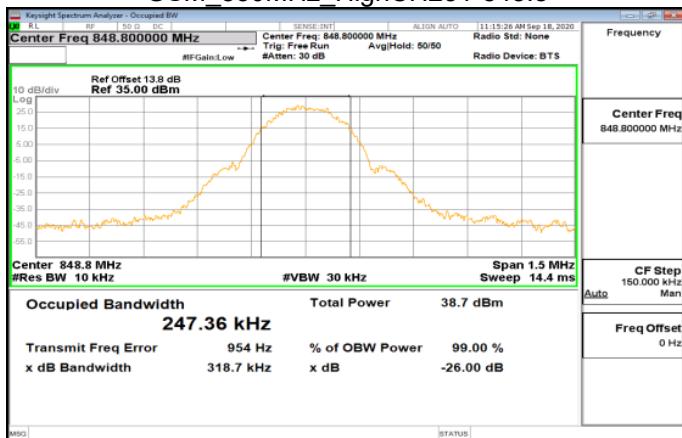
GSM 850MHz MidCH190-836.6



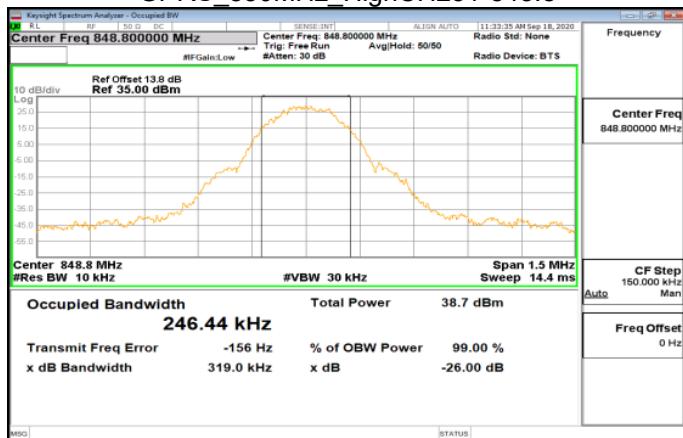
GPRS 850MHz MidCH190-836.6



GSM 850MHz HighCH251-848.8



GPRS 850MHz HighCH251-848.8



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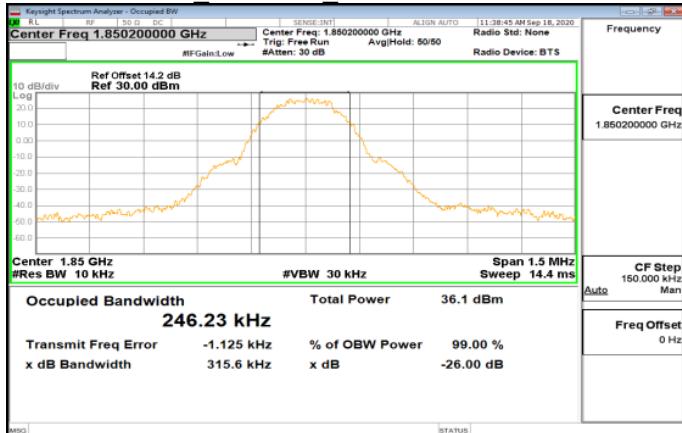
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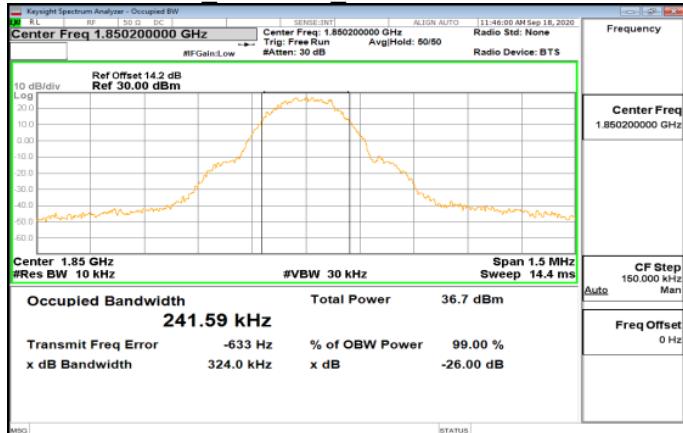
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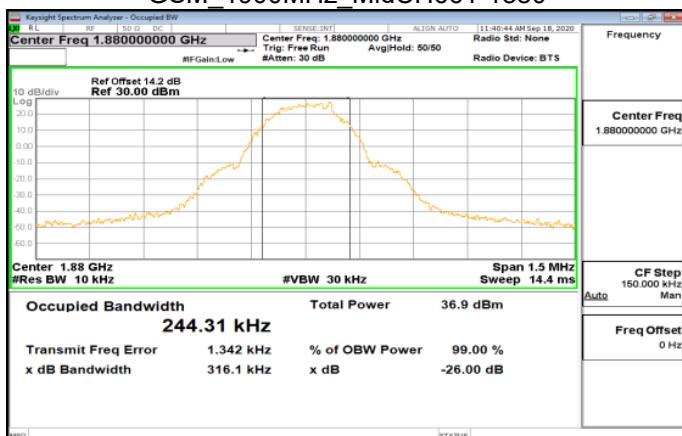
## GSM\_1900MHz\_LowCH512-1850.2



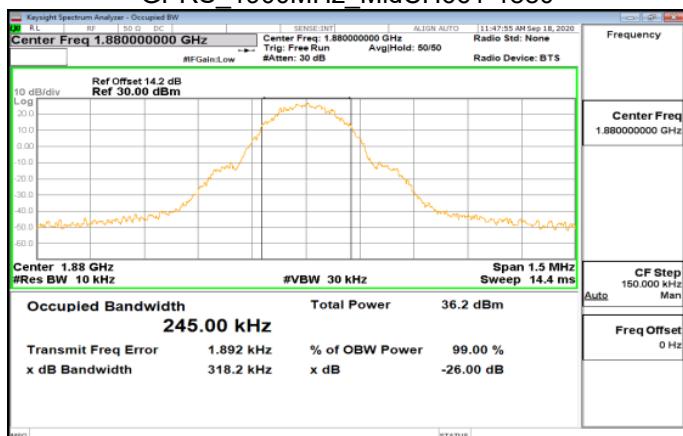
## GPRS\_1900MHz\_LowCH512-1850.2



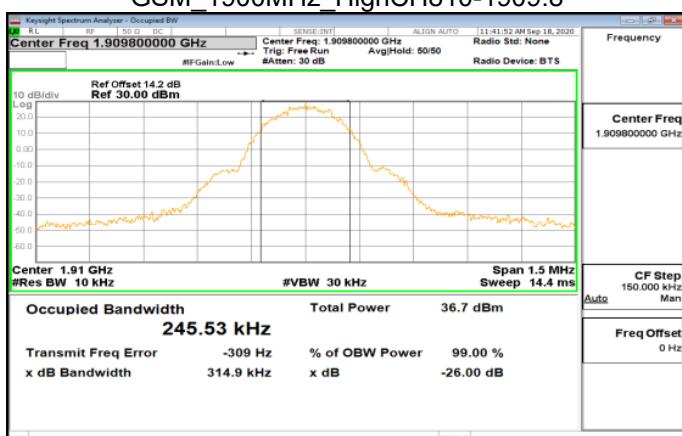
## GSM\_1900MHz\_MidCH661-1880



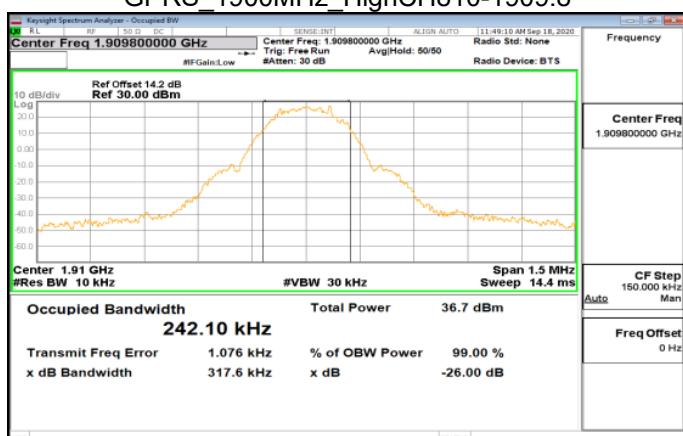
## GPRS\_1900MHz\_MidCH661-1880



## GSM\_1900MHz\_HighCH810-1909.8



## GPRS\_1900MHz\_HighCH810-1909.8



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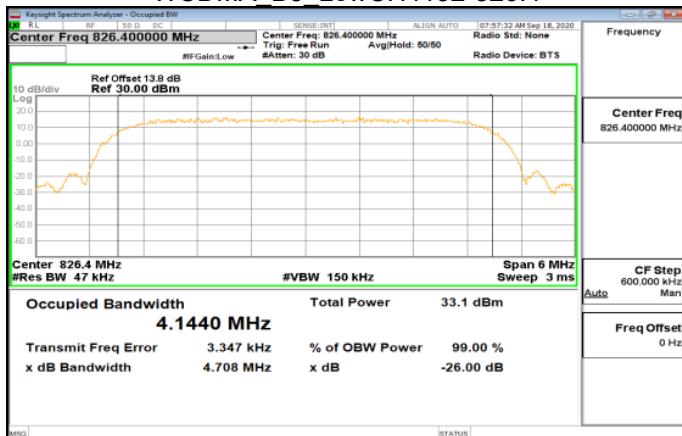
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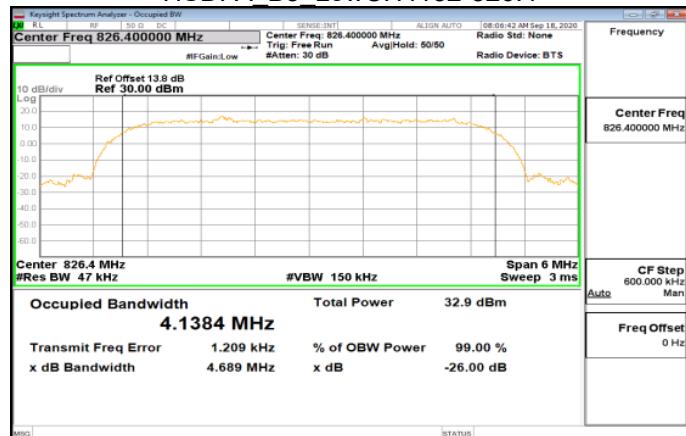
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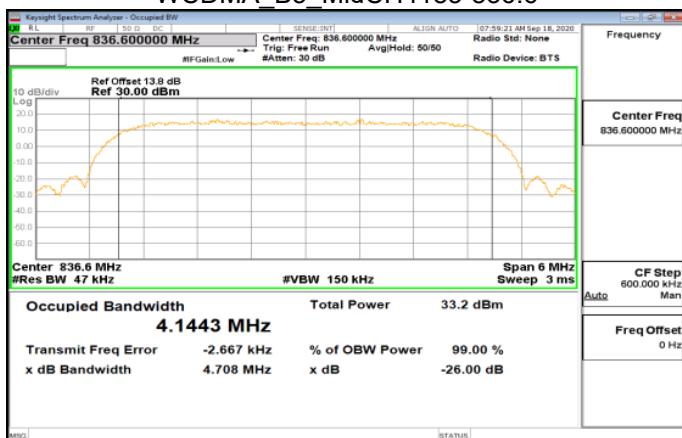
## WCDMA B5 LowCH4132-826.4



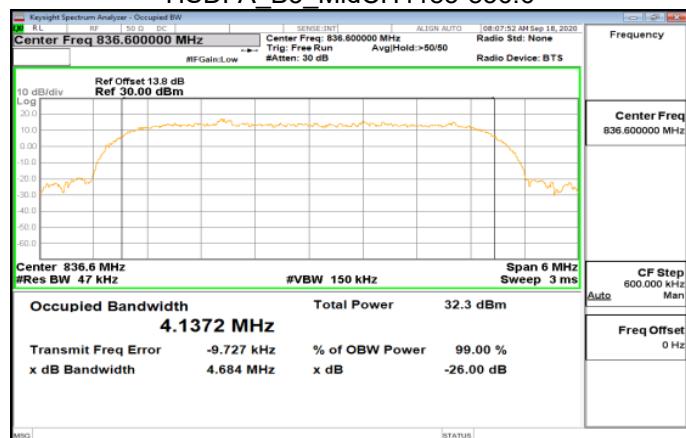
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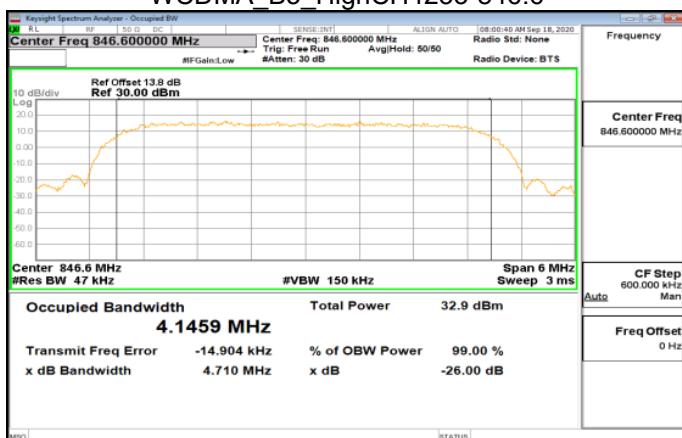
## WCDMA B5 MidCH4183-836.6



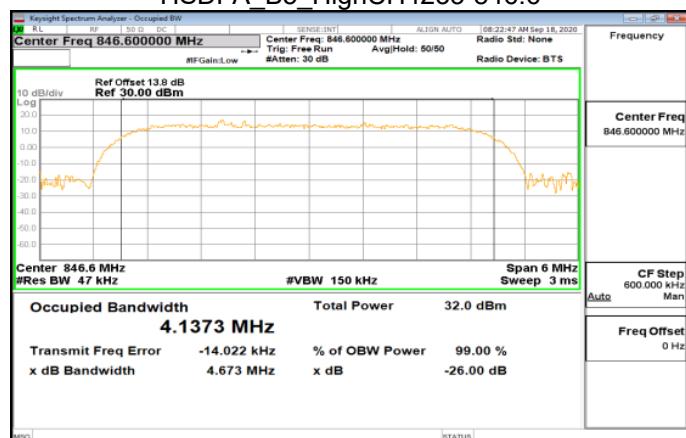
## HSDPA B5 MidCH4183-836.6



## WCDMA B5 HighCH4233-846.6



## HSDPA B5 HighCH4233-846.6



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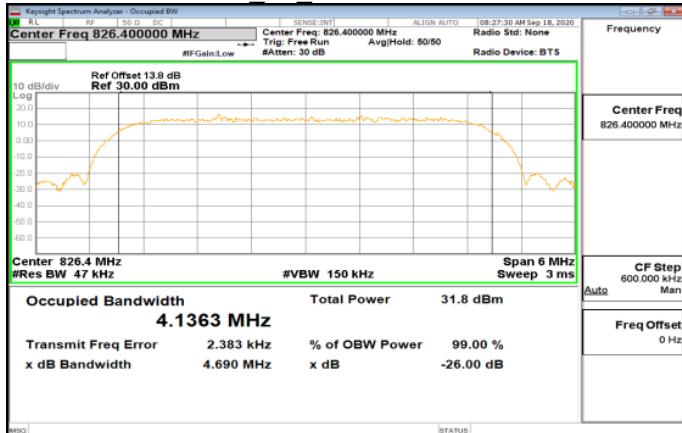
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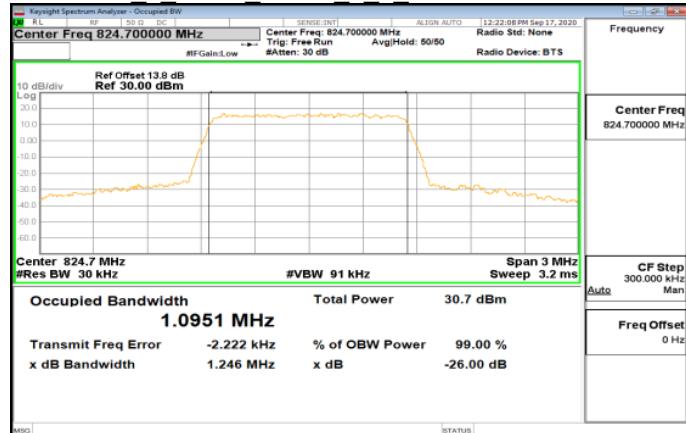
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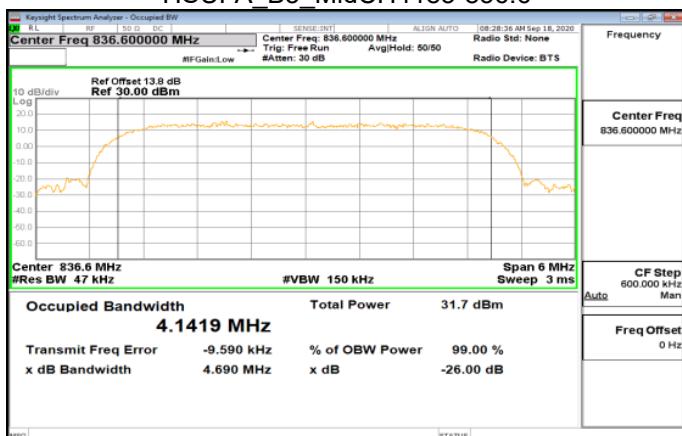
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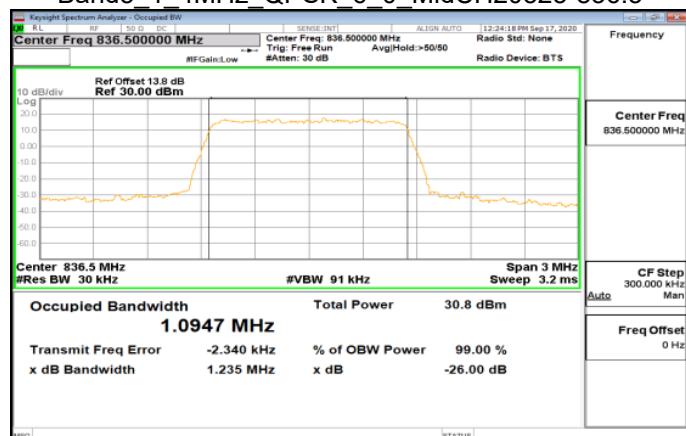
## Band5\_1\_4MHz\_QPSK\_6\_0\_LowCH20407-824.7



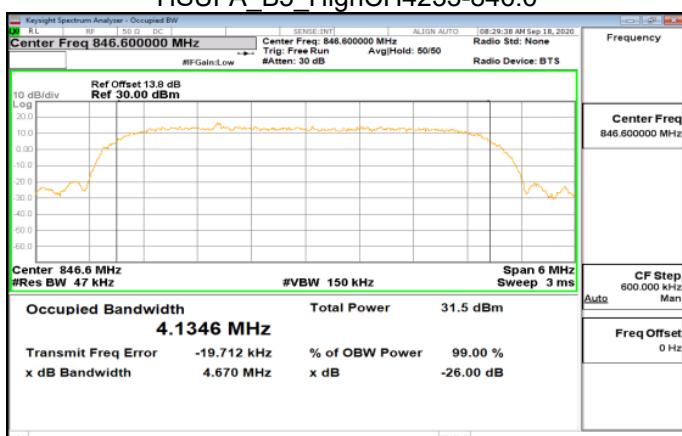
## HSUPA\_B5\_MidCH4183-836.6



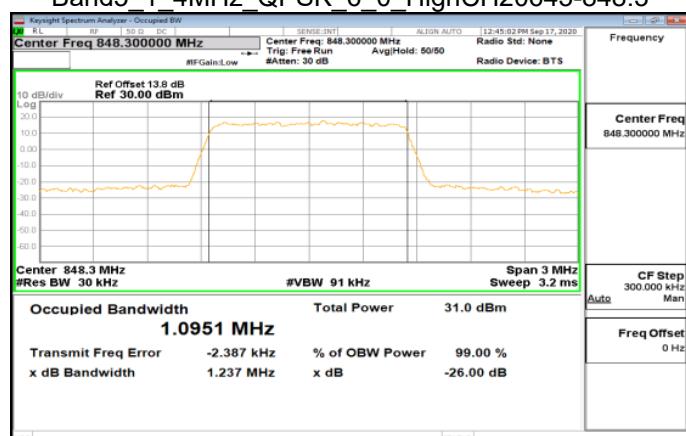
## Band5\_1\_4MHz\_QPSK\_6\_0\_MidCH20525-836.5



## HSUPA\_B5\_HighCH4233-846.6



## Band5\_1\_4MHz\_QPSK\_6\_0\_HighCH20643-848.3



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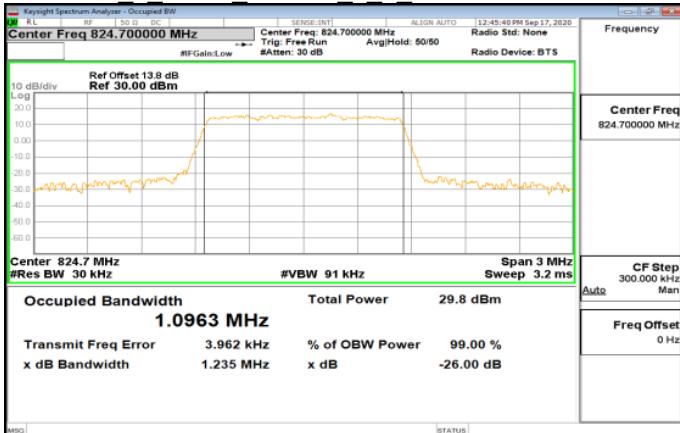
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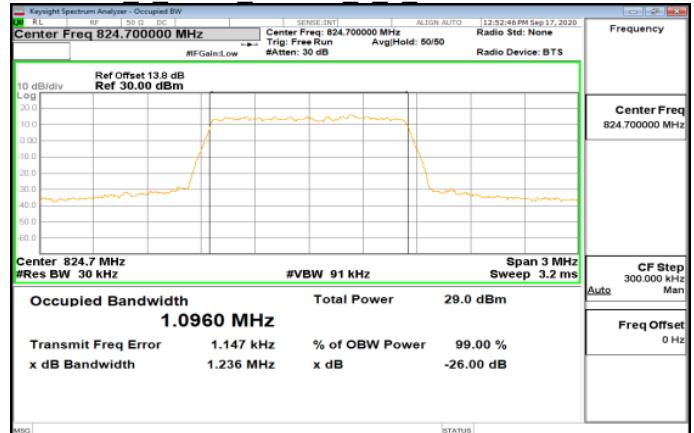
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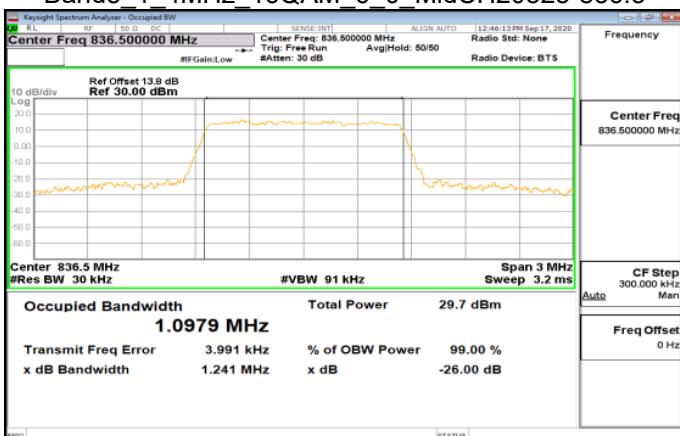
## Band5\_1 4MHz 16QAM 6\_0 LowCH20407-824.7



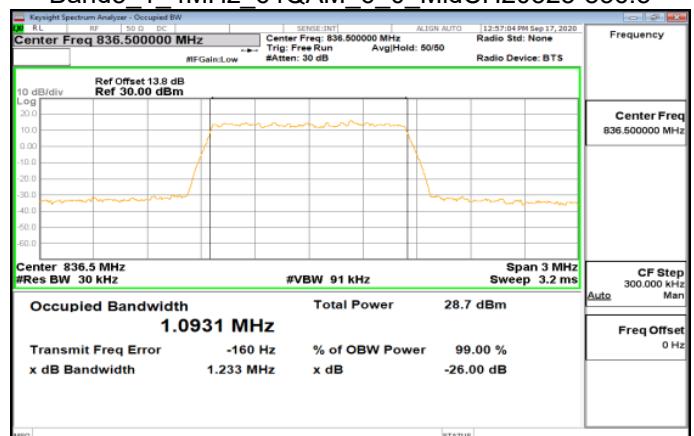
## Band5\_1 4MHz 64QAM 6\_0 LowCH20407-824.7



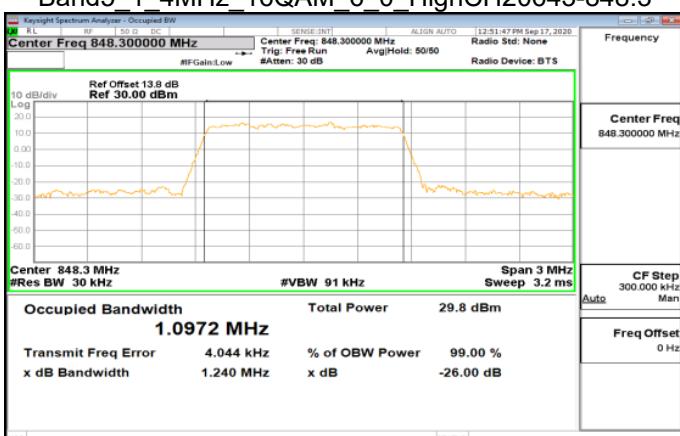
## Band5\_1 4MHz 16QAM 6\_0 MidCH20525-836.5



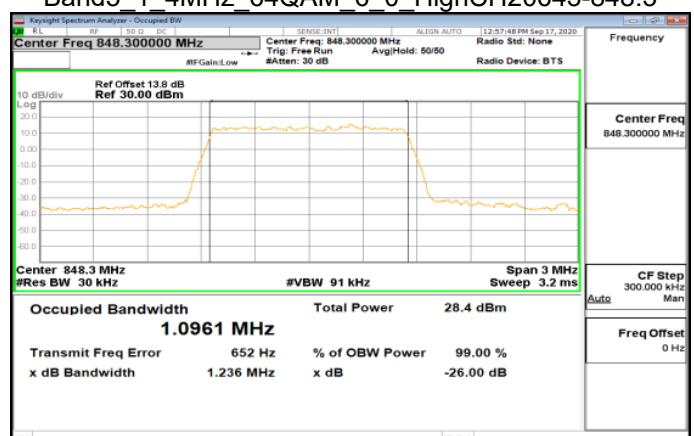
## Band5\_1 4MHz 64QAM 6\_0 MidCH20525-836.5



## Band5\_1 4MHz 16QAM 6\_0 HighCH20643-848.3



## Band5\_1 4MHz 64QAM 6\_0 HighCH20643-848.3



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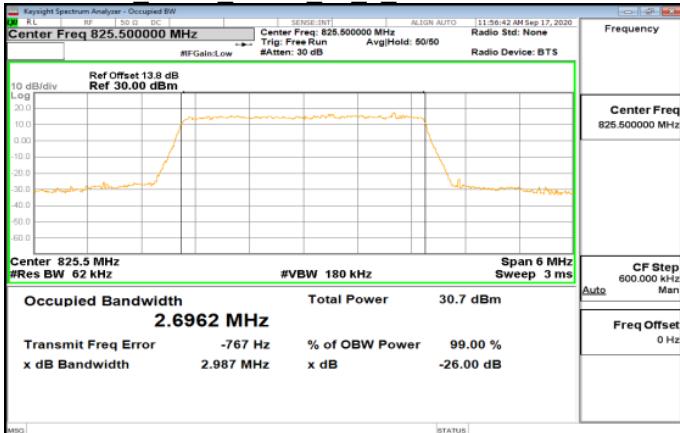
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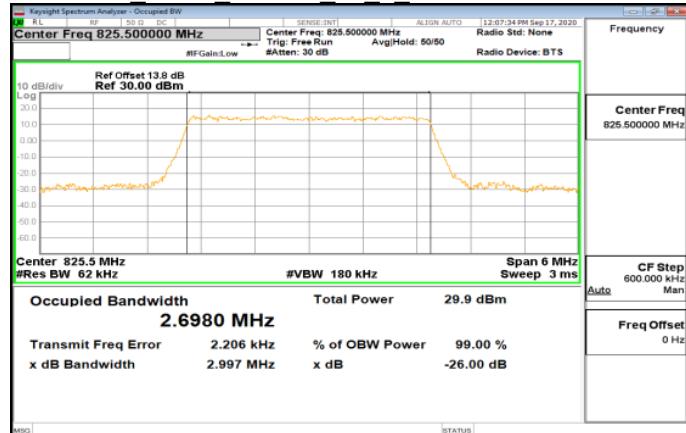
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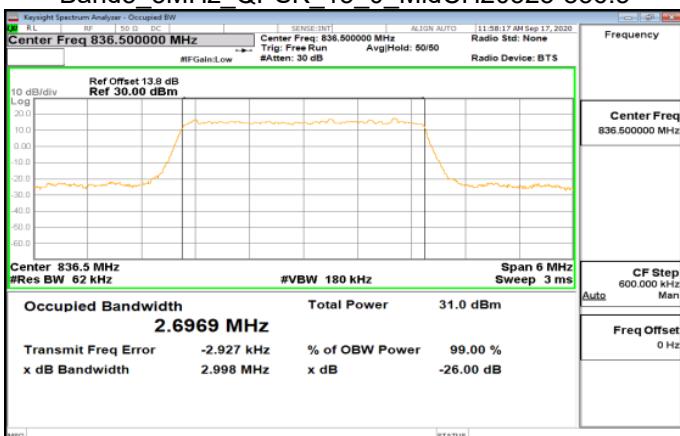
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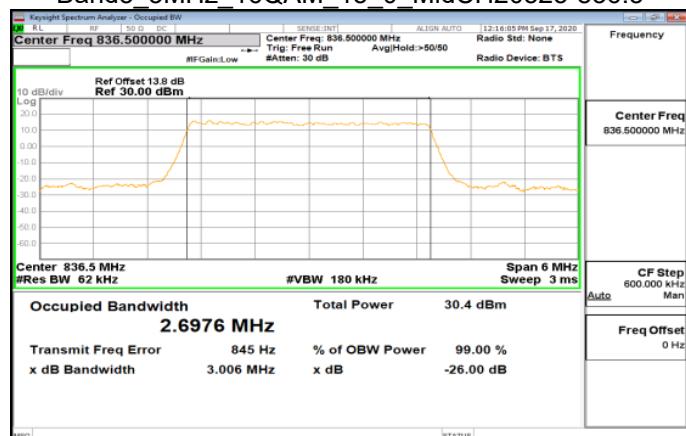
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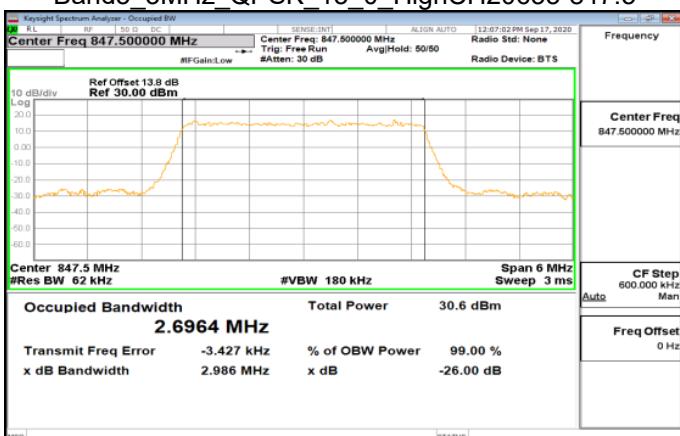
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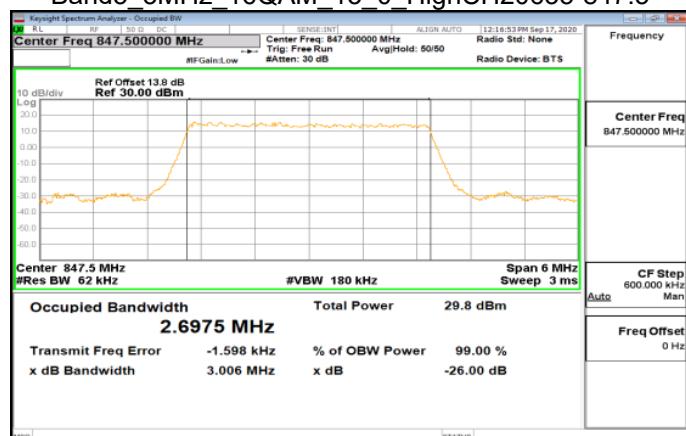
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## Band5 3MHz\_QPSK 15 0 HighCH20635-847.5



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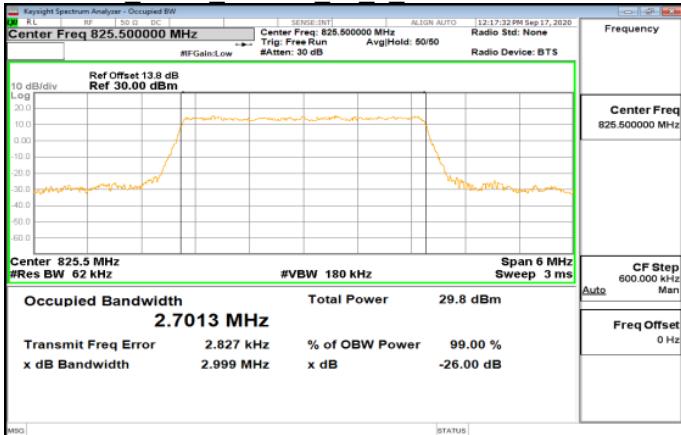
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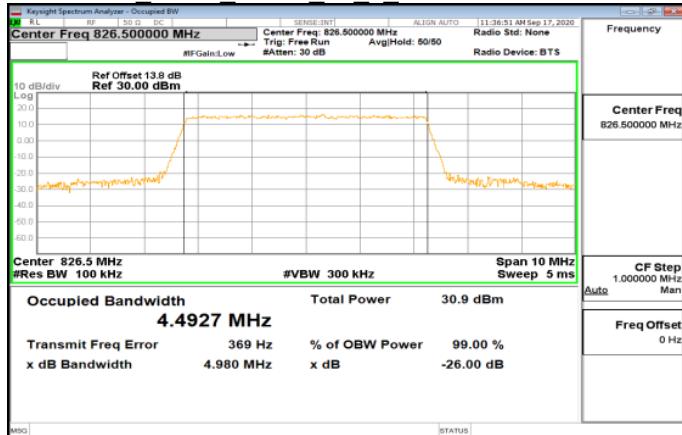
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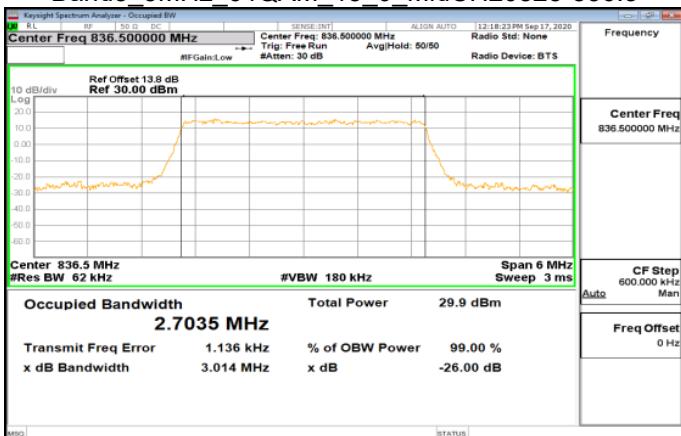
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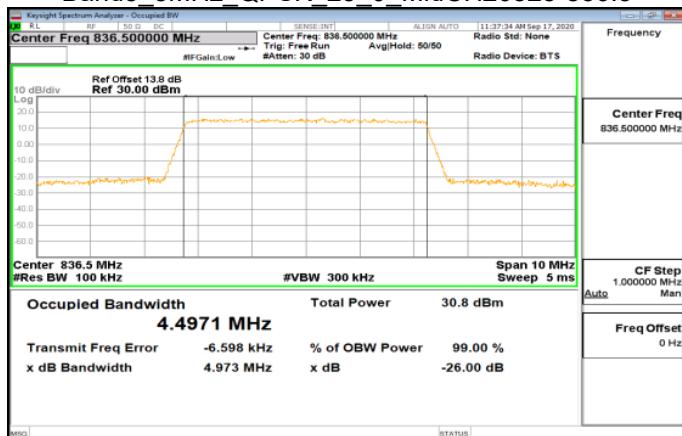
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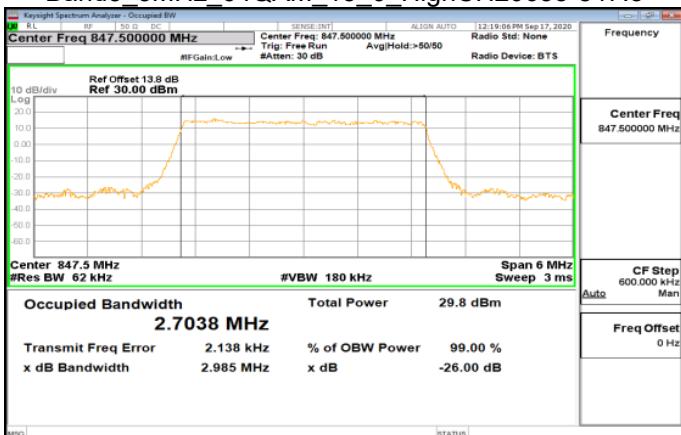
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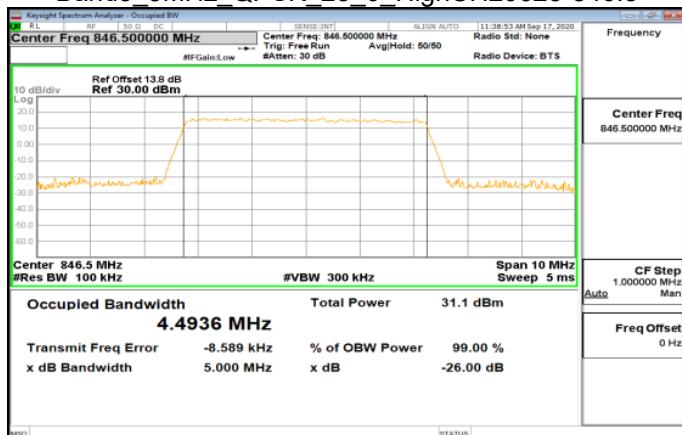
## Band5\_5MHz\_QPSK\_25\_0\_MidCH20525-836.5



## Band5\_3MHz\_64QAM\_15\_0\_HighCH20635-847.5



## Band5\_5MHz\_QPSK\_25\_0\_HighCH20625-846.5



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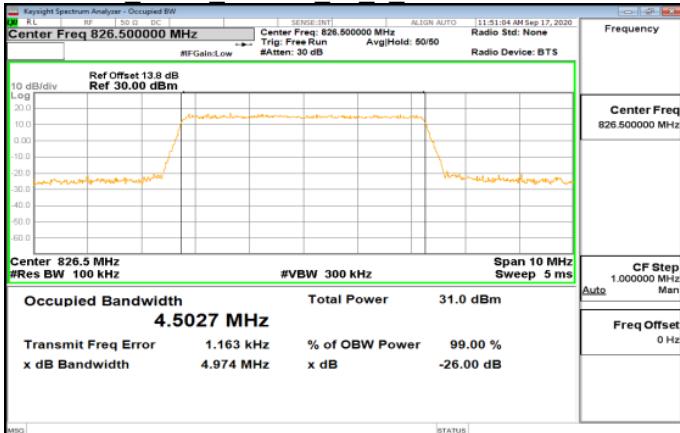
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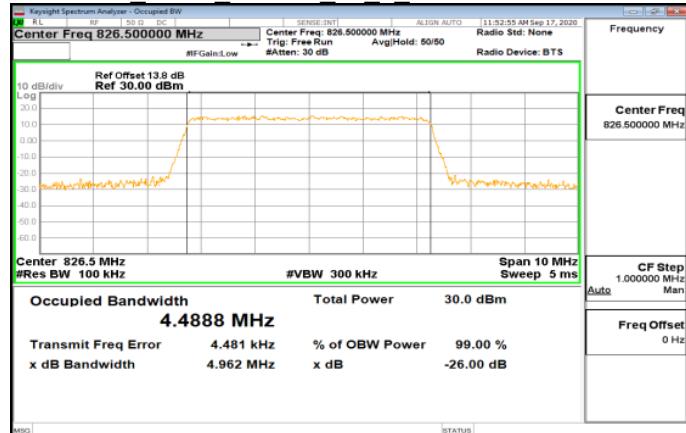
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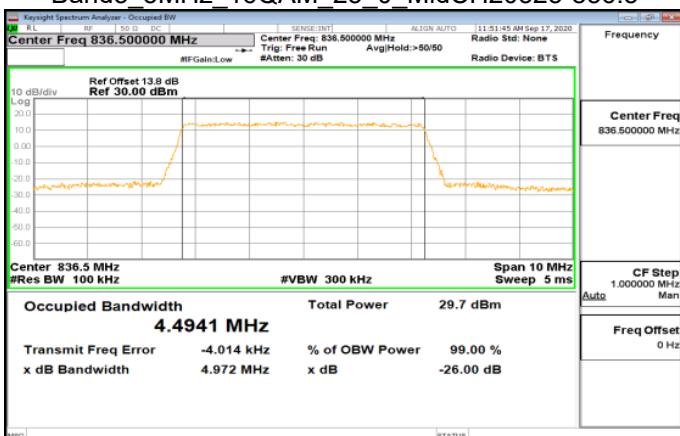
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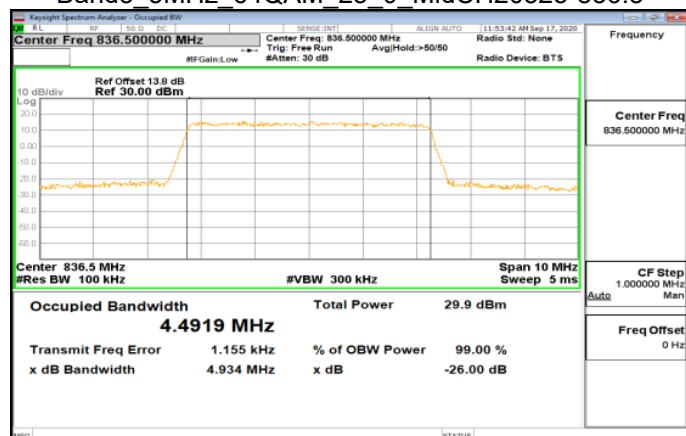
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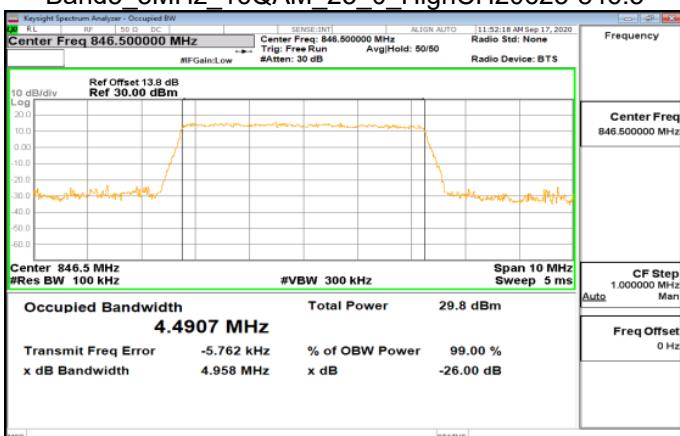
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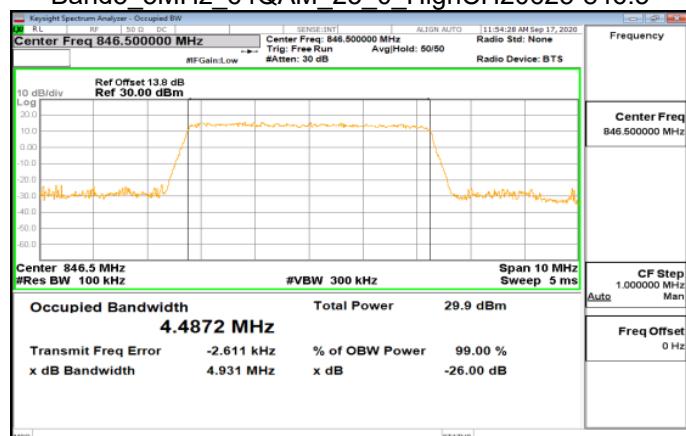
## Band5 5MHz 64QAM 25 0 MidCH20525-836.5



## Band5 5MHz 16QAM 25 0 HighCH20625-846.5



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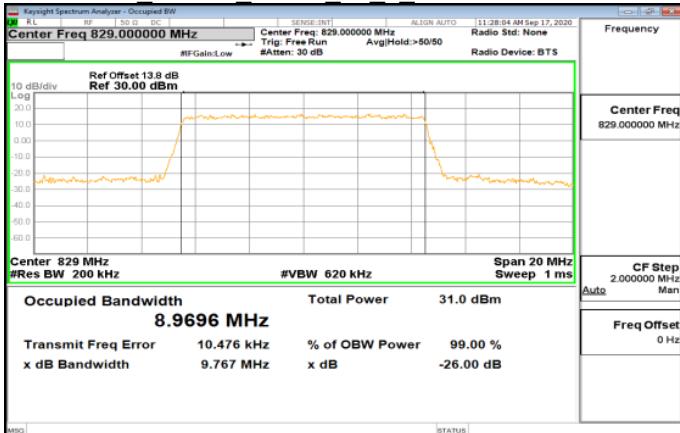
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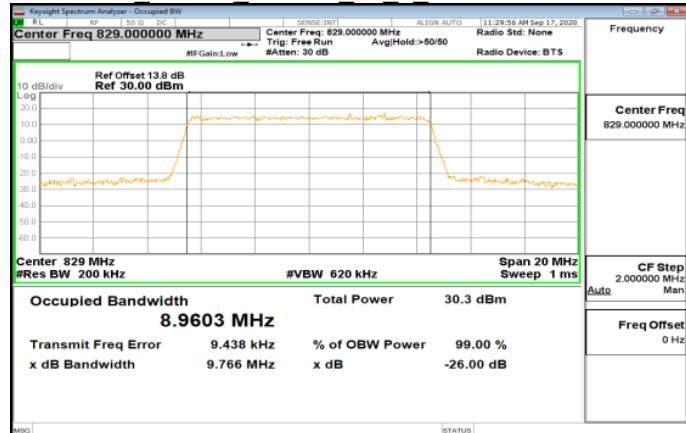
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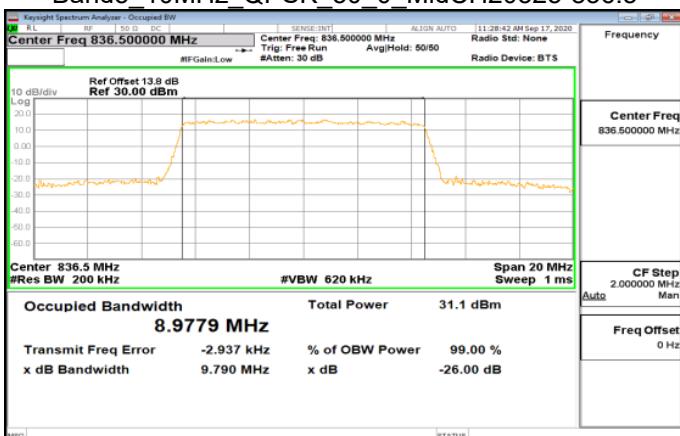
## Band5 10MHz QPSK 50\_0 LowCH20450-829



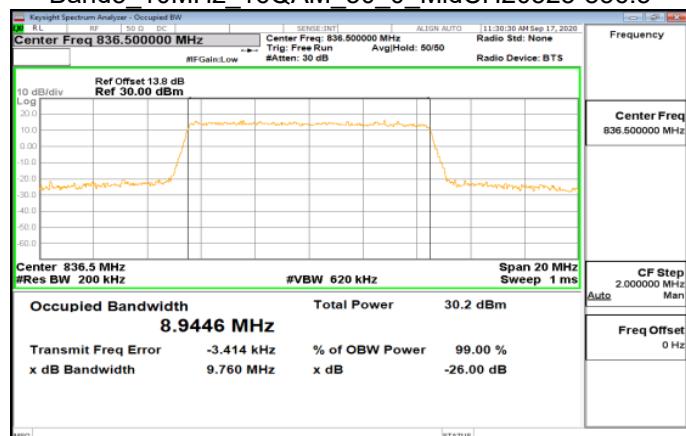
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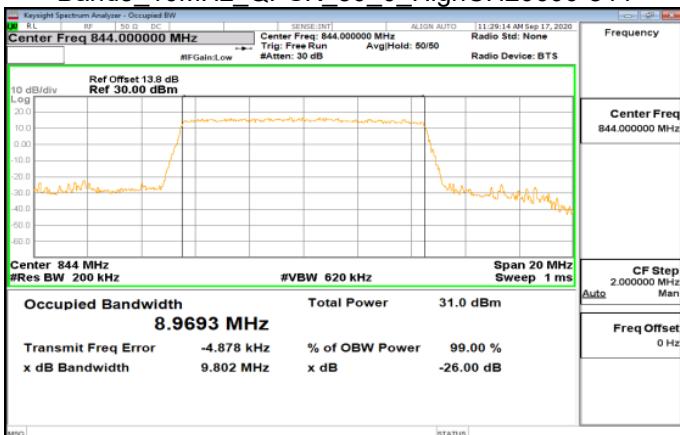
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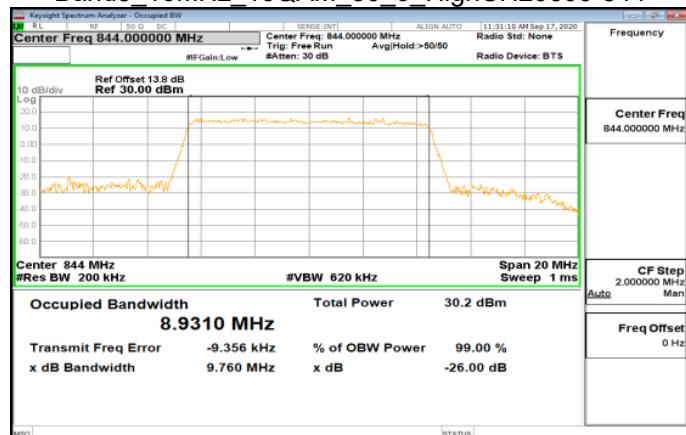
## Band5 10MHz 16QAM 50\_0 MidCH20525-836.5



## Band5 10MHz QPSK 50\_0 HighCH20600-844



## Band5 10MHz 16QAM 50\_0 HighCH20600-844



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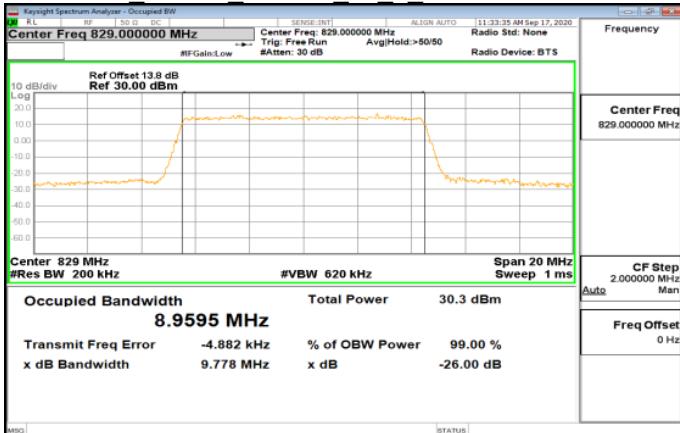
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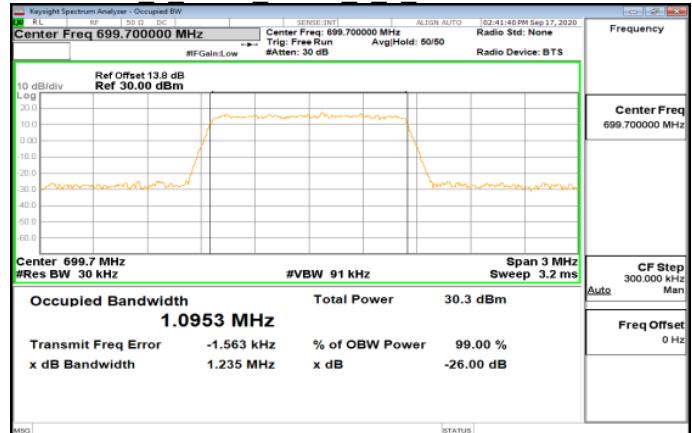
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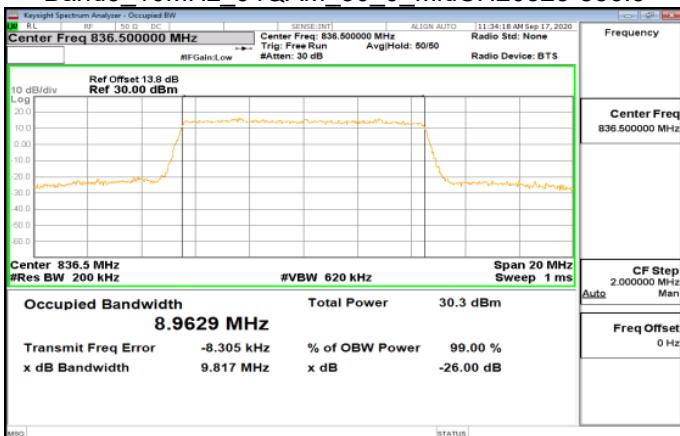
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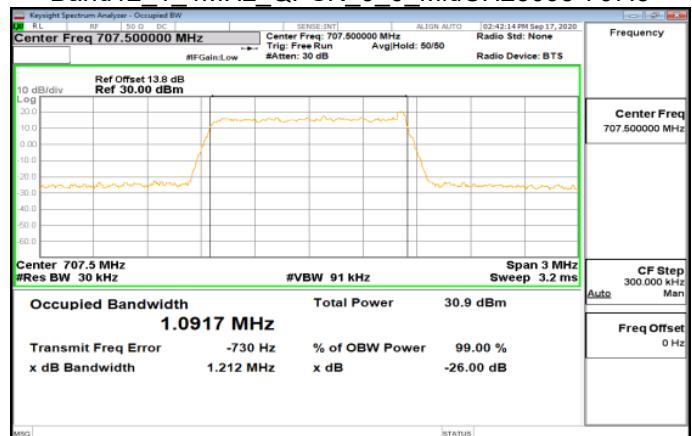
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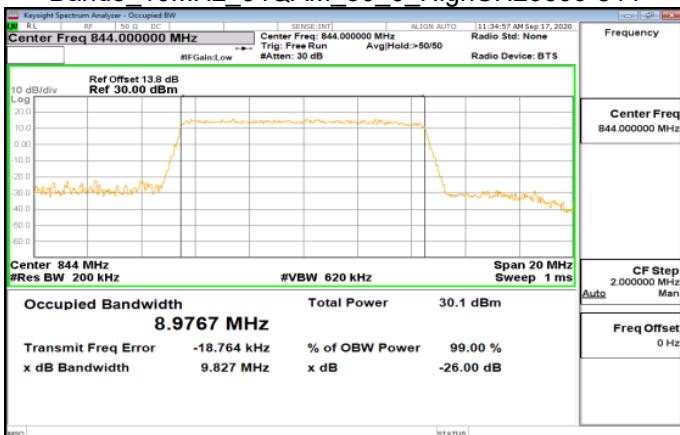
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## Band12\_1\_4MHz\_QPSK\_6\_0\_MidCH23095-707.5



## Band5\_10MHz\_64QAM\_50\_0\_HighCH20600-844



## Band12\_1\_4MHz\_QPSK\_6\_0\_HighCH23173-715.3



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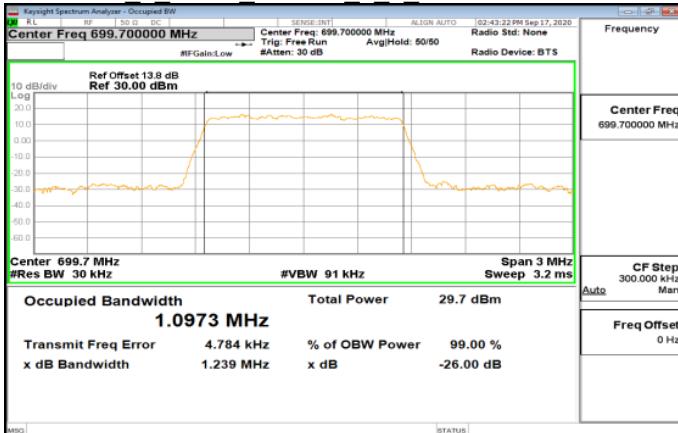
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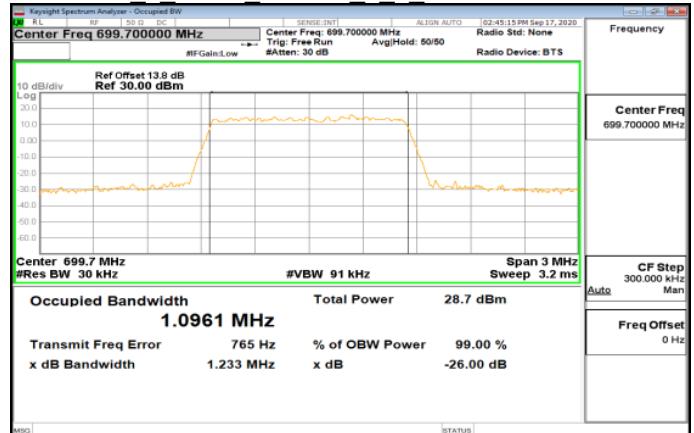
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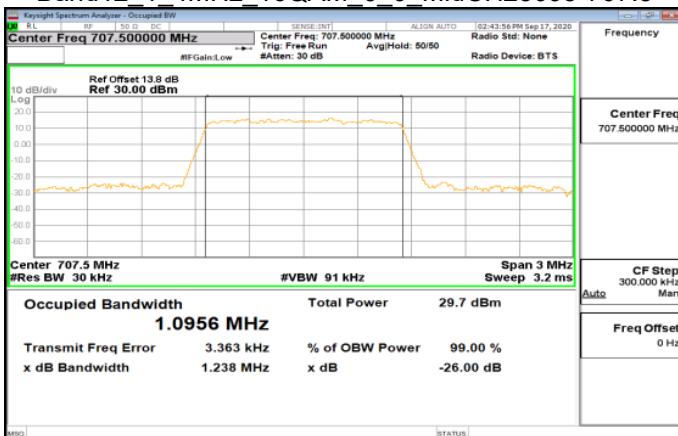
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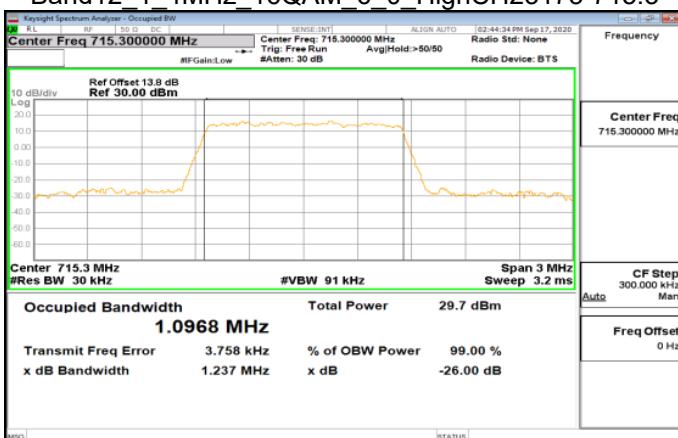
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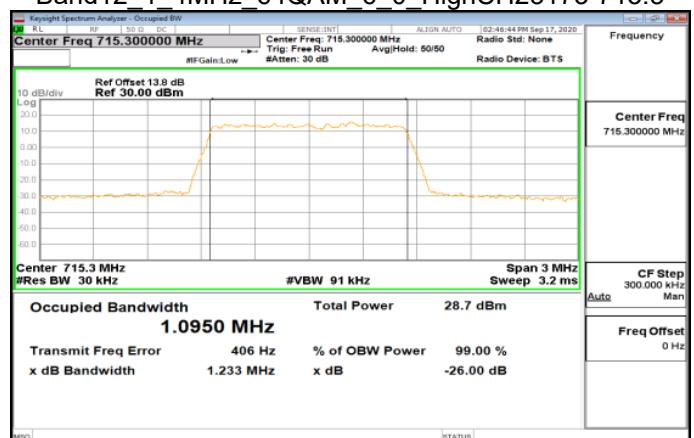
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## Band12\_1\_4MHz\_16QAM\_6\_0\_HighCH23173-715.3



## Band12\_1\_4MHz\_64QAM\_6\_0\_HighCH23173-715.3



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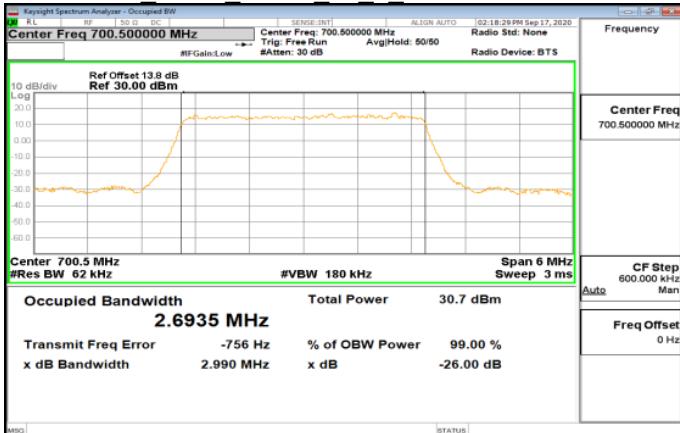
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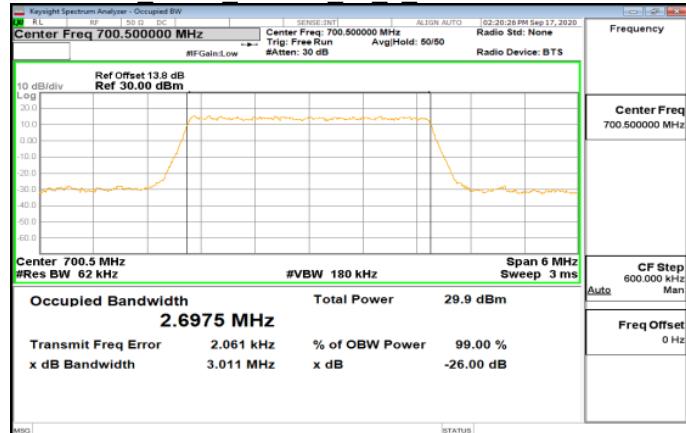
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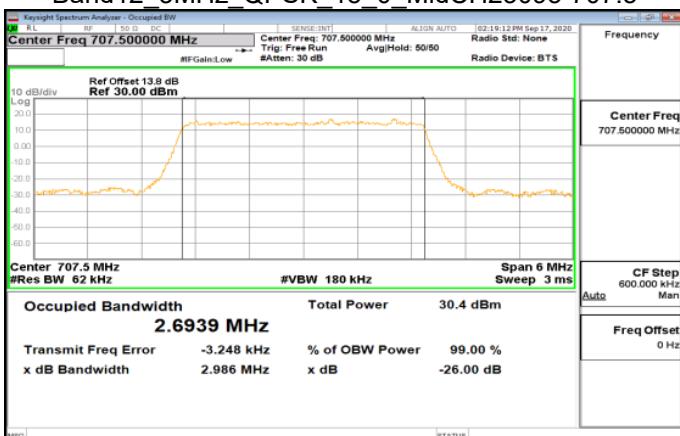
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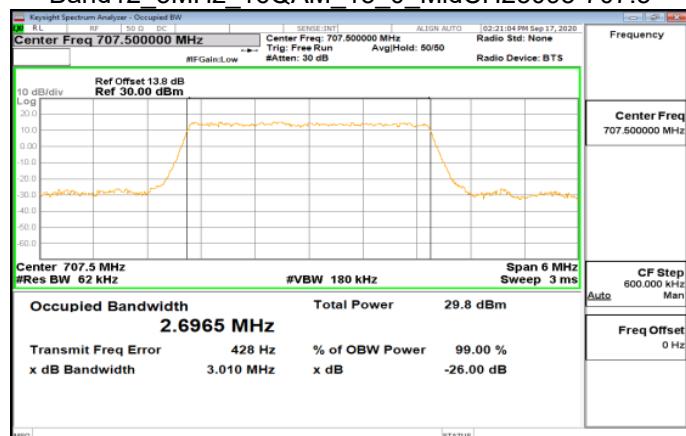
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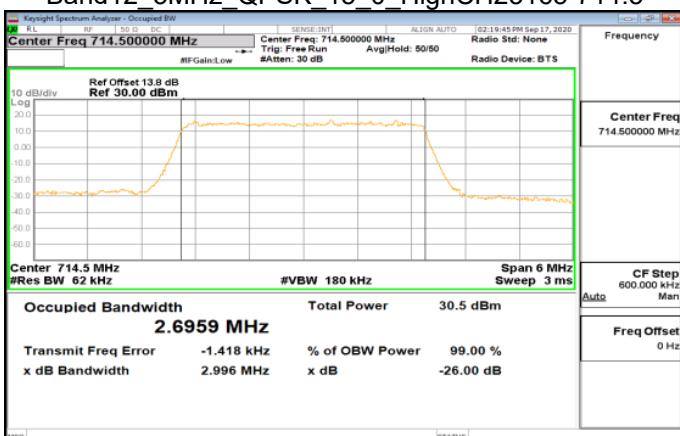
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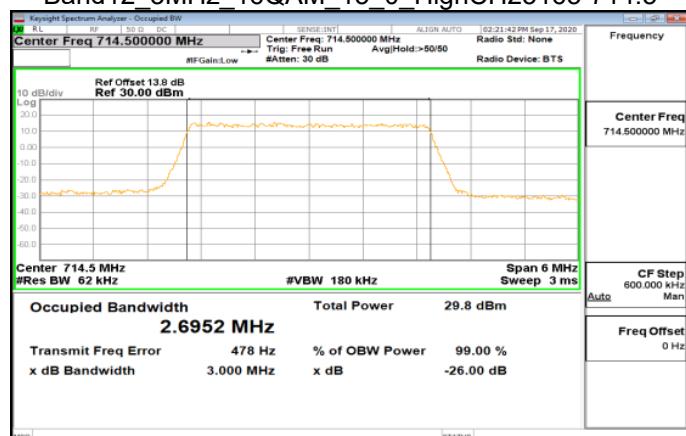
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## Band12 3MHz QPSK 15\_0 HighCH23165-714.5



## Band12 3MHz 16QAM 15\_0 HighCH23165-714.5



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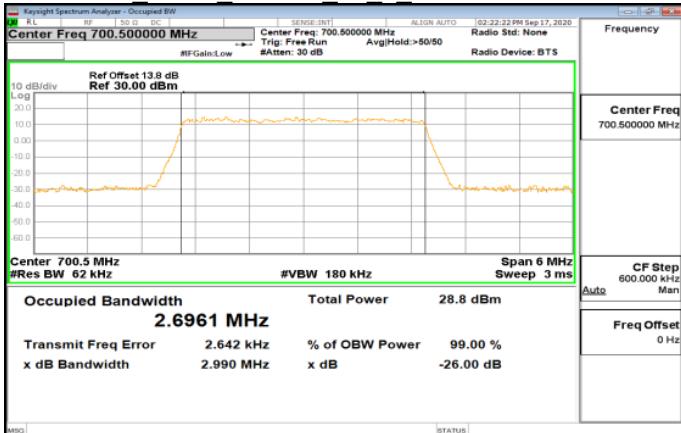
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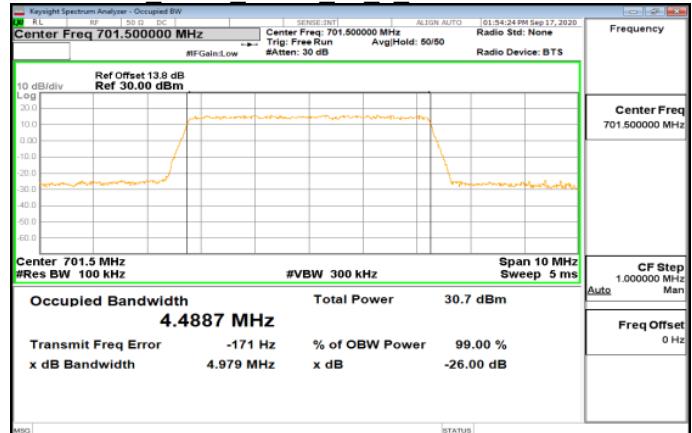
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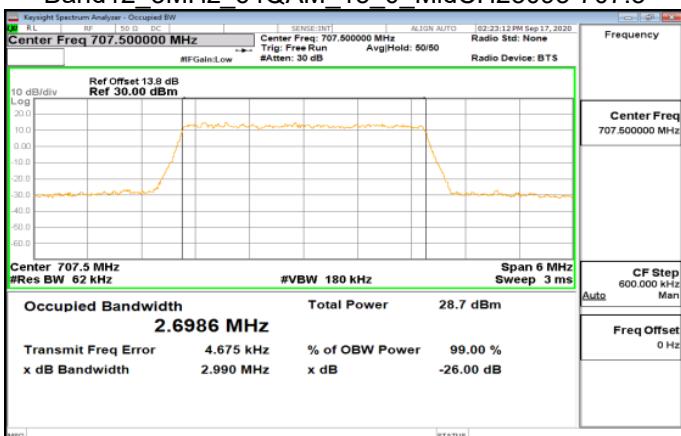
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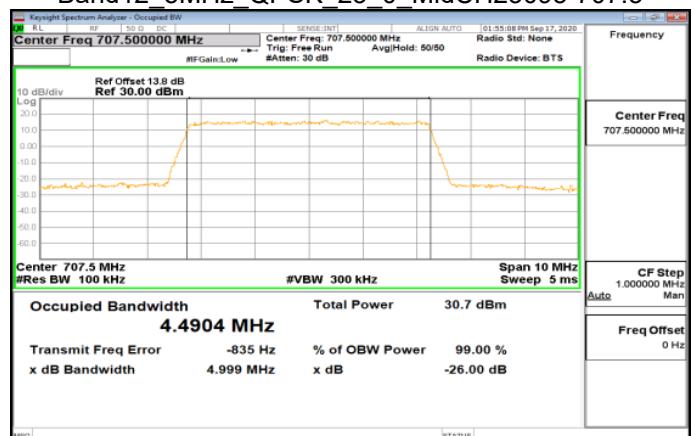
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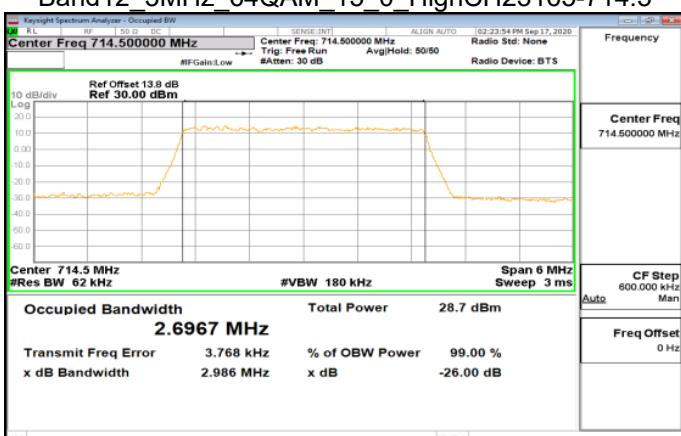
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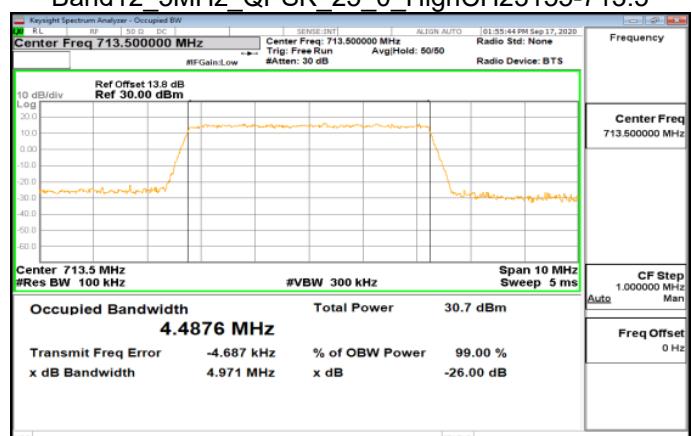
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## Band12 3MHz 64QAM 15 0 HighCH23165-714.5



## Band12 5MHz QPSK 25 0 HighCH23155-713.5



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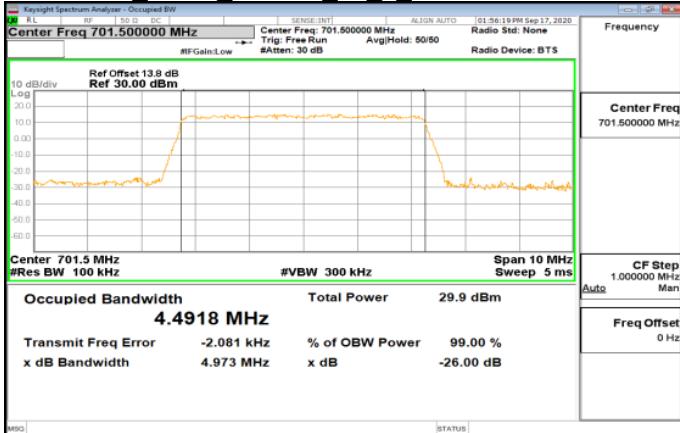
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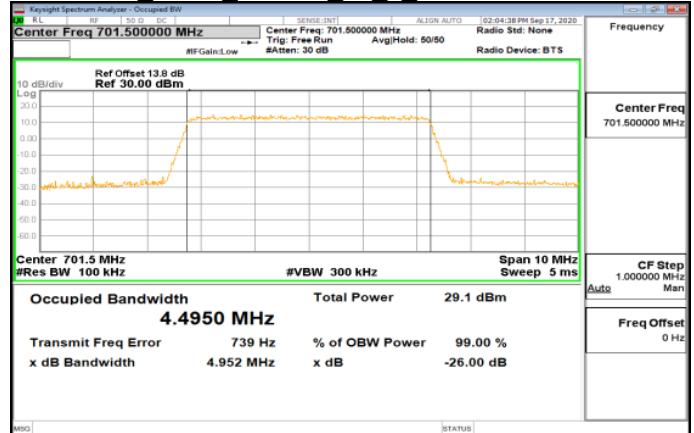
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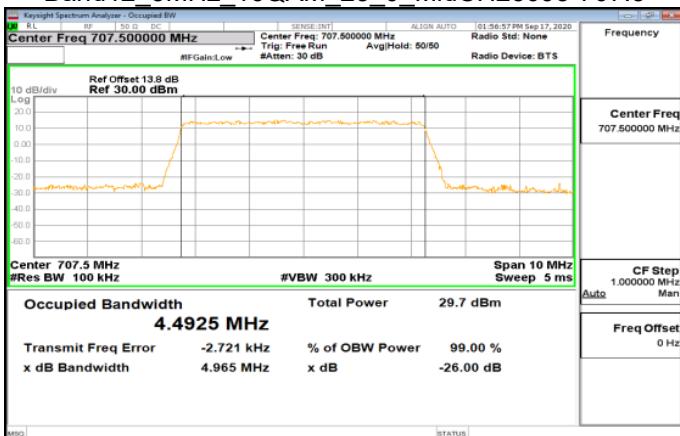
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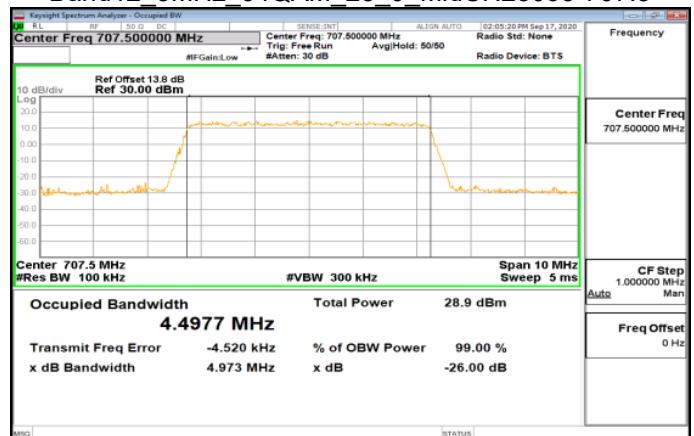
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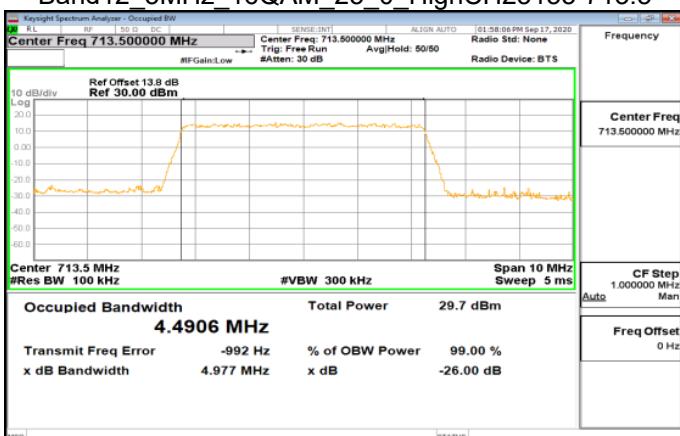
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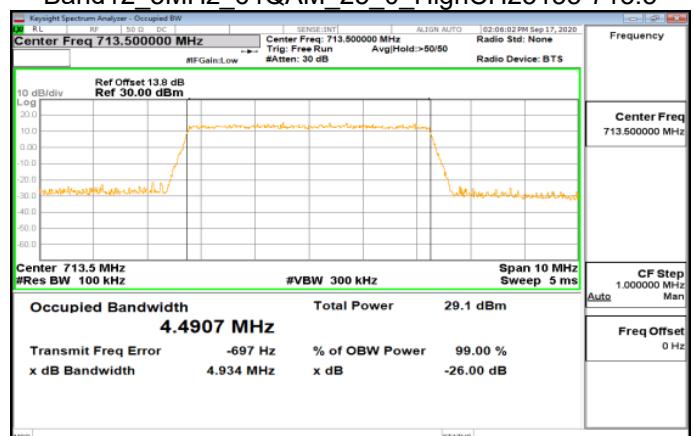
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## Band12 5MHz 16QAM 25\_0 HighCH23155-713.5



## Band12 5MHz 64QAM 25\_0 HighCH23155-713.5



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