

## 7.5 Peak-Average Ratio

### Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

### Test Procedure Used

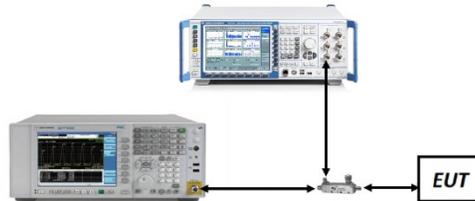
KDB 971168 D01 v03r01 – Section 5.7.1

### Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW  $\geq$  OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



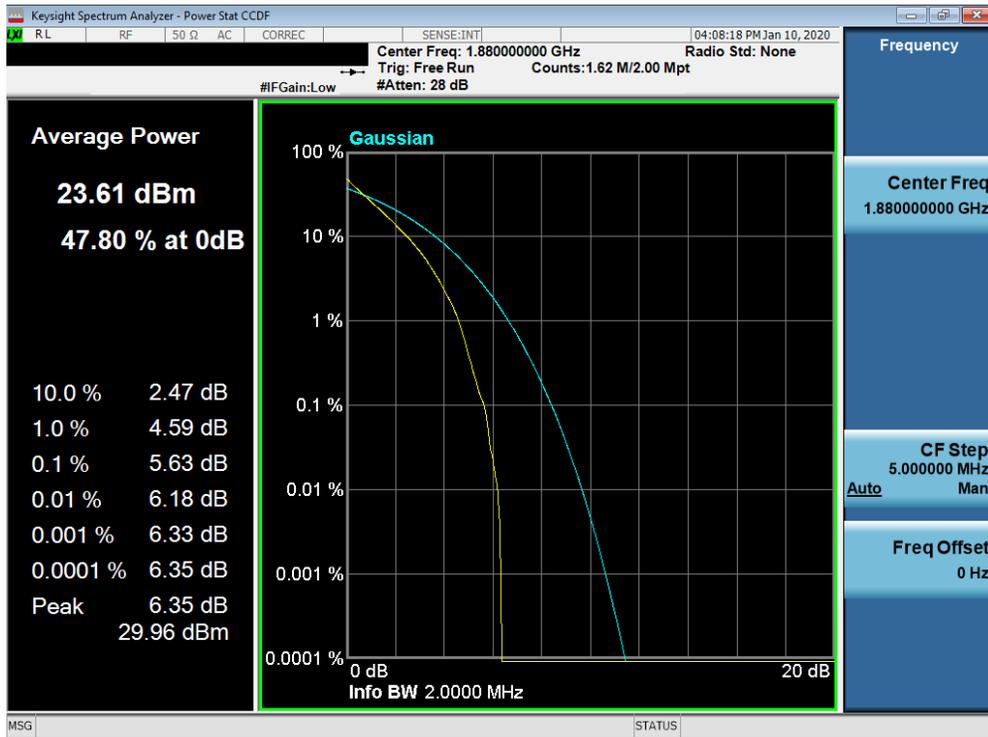
**Figure 7-4. Test Instrument & Measurement Setup**

### Test Notes

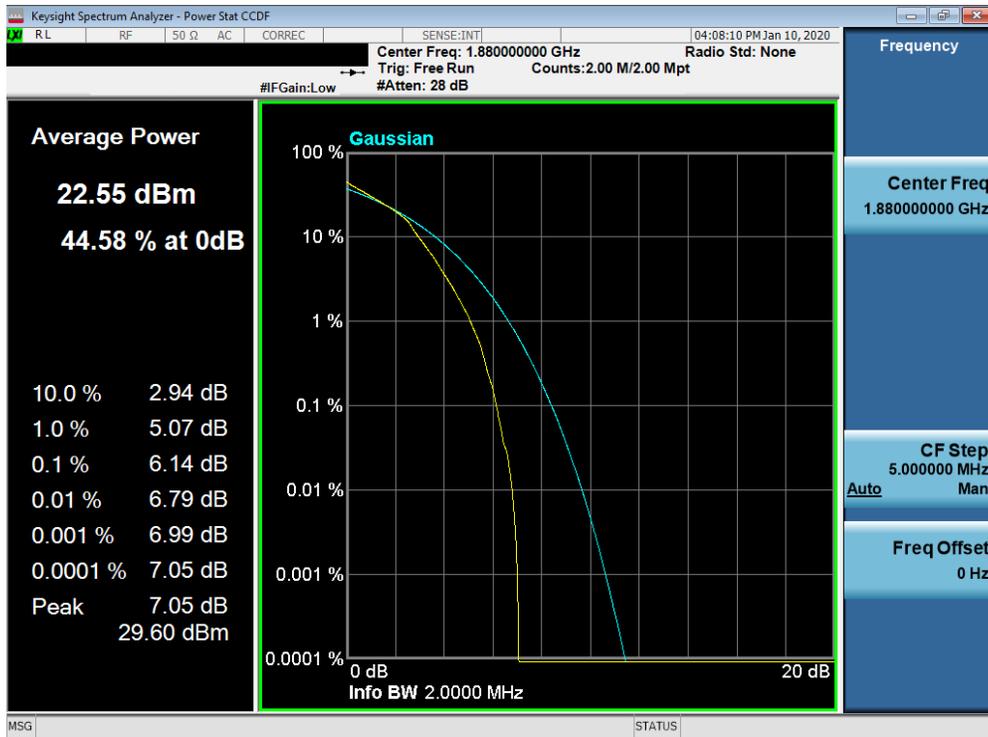
None.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 146 of 302

## Band 2

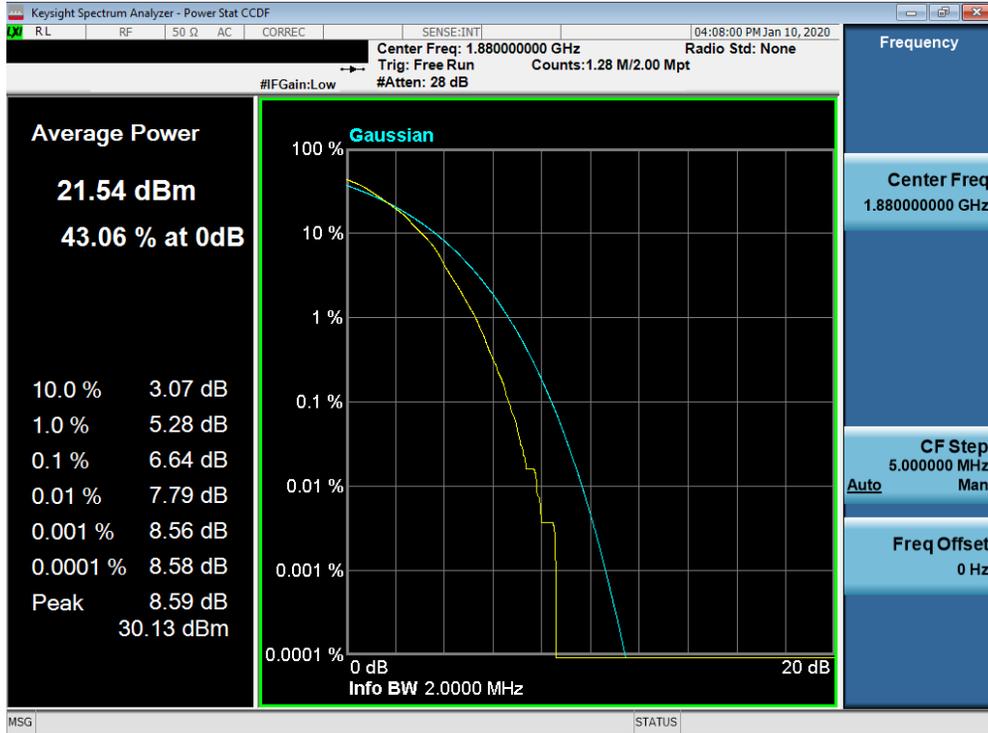


Plot 7-243. PAR Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

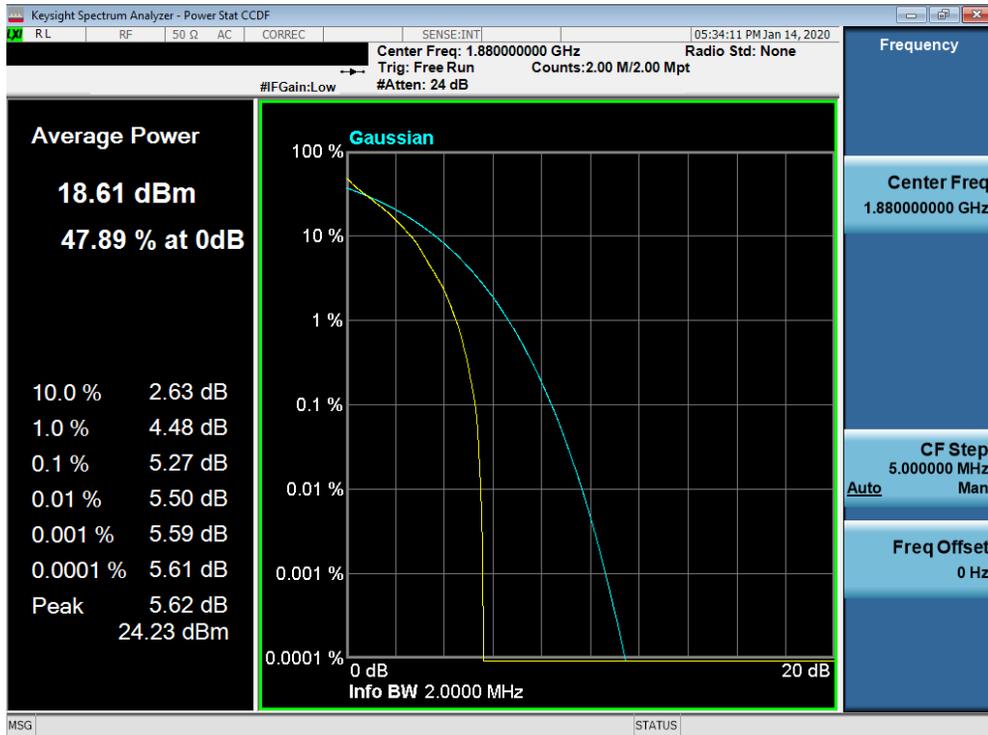


Plot 7-244. PAR Plot (Band 2 - 1.4MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 147 of 302

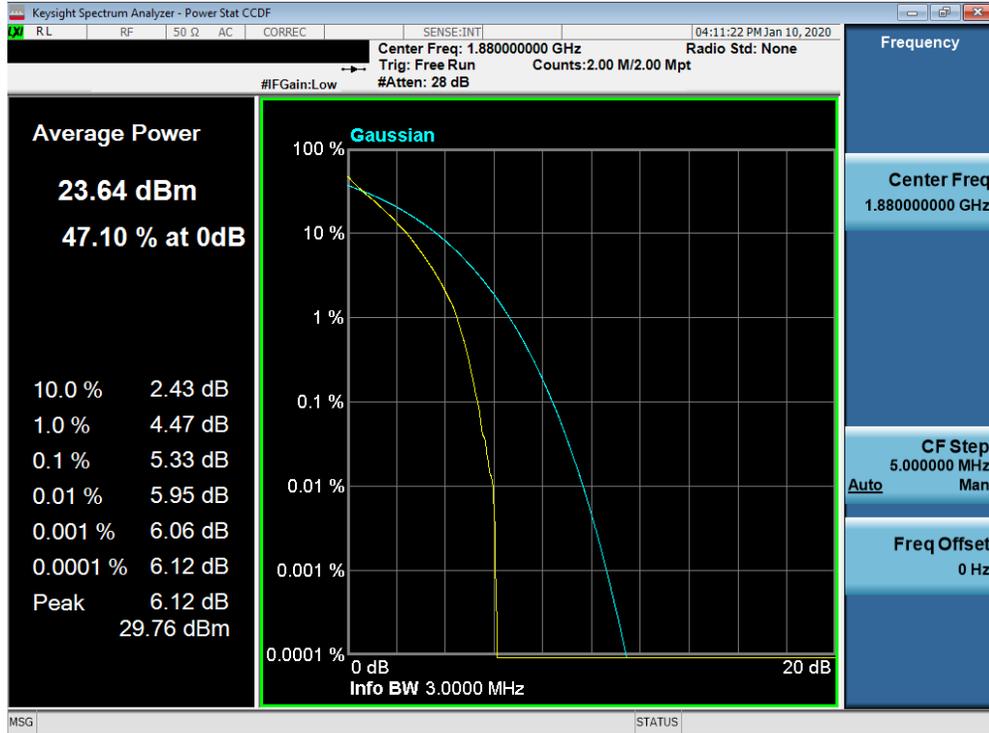


Plot 7-245. PAR Plot (Band 2 - 1.4MHz 64-QAM - Full RB Configuration)

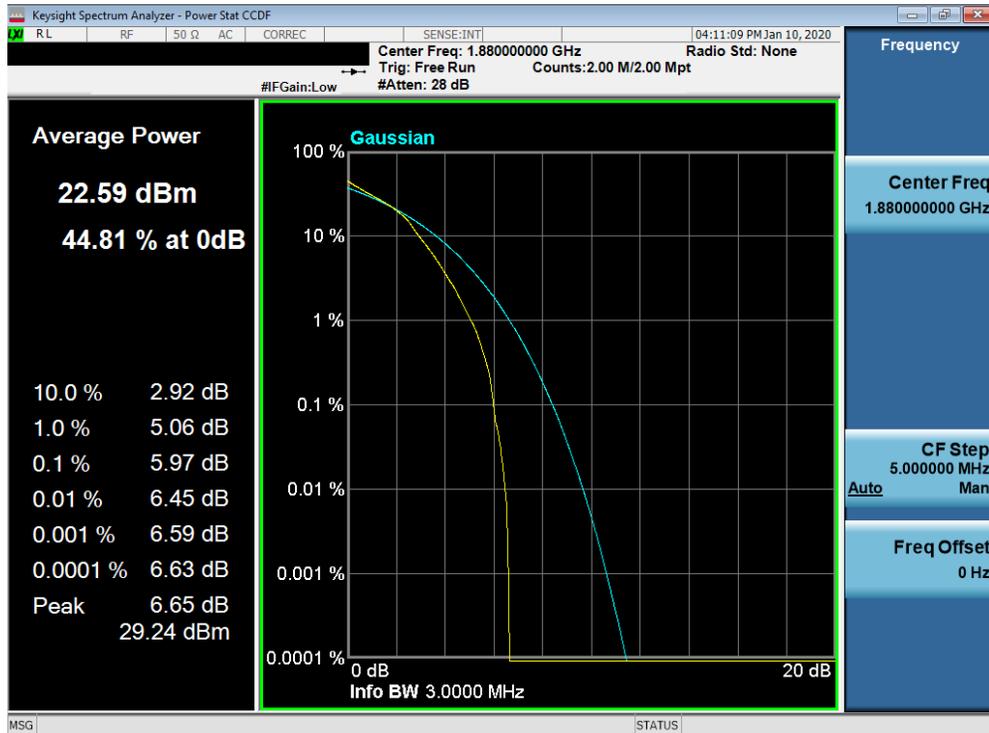


Plot 7-246. PAR Plot (Band 2 - 1.4MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 148 of 302

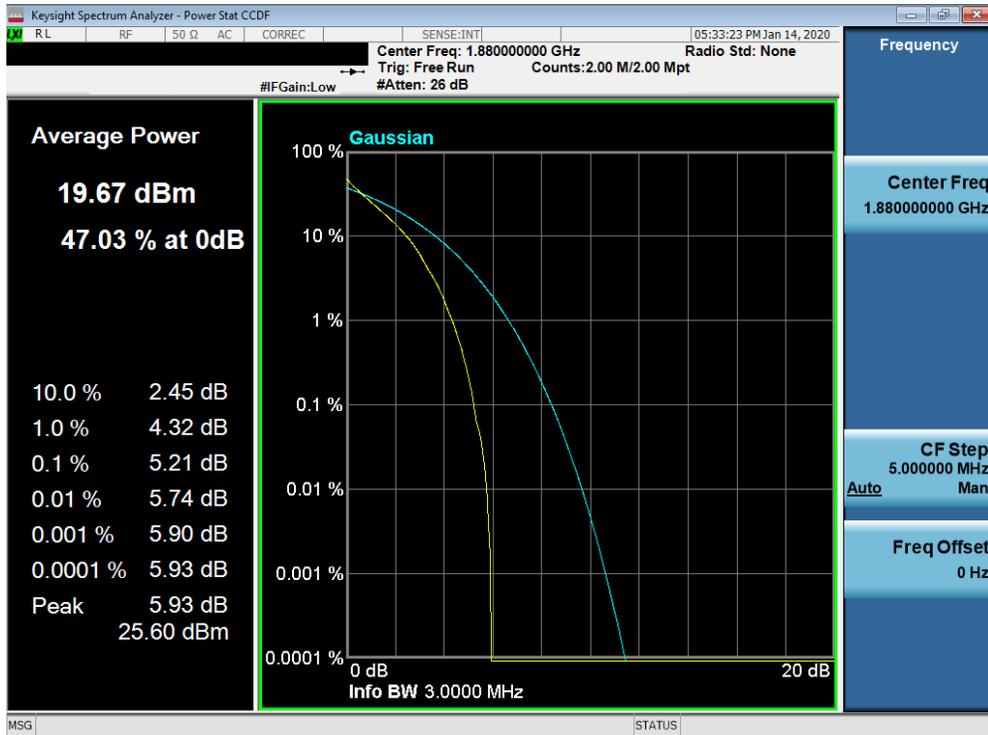
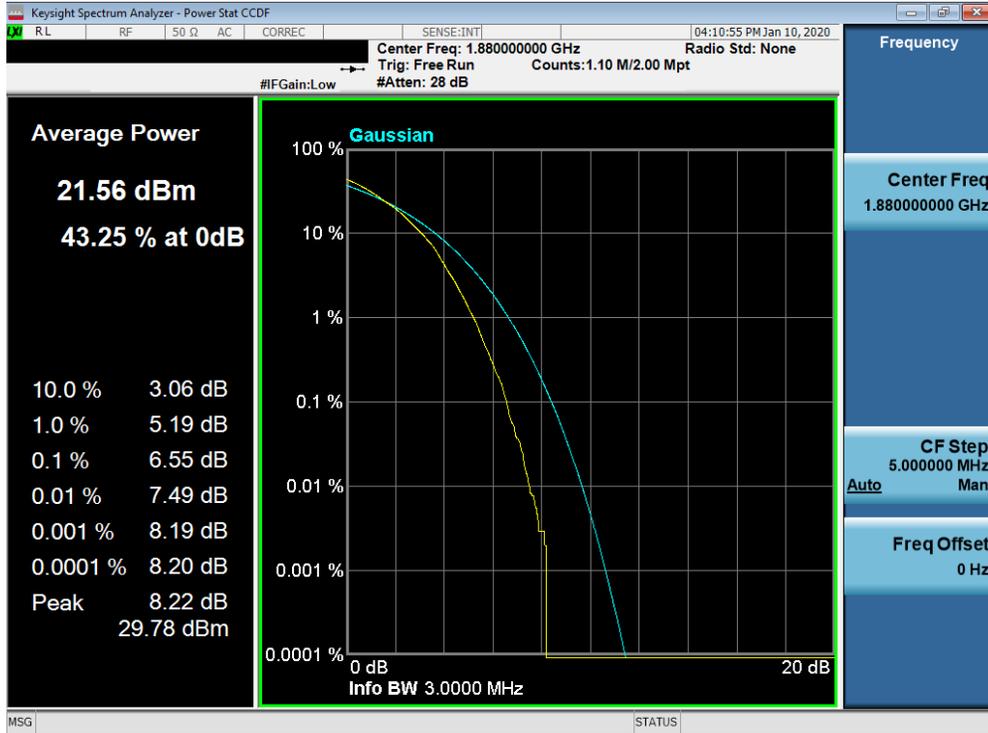


Plot 7-247. PAR Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)

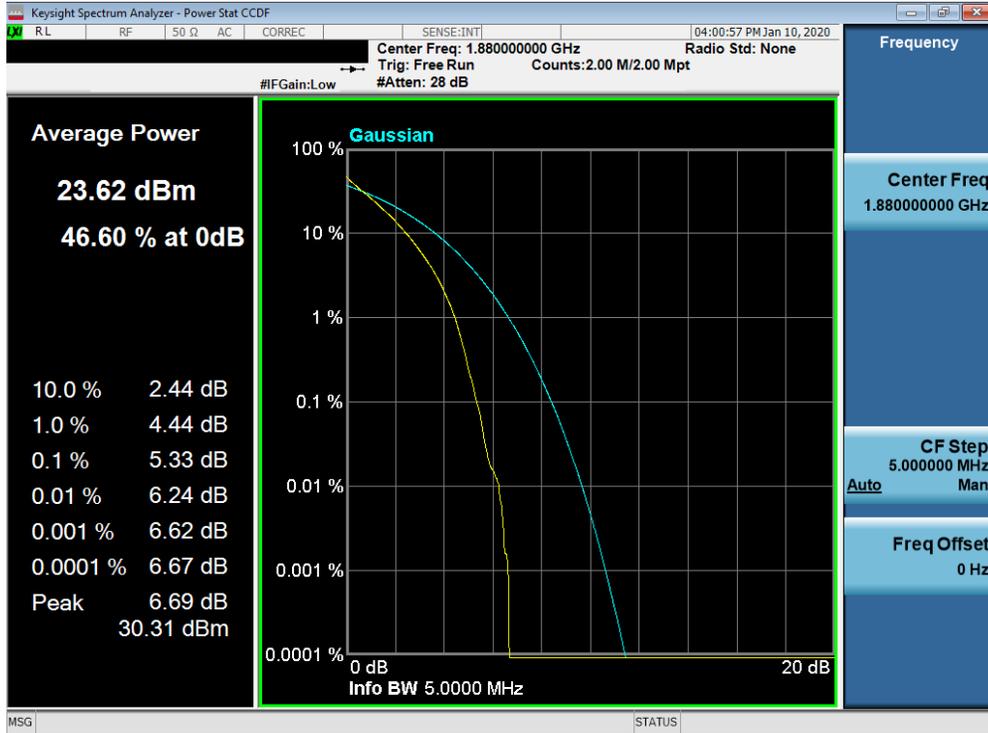


Plot 7-248. PAR Plot (Band 2 - 3.0MHz 16-QAM - Full RB Configuration)

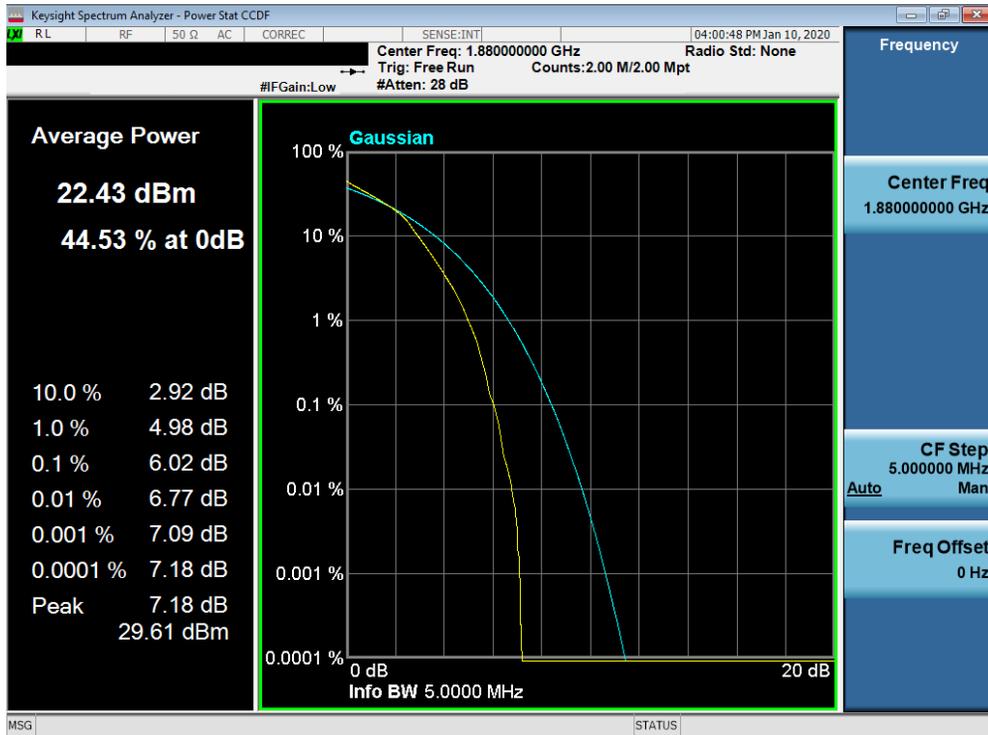
FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 149 of 302



FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 150 of 302

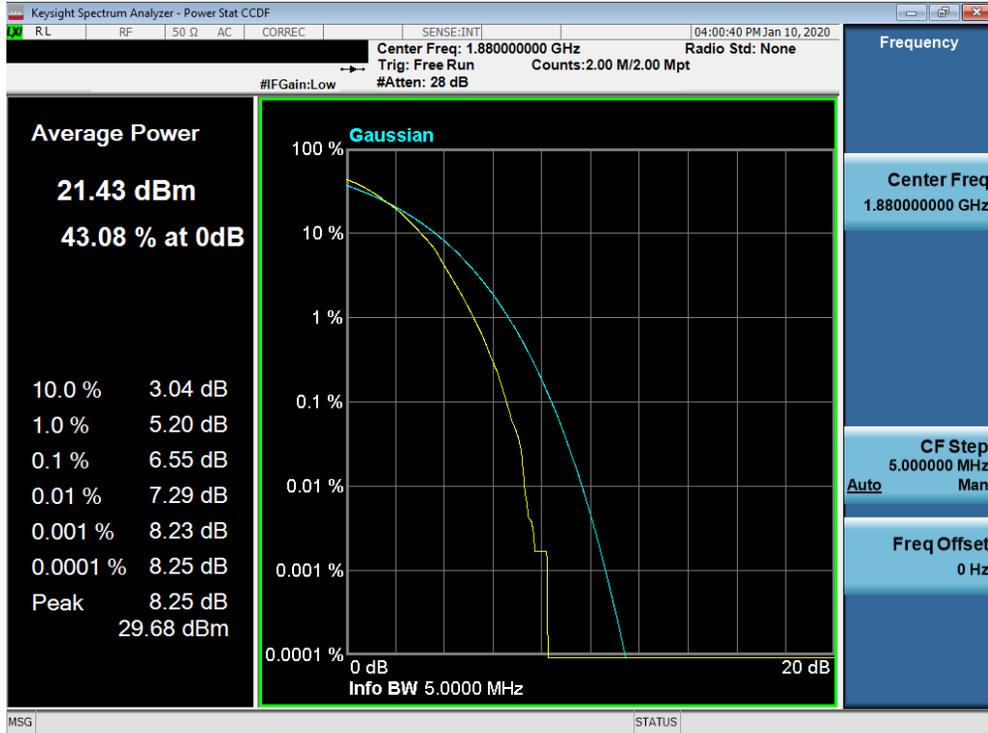


Plot 7-251. PAR Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)

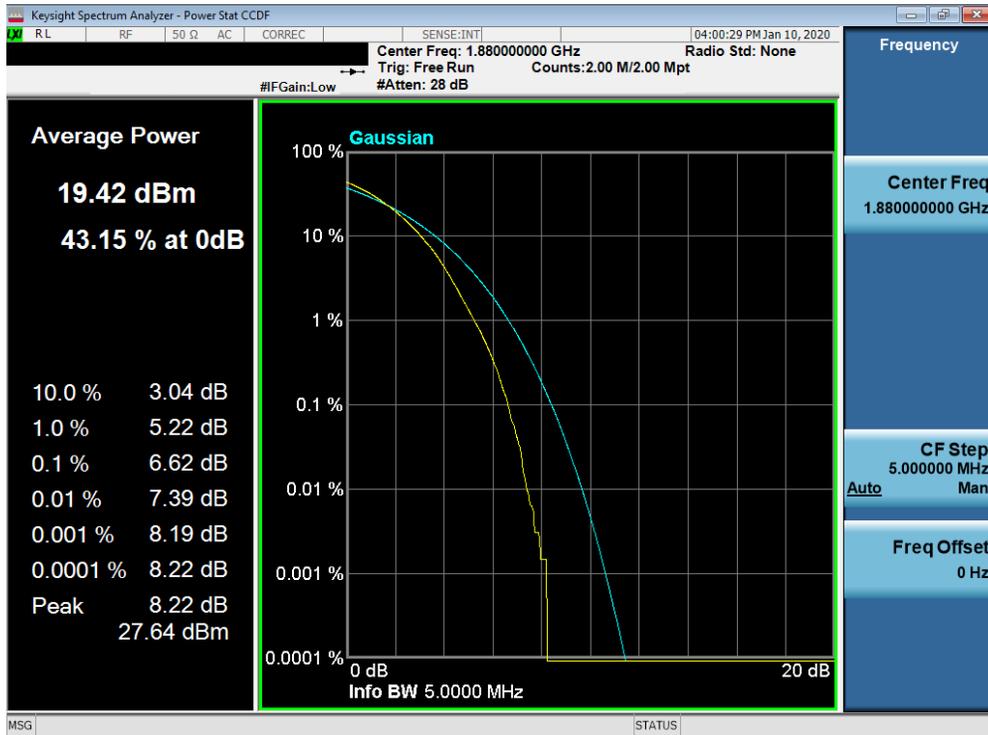


Plot 7-252. PAR Plot (Band 2 - 5.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 151 of 302

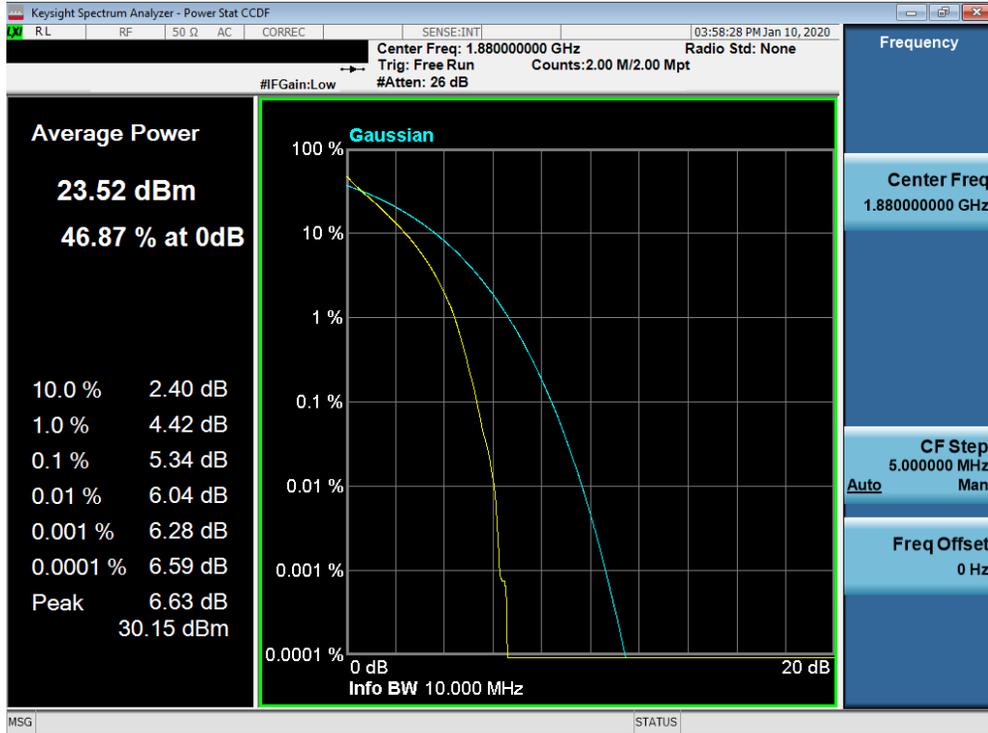


Plot 7-253. PAR Plot (Band 2 - 5.0MHz 64-QAM - Full RB Configuration)

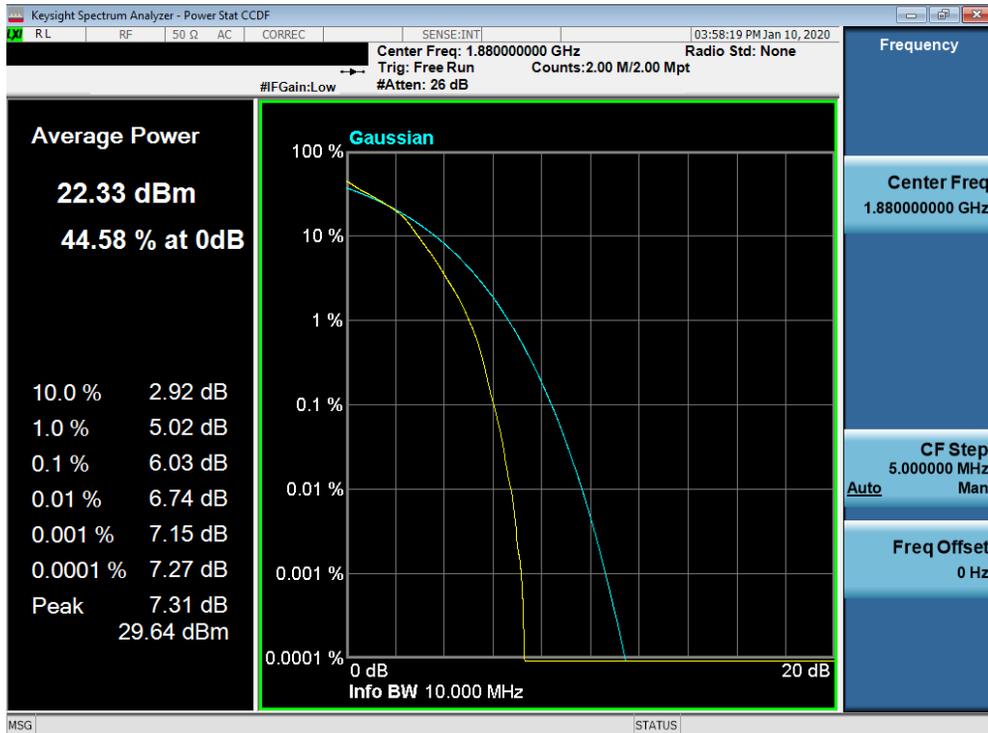


Plot 7-254. PAR Plot (Band 2 - 5.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 152 of 302

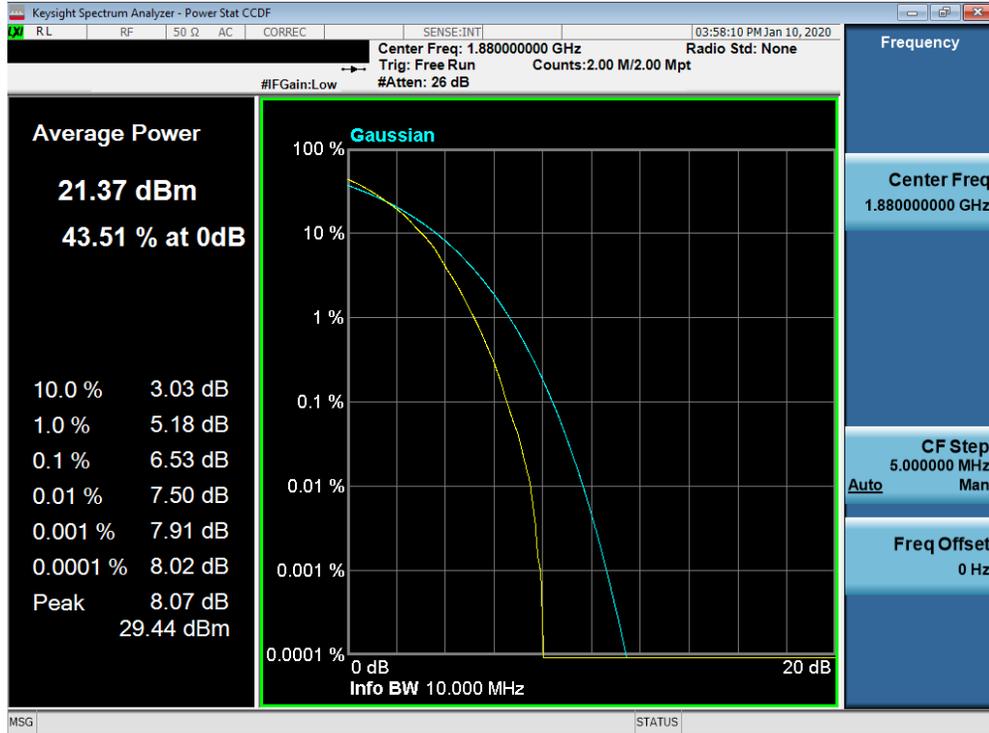


**Plot 7-255. PAR Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)**

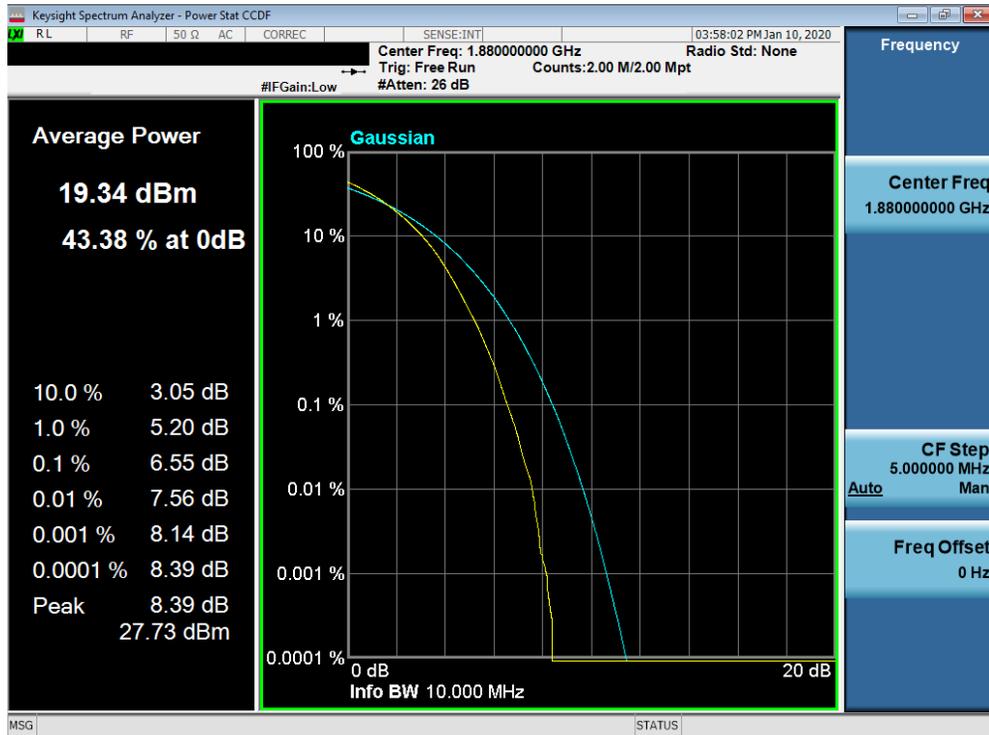


**Plot 7-256. PAR Plot (Band 2 - 10.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 153 of 302

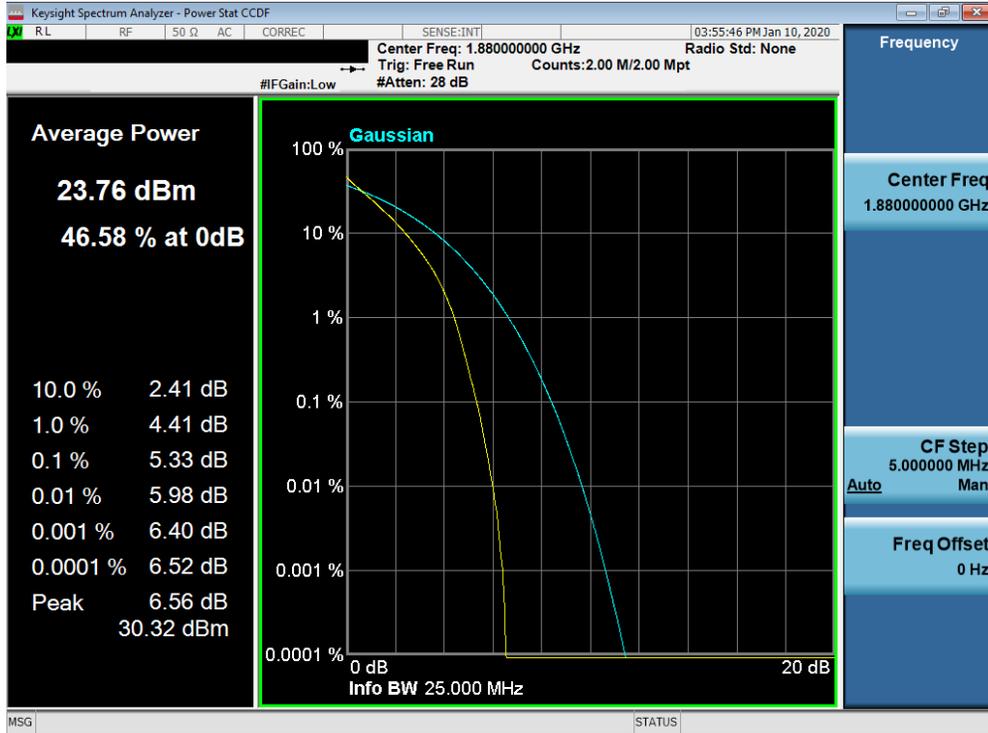


**Plot 7-257. PAR Plot (Band 2 - 10.0MHz 64-QAM - Full RB Configuration)**

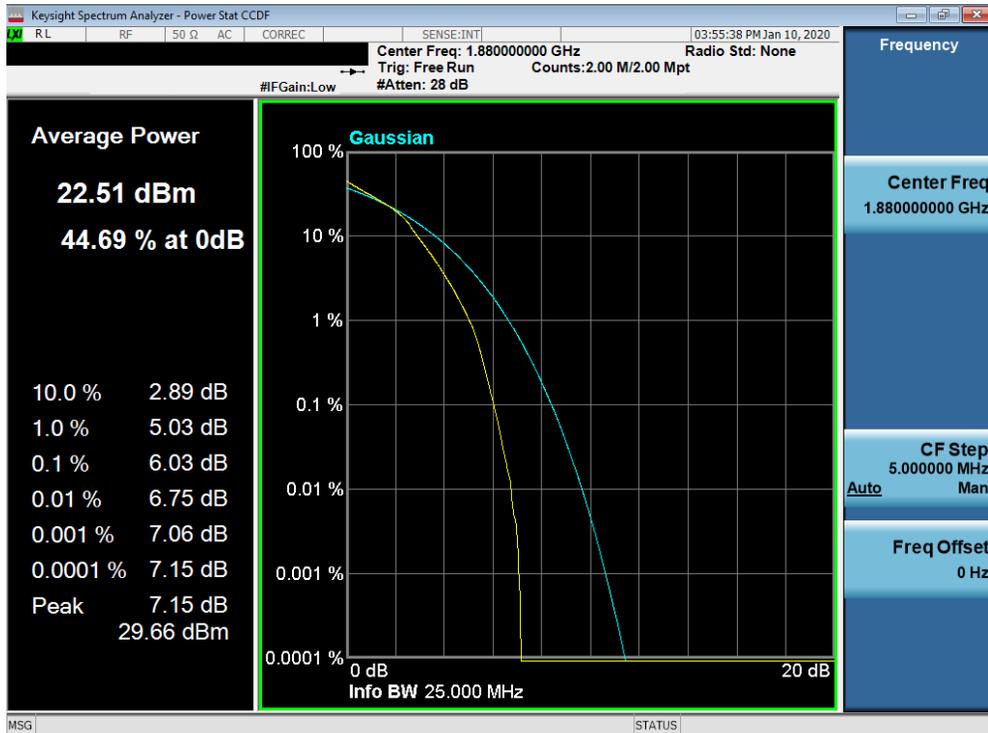


**Plot 7-258. PAR Plot (Band 2 - 10.0MHz 256-QAM - Full RB Configuration)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 154 of 302

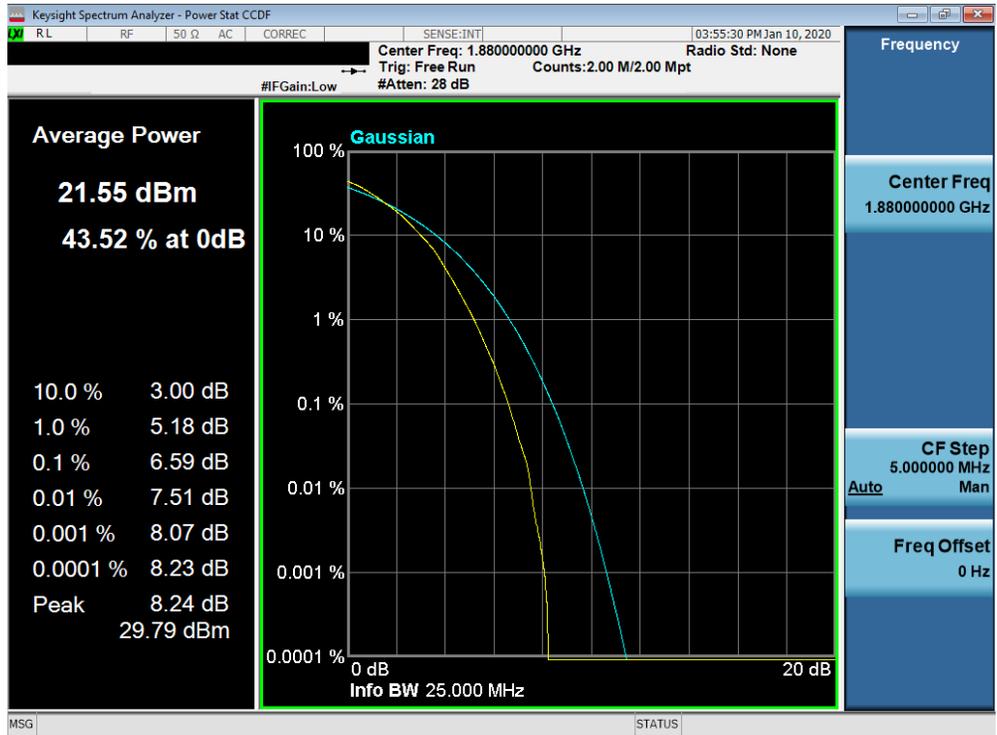


**Plot 7-259. PAR Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)**

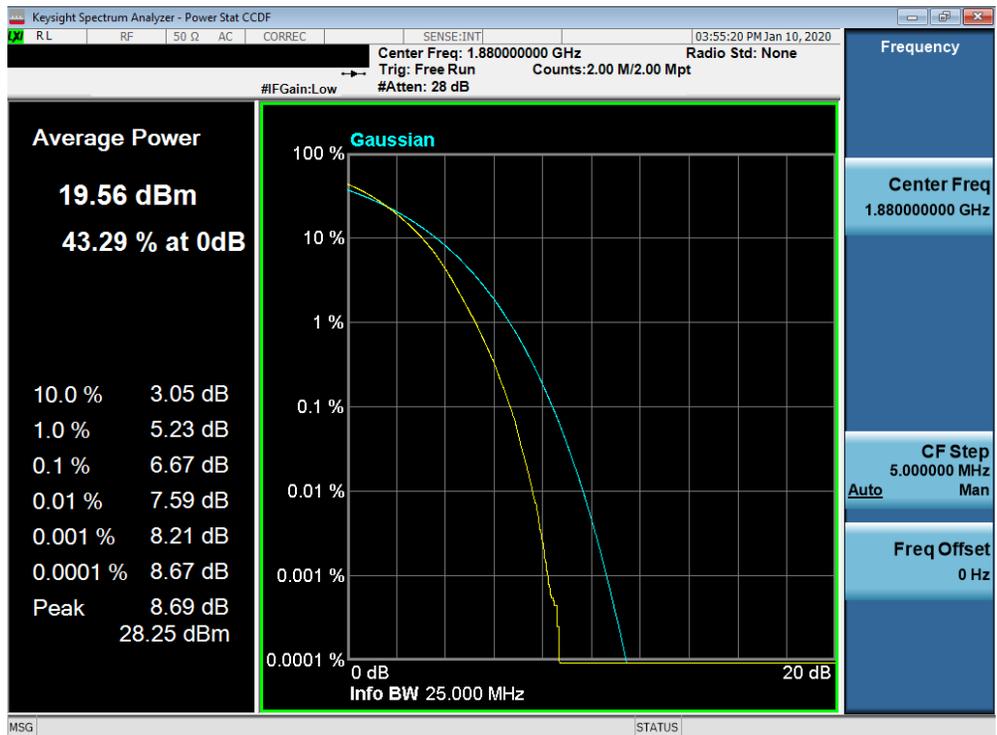


**Plot 7-260. PAR Plot (Band 2 - 15.0MHz 16-QAM - Full RB Configuration)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 155 of 302

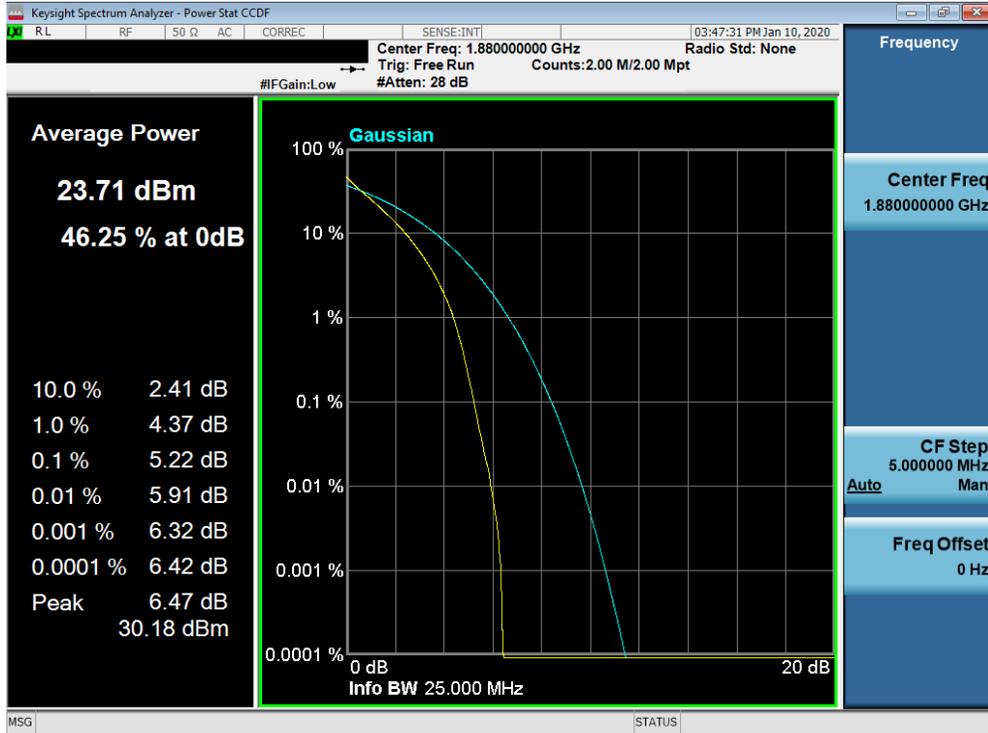


Plot 7-261. PAR Plot (Band 2 - 15.0MHz 64-QAM - Full RB Configuration)

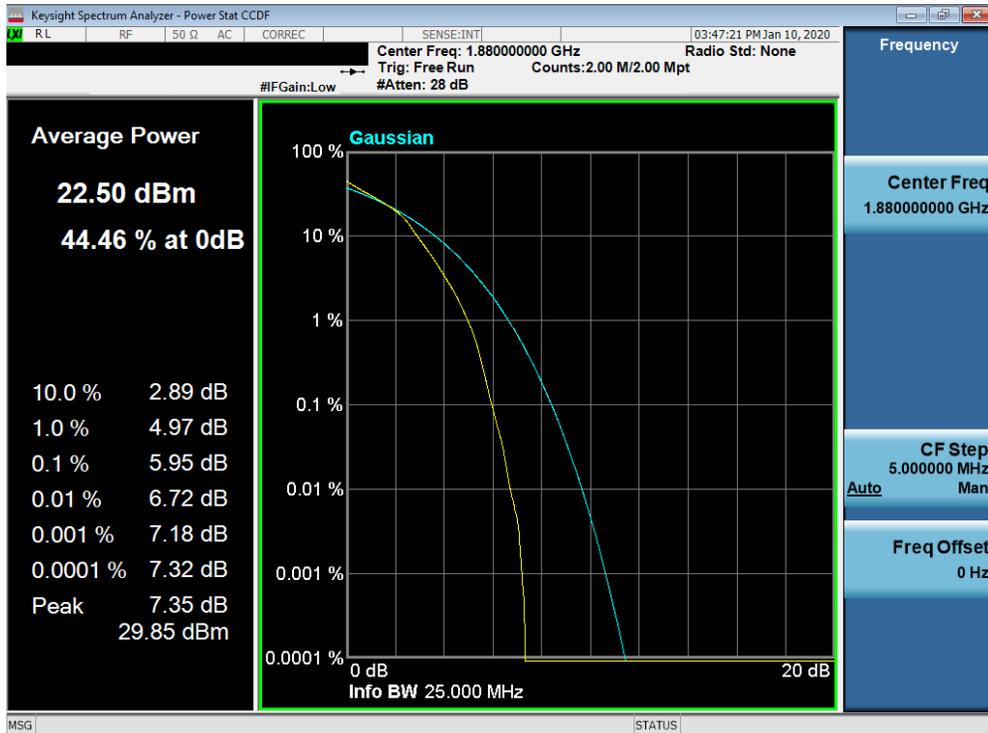


Plot 7-262. PAR Plot (Band 2 - 15.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 156 of 302

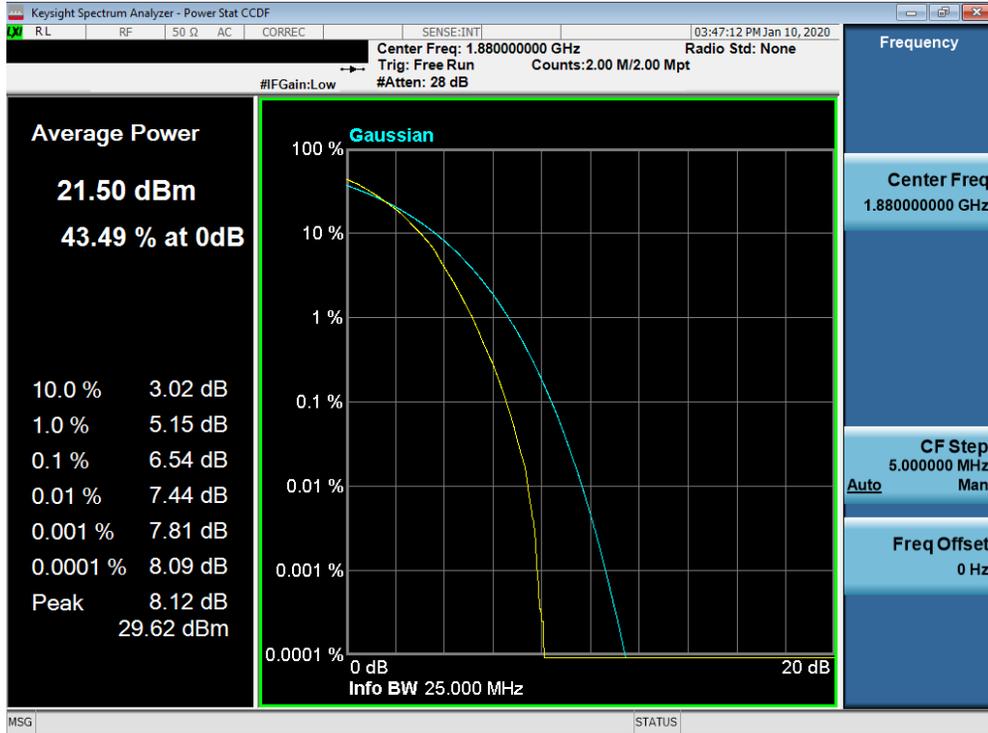


Plot 7-263. PAR Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

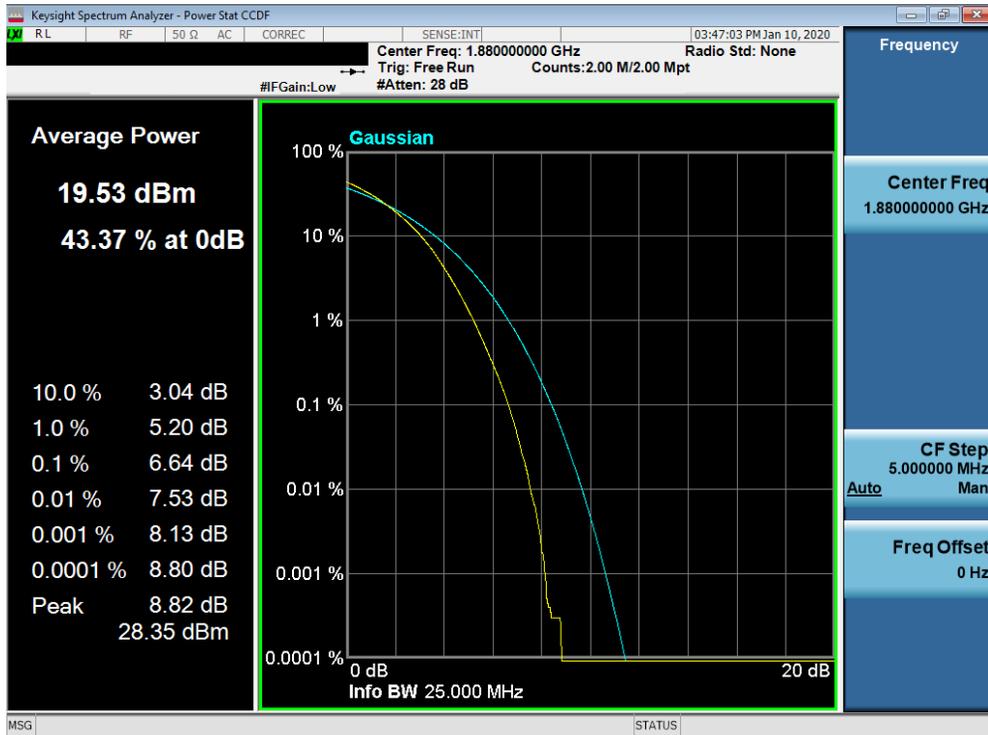


Plot 7-264. PAR Plot (Band 2 - 20.0MHz 16-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 157 of 302



Plot 7-265. PAR Plot (Band 2 - 20.0MHz 64-QAM - Full RB Configuration)



Plot 7-266. PAR Plot (Band 2 - 20.0MHz 256-QAM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 158 of 302

## 7.6 Uplink Carrier Aggregation

### §27.53(m)

#### Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

***For Band 38/the minimum permissible attenuation level of any spurious emission is  $55 + 10 \log_{10}(P_{[Watts]})$ .***

#### Test Procedure Used

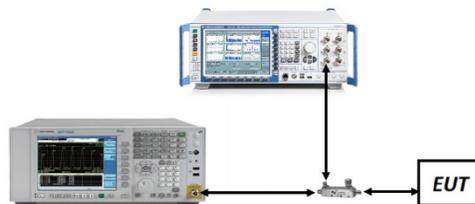
KDB 971168 D01 v03r01 – Section 6.0

#### Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to at least 10 \* the fundamental frequency (separated into at least two plots per channel)
2. Detector = RMS
3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
4. Sweep time = auto couple
5. The trace was allowed to stabilize
6. Please see test notes below for RBW and VBW settings

#### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-5. Test Instrument & Measurement Setup**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 159 of 302	

### Test Notes

1. Uplink carrier aggregation is only supported in this EUT while operating in Power Class 3.
2. Conducted power and spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in Table 7-503 and 7-504 below, with both carriers set to transmit using 1RB.
3. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20450	829	QPSK	1	49	LTE B5	10	20549	838.9	QPSK	1	0	25.78
Max	LTE B5	10	20525	836.5	QPSK	1	49	LTE B5	5	20597	843.7	QPSK	1	0	25.86
Max	LTE B5	10	20600	844	QPSK	1	0	LTE B5	10	20501	834.1	QPSK	1	49	25.69

**Table 7-3. Conducted Powers (B5 – Left Carrier: RB Size 1 Offset Max Right Carrier: RB Size 1 Offset 0)**

Power State	PCC							SCC							Power ULCA Tx.Power (dBm)
	PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	SCC Band	SCC Bandwidth [MHz]	SCC (UL) Channel	SCC (UL) Frequency [MHz]	Modulation	PCC UL# RB	PCC UL RB Offset	
Max	LTE B5	10	20600	844	QPSK	50	0	LTE B5	10	20699	853.9	QPSK	50	0	22.69
Max	LTE B5	10	20600	844	16-QAM	50	0	LTE B5	10	20699	853.9	16-QAM	50	0	21.56
Max	LTE B5	10	20600	844	64-QAM	50	0	LTE B5	10	20699	853.9	64-QAM	50	0	20.49
Max	LTE B5	10	20600	844	256-QAM	50	0	LTE B5	10	20699	853.9	256-QAM	50	0	18.25

**Table 7-4. Conducted Powers (B5 with Various Combinations for 20MHz Channel Bandwidth)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 160 of 302	

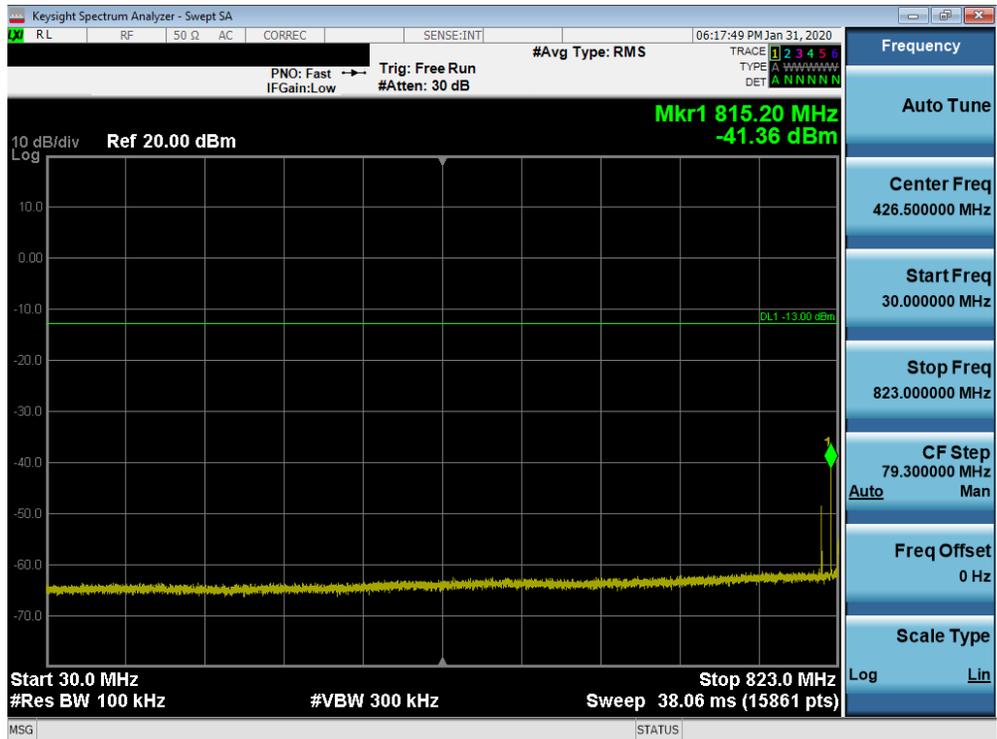


Table 7-267. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)



Table 7-268. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 161 of 302

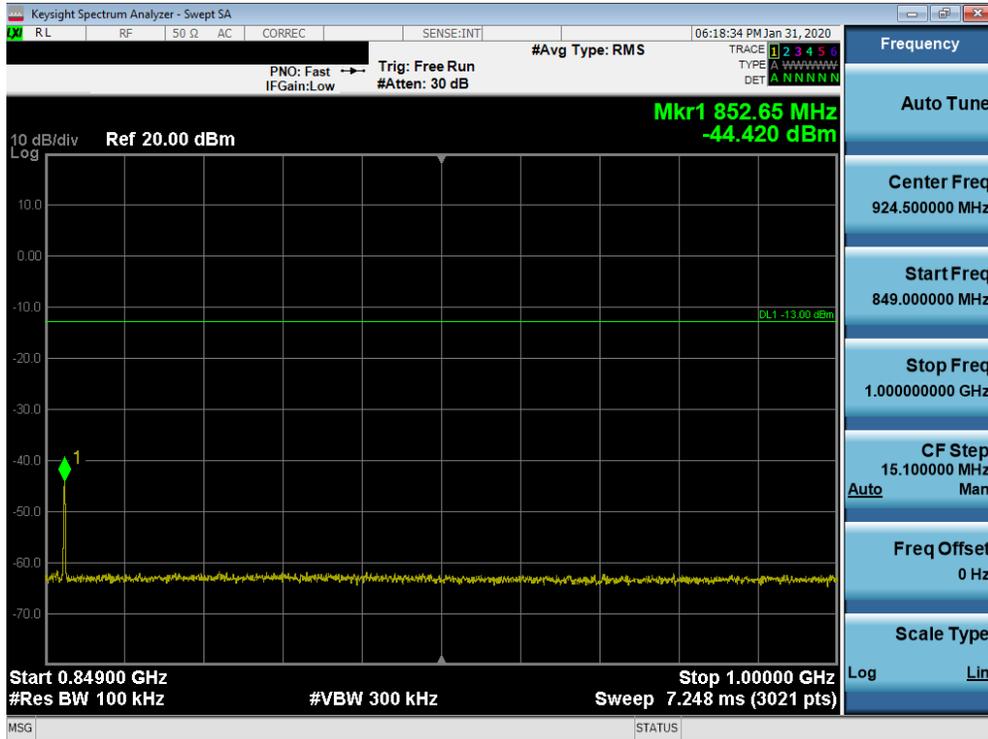


Table 7-269. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

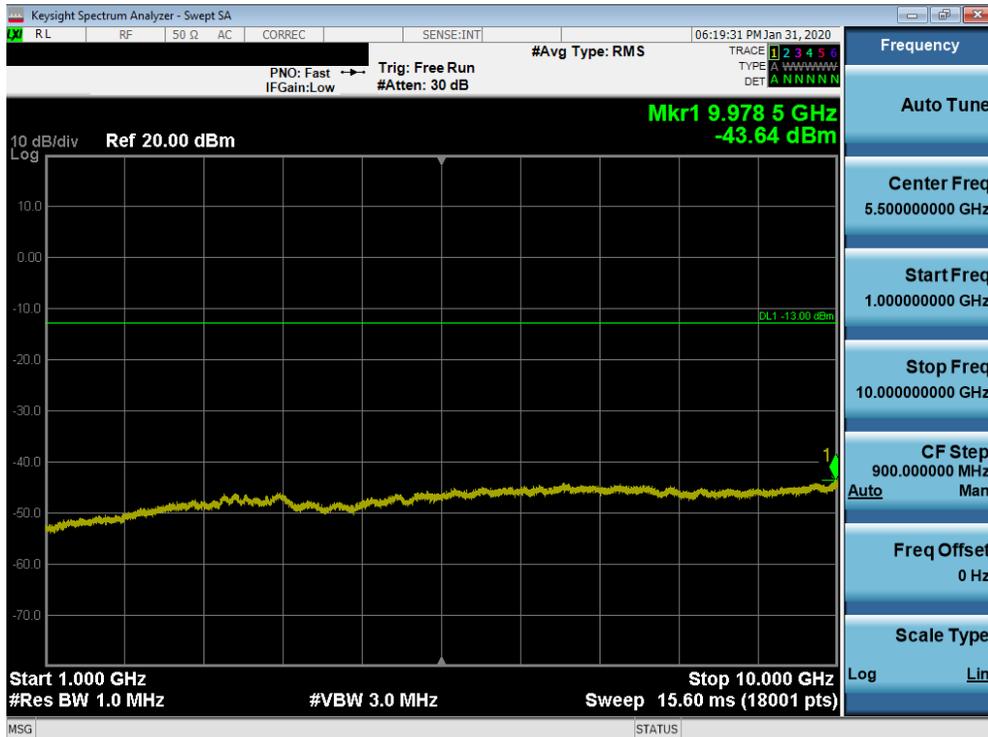


Table 7-270. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/99 Right Carrier 1/0 – Low Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 162 of 302

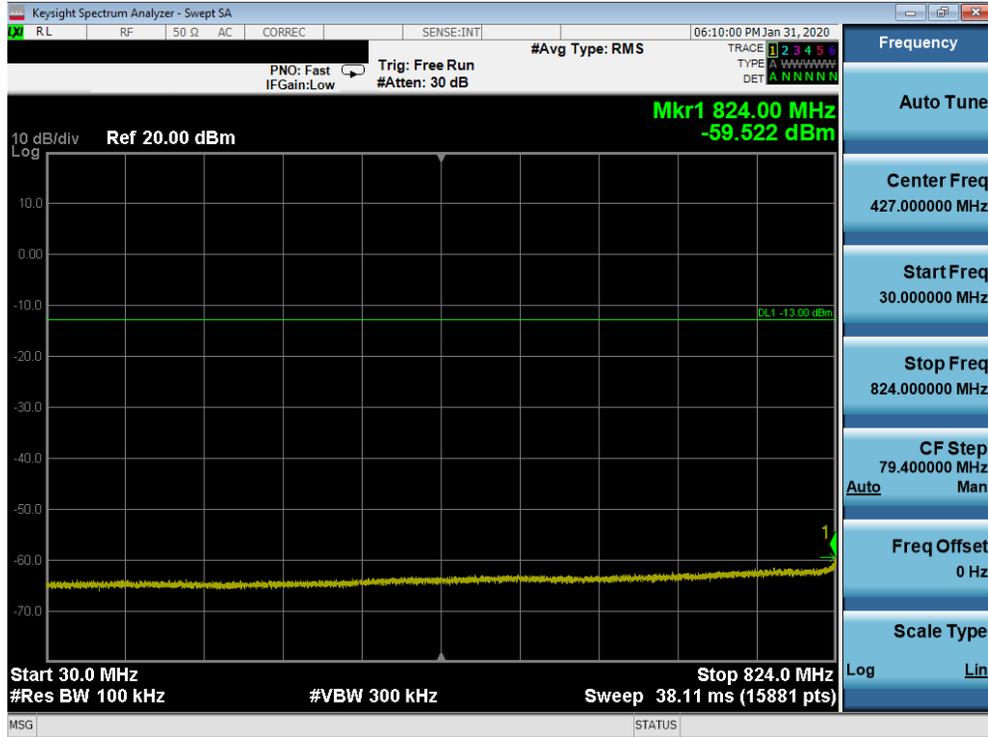


Table 7-271. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/0 Right Carrier 1/99 – High Channel)

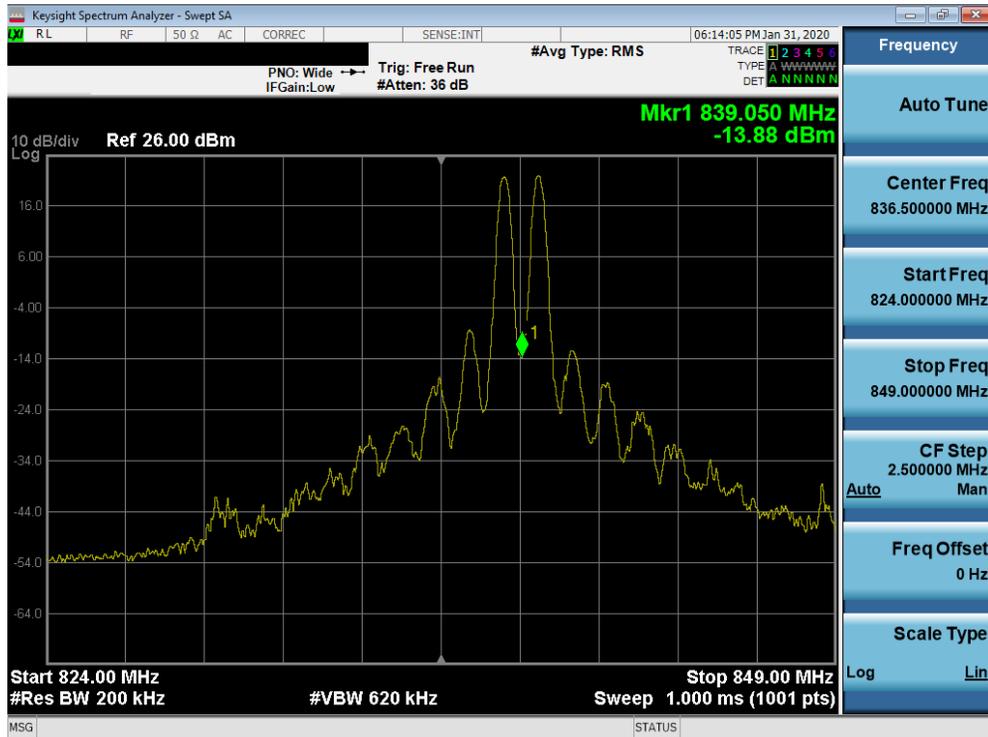


Table 7-272. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/0 Right Carrier 1/99 – High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 163 of 302

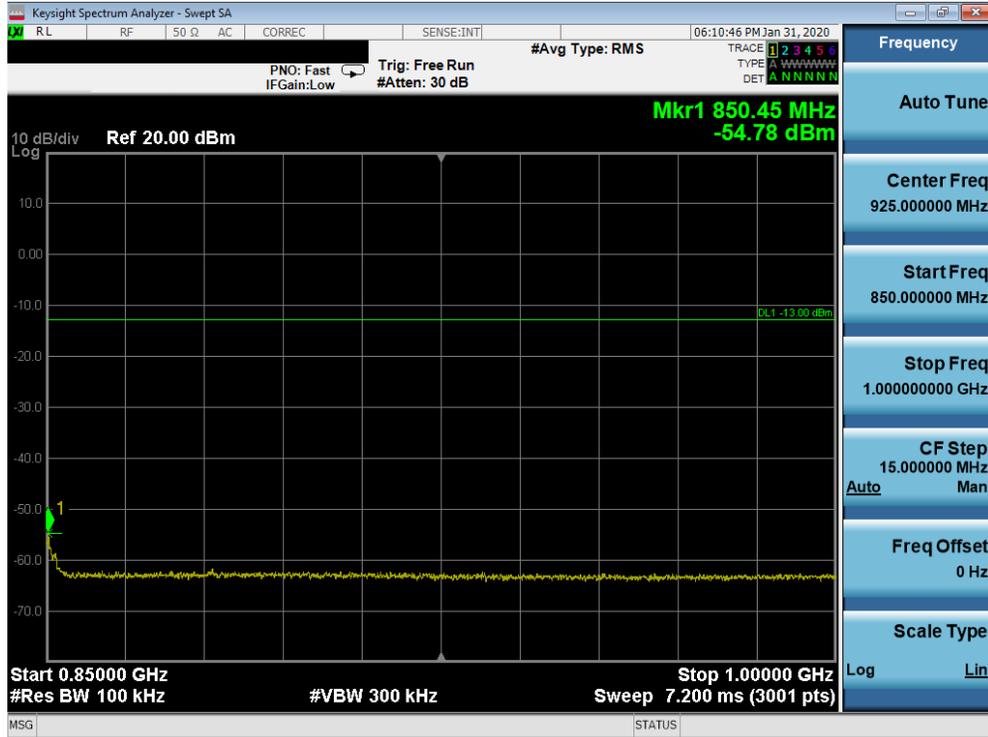


Table 7-273. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/0 Right Carrier 1/99 – High Channel)

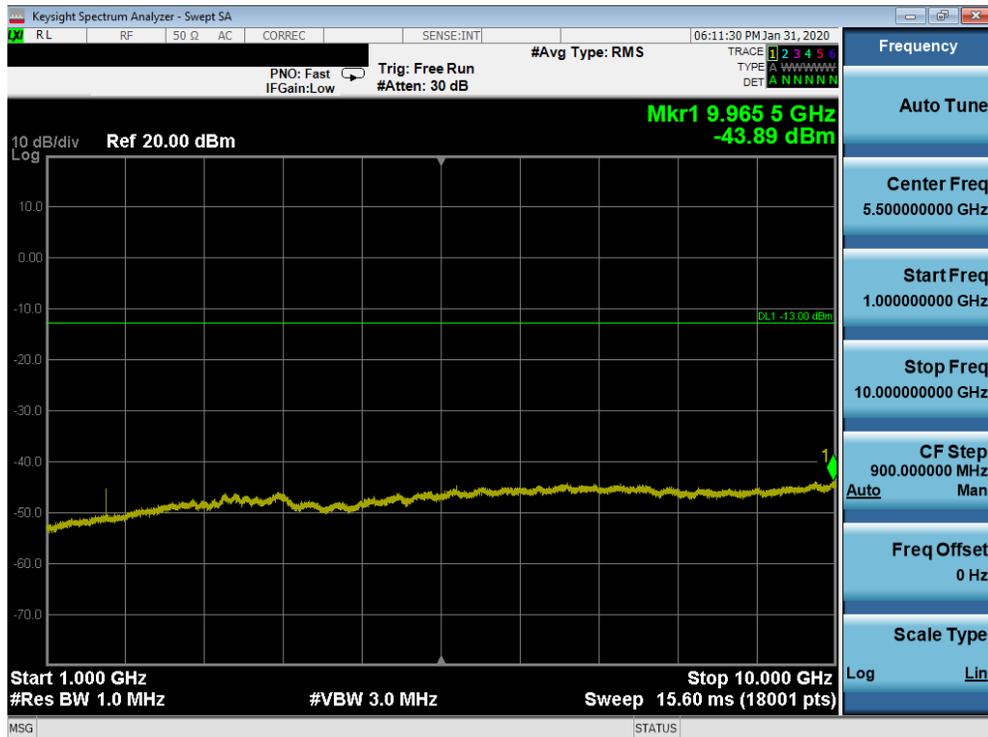


Table 7-274. Conducted Spurious Plot (Band 5 – 20.0MHz QPSK – Left Carrier 1/0 Right Carrier 1/99 – High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 164 of 302



Table 7-275. Lower ACP Plot (Band 5 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)

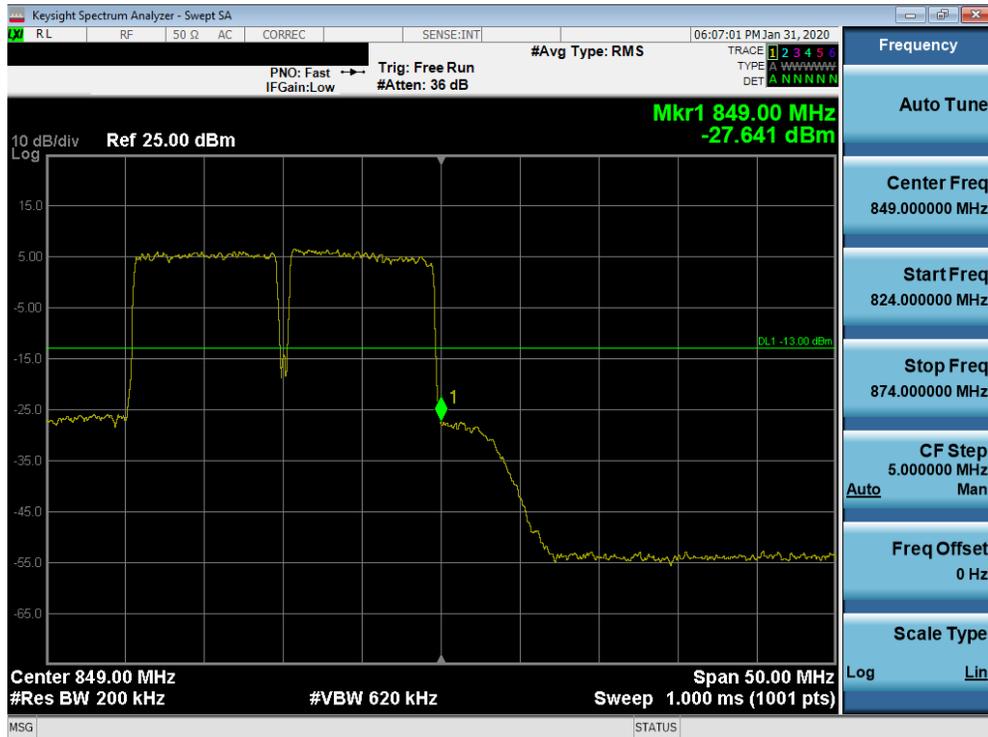


Table 7-276. Upper ACP Plot (Band 5 QPSK – Left Carrier:20 MHz Right Carrier:20 MHz – Full RB)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 165 of 302

## 7.7 Radiated Power (ERP/EIRP)

### Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

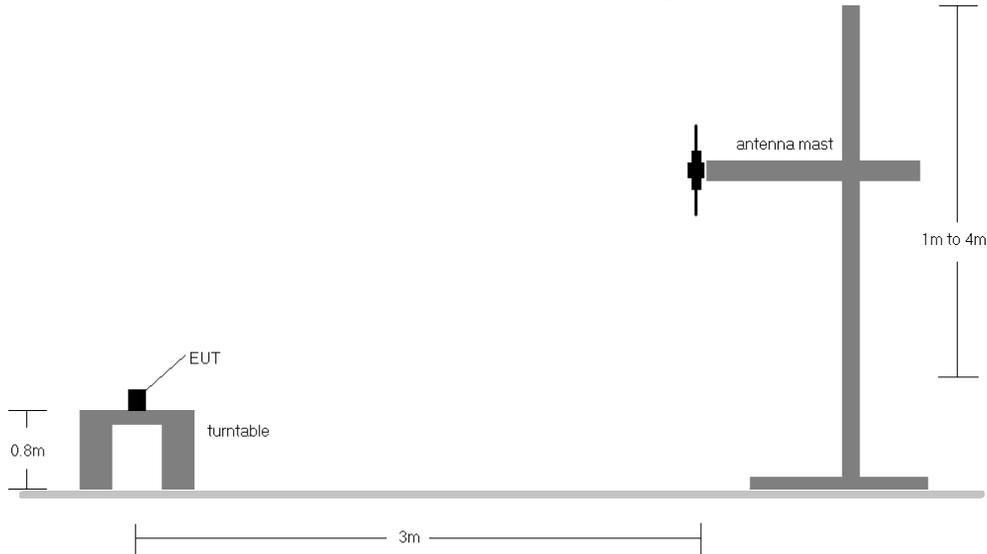
### Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW  $\geq$  3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points  $\geq$  2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

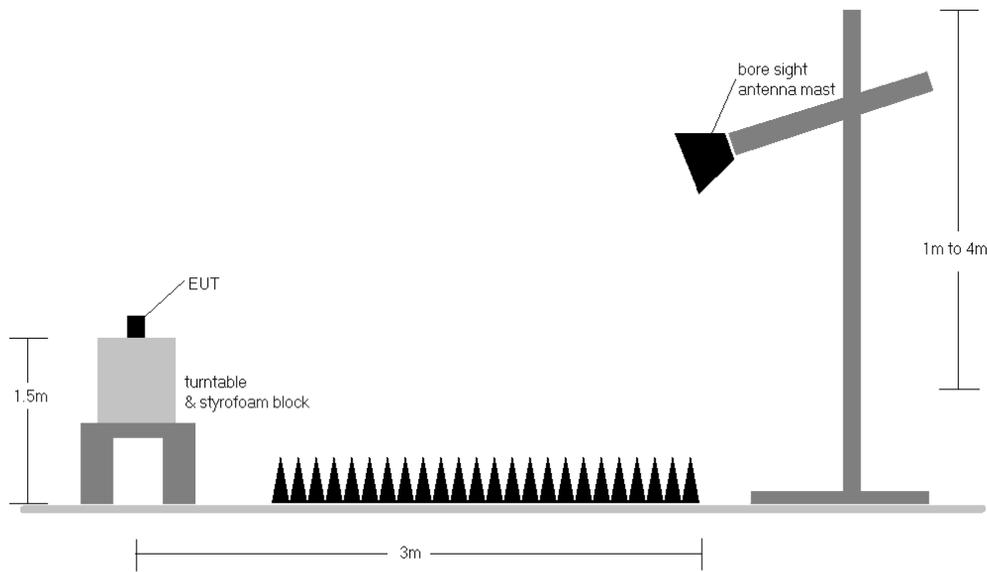
FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 166 of 302

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



**Figure 7-6. Radiated Test Setup <1GHz**



**Figure 7-7. Radiated Test Setup >1GHz**

### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 167 of 302

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	271	14	1 / 2	17.35	3.40	18.60	0.072	34.77	-16.17	20.75	0.119	36.99	-16.24
707.50	1.4	QPSK	H	287	6	1 / 2	17.16	3.65	<b>18.66</b>	0.073	34.77	-16.11	<b>20.81</b>	0.121	36.99	-16.18
715.30	1.4	QPSK	H	269	12	1 / 2	17.10	3.70	18.65	0.073	34.77	-16.12	20.80	0.120	36.99	-16.19
707.50	1.4	16-QAM	H	287	6	1 / 2	16.21	3.65	<b>17.71</b>	0.059	34.77	-17.06	<b>19.86</b>	0.097	36.99	-17.13
707.50	1.4	64-QAM	H	287	6	1 / 2	15.14	3.65	<b>16.64</b>	0.046	34.77	-18.13	<b>18.79</b>	0.076	36.99	-18.20
707.50	1.4	256-QAM	H	287	6	1 / 2	12.03	3.65	<b>13.53</b>	<b>0.023</b>	34.77	-21.24	<b>15.68</b>	<b>0.037</b>	36.99	-21.31
700.50	3	QPSK	H	249	8	1 / 0	17.38	3.40	18.63	0.073	34.77	-16.14	20.78	0.120	36.99	-16.21
707.50	3	QPSK	H	268	348	1 / 14	17.12	3.65	18.62	0.073	34.77	-16.15	20.77	0.119	36.99	-16.22
714.50	3	QPSK	H	249	12	1 / 0	17.10	3.70	<b>18.65</b>	0.073	34.77	-16.12	<b>20.80</b>	0.120	36.99	-16.19
714.50	3	16-QAM	H	249	12	1 / 0	16.19	3.70	<b>17.74</b>	0.059	34.77	-17.03	<b>19.89</b>	0.097	36.99	-17.10
714.50	3	64-QAM	H	249	12	1 / 0	15.12	3.70	<b>16.67</b>	0.046	34.77	-18.10	<b>18.82</b>	0.076	36.99	-18.17
714.50	3	256-QAM	H	249	12	1 / 0	12.06	3.70	<b>13.61</b>	<b>0.023</b>	34.77	-21.16	<b>15.76</b>	<b>0.038</b>	36.99	-21.23
701.50	5	QPSK	H	270	10	1 / 12	17.36	3.40	18.61	0.073	34.77	-16.16	20.76	0.119	36.99	-16.23
707.50	5	QPSK	H	249	44	1 / 12	17.12	3.65	<b>18.62</b>	0.073	34.77	-16.15	<b>20.77</b>	0.119	36.99	-16.22
713.50	5	QPSK	H	269	1	1 / 12	17.01	3.70	18.56	0.072	34.77	-16.21	20.71	0.118	36.99	-16.28
713.50	5	16-QAM	H	269	1	1 / 12	16.08	3.70	<b>17.63</b>	0.058	34.77	-17.14	<b>19.78</b>	0.095	36.99	-17.21
713.50	5	64-QAM	H	269	1	1 / 12	15.15	3.70	<b>16.70</b>	0.047	34.77	-18.07	<b>18.85</b>	0.077	36.99	-18.14
713.50	5	256-QAM	H	269	1	1 / 12	12.13	3.70	<b>13.68</b>	<b>0.023</b>	34.77	-21.09	<b>15.83</b>	<b>0.038</b>	36.99	-21.16
704.00	10	QPSK	H	278	6	1 / 49	16.15	3.50	17.50	0.056	34.77	-17.27	19.65	0.092	36.99	-17.34
707.50	10	QPSK	H	275	357	1 / 0	15.83	3.65	17.33	0.054	34.77	-17.44	19.48	0.089	36.99	-17.51
711.00	10	QPSK	H	264	6	1 / 49	17.13	3.70	<b>18.68</b>	<b>0.074</b>	34.77	-16.09	<b>20.83</b>	<b>0.121</b>	36.99	-16.16
711.00	10	16-QAM	H	264	6	1 / 49	14.89	3.70	<b>16.44</b>	0.044	34.77	-18.33	<b>18.59</b>	0.072	36.99	-18.40
711.00	10	64-QAM	H	264	6	1 / 49	13.74	3.70	<b>15.29</b>	0.034	34.77	-19.48	<b>17.44</b>	0.055	36.99	-19.55
711.00	10	256-QAM	H	264	6	1 / 49	10.40	3.70	<b>11.95</b>	<b>0.016</b>	34.77	-22.82	<b>14.10</b>	<b>0.026</b>	36.99	-22.89
711.00	10	QPSK	V	166	139	1 / 49	16.57	3.70	18.12	0.065	34.77	-16.65	20.27	0.106	36.99	-16.72
711.00	10 (WCP)	QPSK	V	153	194	1 / 49	14.36	3.70	15.91	0.039	34.77	-18.86	18.06	0.064	36.99	-18.93
711.00	10 (WCP + DD)	QPSK	V	153	194	1 / 49	12.56	3.70	14.11	<b>0.026</b>	34.77	-20.66	16.26	<b>0.042</b>	36.99	-20.73

Table 7-5. ERP Data (Band 12)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 168 of 302	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	142	81	1 / 2	13.23	6.30	<b>17.38</b>	0.055	38.45	-21.07	<b>19.53</b>	0.090	40.61	-21.08
836.50	1.4	QPSK	V	148	68	1 / 2	13.00	6.40	17.25	0.053	38.45	-21.20	19.40	0.087	40.61	-21.21
848.30	1.4	QPSK	V	156	71	1 / 2	12.77	6.50	17.12	0.052	38.45	-21.33	19.27	0.085	40.61	-21.34
824.70	1.4	16-QAM	V	142	81	1 / 2	11.83	6.30	<b>15.98</b>	0.040	38.45	-22.47	<b>18.13</b>	0.065	40.61	-22.48
824.70	1.4	64-QAM	V	142	81	1 / 2	10.96	6.30	<b>15.11</b>	0.032	38.45	-23.34	<b>17.26</b>	0.053	40.61	-23.35
824.70	1.4	256-QAM	V	142	81	1 / 2	7.96	6.30	<b>12.11</b>	<b>0.016</b>	38.45	-26.34	<b>14.26</b>	<b>0.027</b>	40.61	-26.35
825.50	3	QPSK	V	142	74	1 / 0	13.08	6.30	17.23	0.053	38.45	-21.22	19.38	0.087	40.61	-21.23
836.50	3	QPSK	V	152	89	1 / 14	13.06	6.40	<b>17.31</b>	0.054	38.45	-21.14	<b>19.46</b>	0.088	40.61	-21.15
847.50	3	QPSK	V	160	54	1 / 0	12.84	6.50	17.19	0.052	38.45	-21.26	19.34	0.086	40.61	-21.27
836.50	3	16-QAM	V	152	89	1 / 14	11.85	6.40	<b>16.10</b>	0.041	38.45	-22.35	<b>18.25</b>	0.067	40.61	-22.36
836.50	3	64-QAM	V	152	89	1 / 14	10.85	6.40	<b>15.10</b>	0.032	38.45	-23.35	<b>17.25</b>	0.053	40.61	-23.36
836.50	3	256-QAM	V	152	89	1 / 14	7.81	6.40	<b>12.06</b>	<b>0.016</b>	38.45	-26.39	<b>14.21</b>	<b>0.026</b>	40.61	-26.40
826.50	5	QPSK	V	134	70	1 / 12	13.12	6.30	17.27	0.053	38.45	-21.18	19.42	0.087	40.61	-21.19
836.50	5	QPSK	V	140	73	1 / 0	13.05	6.40	17.30	0.054	38.45	-21.15	19.45	0.088	40.61	-21.16
846.50	5	QPSK	V	151	81	1 / 0	12.98	6.50	<b>17.33</b>	0.054	38.45	-21.12	<b>19.48</b>	0.089	40.61	-21.13
846.50	5	16-QAM	V	151	81	1 / 0	11.57	6.50	<b>15.92</b>	0.039	38.45	-22.53	<b>18.07</b>	0.064	40.61	-22.54
836.50	5	64-QAM	V	140	73	1 / 0	10.81	6.40	<b>15.06</b>	0.032	38.45	-23.39	<b>17.21</b>	0.053	40.61	-23.40
836.50	5	256-QAM	V	140	73	1 / 0	7.77	6.40	<b>12.02</b>	<b>0.016</b>	38.45	-26.43	<b>14.17</b>	<b>0.026</b>	40.61	-26.44
829.00	10	QPSK	V	137	76	1 / 49	12.94	6.30	17.09	0.051	38.45	-21.36	19.24	0.084	40.61	-21.37
836.50	10	QPSK	V	148	74	25 / 12	13.15	6.40	<b>17.40</b>	<b>0.055</b>	38.45	-21.05	<b>19.55</b>	<b>0.090</b>	40.61	-21.06
844.00	10	QPSK	V	145	85	1 / 0	13.08	6.40	17.33	0.054	38.45	-21.12	19.48	0.089	40.61	-21.13
836.50	10	16-QAM	V	148	74	25 / 12	11.36	6.40	<b>15.61</b>	0.036	38.45	-22.84	<b>17.76</b>	0.060	40.61	-22.85
836.50	10	64-QAM	V	148	74	25 / 12	10.24	6.40	<b>14.49</b>	0.028	38.45	-23.96	<b>16.64</b>	0.046	40.61	-23.97
836.50	10	256-QAM	V	148	74	25 / 12	7.27	6.40	<b>11.52</b>	<b>0.014</b>	38.45	-26.93	<b>13.67</b>	<b>0.023</b>	40.61	-26.94
836.50	10	QPSK	H	220	99	25 / 12	11.92	6.40	16.17	0.041	38.45	-22.28	18.32	0.068	40.61	-22.29
836.50	10 (WCP)	QPSK	V	139	237	25 / 12	9.86	6.40	14.11	0.026	38.45	-24.34	16.26	0.042	40.61	-24.35
836.50	10 ( WCP + DD)	QPSK	V	139	237	25 / 12	10.41	6.40	14.66	<b>0.029</b>	38.45	-23.79	16.81	<b>0.048</b>	40.61	-23.80

**Table 7-6. ERP Data (Band 5)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 169 of 302	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	133	12	1 / 2	12.45	9.35	21.80	0.151	30.00	-8.20
1745.00	1.4	QPSK	V	114	21	1 / 2	12.65	9.11	21.76	0.150	30.00	-8.24
1779.30	1.4	QPSK	V	151	320	1 / 0	12.73	9.17	<b>21.90</b>	0.155	30.00	-8.10
1779.30	1.4	16-QAM	V	151	320	1 / 0	11.76	9.17	<b>20.93</b>	0.124	30.00	-9.07
1779.30	1.4	64-QAM	V	151	320	1 / 0	10.68	9.17	<b>19.85</b>	0.097	30.00	-10.15
1779.30	1.4	256-QAM	V	151	320	1 / 0	7.55	9.17	<b>16.72</b>	<b>0.047</b>	30.00	-13.28
1711.50	3	QPSK	V	128	24	1 / 0	12.49	9.34	21.83	0.152	30.00	-8.17
1745.00	3	QPSK	V	112	21	1 / 7	12.81	9.11	<b>21.92</b>	0.156	30.00	-8.08
1778.50	3	QPSK	V	140	340	1 / 7	12.65	9.17	21.82	0.152	30.00	-8.18
1745.00	3	16-QAM	V	112	21	1 / 7	11.51	9.11	<b>20.62</b>	0.115	30.00	-9.38
1745.00	3	64-QAM	V	112	21	1 / 7	10.76	9.11	<b>19.87</b>	0.097	30.00	-10.13
1745.00	3	256-QAM	V	112	21	1 / 7	7.77	9.11	<b>16.88</b>	<b>0.049</b>	30.00	-13.12
1712.50	5	QPSK	V	128	24	1 / 24	12.47	9.34	21.81	0.152	30.00	-8.19
1745.00	5	QPSK	V	111	21	1 / 12	12.51	9.11	21.62	0.145	30.00	-8.38
1777.50	5	QPSK	V	146	349	1 / 24	12.69	9.16	<b>21.85</b>	0.153	30.00	-8.15
1777.50	5	16-QAM	V	146	349	1 / 24	11.44	9.16	<b>20.60</b>	0.115	30.00	-9.40
1777.50	5	64-QAM	V	146	349	1 / 24	10.71	9.16	<b>19.87</b>	0.097	30.00	-10.13
1777.50	5	256-QAM	V	146	349	1 / 24	7.58	9.16	<b>16.74</b>	<b>0.047</b>	30.00	-13.26
1715.00	10	QPSK	V	128	24	1 / 25	12.51	9.32	21.83	0.152	30.00	-8.17
1745.00	10	QPSK	V	111	21	1 / 25	12.60	9.11	21.71	0.148	30.00	-8.29
1775.00	10	QPSK	V	108	315	1 / 25	12.74	9.16	<b>21.90</b>	0.155	30.00	-8.10
1775.00	10	16-QAM	V	108	315	1 / 25	11.53	9.16	<b>20.69</b>	0.117	30.00	-9.31
1775.00	10	64-QAM	V	108	315	1 / 25	10.50	9.16	<b>19.66</b>	0.092	30.00	-10.34
1775.00	10	256-QAM	V	108	315	1 / 25	7.75	9.16	<b>16.91</b>	<b>0.049</b>	30.00	-13.09
1717.50	15	QPSK	V	130	19	1 / 36	12.42	9.30	21.72	0.149	30.00	-8.28
1745.00	15	QPSK	V	114	21	1 / 0	12.66	9.11	21.77	0.150	30.00	-8.23
1772.50	15	QPSK	V	140	304	1 / 0	12.70	9.15	<b>21.85</b>	0.153	30.00	-8.15
1772.50	15	16-QAM	V	140	304	1 / 0	11.55	9.15	<b>20.70</b>	0.117	30.00	-9.30
1772.50	15	64-QAM	V	140	304	1 / 0	10.56	9.15	<b>19.71</b>	0.094	30.00	-10.29
1772.50	15	256-QAM	V	140	304	1 / 0	7.66	9.15	<b>16.81</b>	<b>0.048</b>	30.00	-13.19
1720.00	20	QPSK	V	133	12	1 / 99	12.67	9.28	<b>21.95</b>	<b>0.157</b>	30.00	-8.05
1745.00	20	QPSK	V	107	18	1 / 0	12.24	9.11	21.35	0.136	30.00	-8.65
1770.00	20	QPSK	V	136	336	1 / 99	11.80	9.14	20.94	0.124	30.00	-9.06
1720.00	20	16-QAM	V	133	12	1 / 99	11.13	9.28	<b>20.41</b>	0.110	30.00	-9.59
1720.00	20	64-QAM	V	133	12	1 / 99	10.22	9.28	<b>19.50</b>	0.089	30.00	-10.50
1720.00	20	256-QAM	V	133	12	1 / 99	7.40	9.28	<b>16.68</b>	<b>0.047</b>	30.00	-13.32
1720.00	20	QPSK	H	129	241	1 / 99	11.37	9.11	20.48	0.112	30.00	-9.52
1720.00	20 (WCP)	QPSK	H	125	205	1 / 99	11.24	9.11	20.35	0.108	30.00	-9.65
1720.00	20 (WCP + DD)	QPSK	H	131	205	1 / 99	11.18	9.11	20.29	<b>0.107</b>	30.00	-9.71

Table 7-7. EIRP Data (Band 66/4)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 170 of 302	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	136	6	1 / 0	11.99	9.88	21.87	0.154	33.01	-11.14
1880.00	1.4	QPSK	V	140	1	1 / 0	11.59	10.10	21.69	0.148	33.01	-11.32
1909.30	1.4	QPSK	V	134	2	1 / 0	11.42	10.31	<b>21.73</b>	0.149	33.01	-11.28
1850.70	1.4	16-QAM	V	136	6	1 / 0	10.97	9.88	<b>20.85</b>	0.122	33.01	-12.16
1850.70	1.4	64-QAM	V	136	6	1 / 0	9.85	9.88	<b>19.73</b>	0.094	33.01	-13.28
1850.70	1.4	256-QAM	V	136	6	1 / 0	6.94	9.88	<b>16.82</b>	<b>0.048</b>	33.01	-16.19
1851.50	3	QPSK	V	134	319	1 / 0	12.01	9.88	21.89	0.155	33.01	-11.12
1880.00	3	QPSK	V	159	0	1 / 0	11.79	10.10	21.89	0.155	33.01	-11.12
1908.50	3	QPSK	V	134	19	1 / 7	11.61	10.30	<b>21.91</b>	0.155	33.01	-11.10
1908.50	3	16-QAM	V	134	19	1 / 7	10.60	10.30	<b>20.90</b>	0.123	33.01	-12.11
1908.50	3	64-QAM	V	134	19	1 / 7	9.54	10.30	<b>19.84</b>	0.096	33.01	-13.17
1908.50	3	256-QAM	V	134	19	1 / 7	6.55	10.30	<b>16.85</b>	<b>0.048</b>	33.01	-16.16
1852.50	5	QPSK	V	145	346	1 / 12	11.93	9.89	21.82	0.152	33.01	-11.19
1880.00	5	QPSK	V	169	356	1 / 24	11.69	10.10	21.79	0.151	33.01	-11.22
1907.50	5	QPSK	V	137	11	1 / 12	11.56	10.30	<b>21.86</b>	0.153	33.01	-11.15
1907.50	5	16-QAM	V	137	11	1 / 12	10.40	10.30	<b>20.70</b>	0.117	33.01	-12.31
1907.50	5	64-QAM	V	137	11	1 / 12	9.25	10.30	<b>19.55</b>	0.090	33.01	-13.46
1907.50	5	256-QAM	V	137	11	1 / 12	6.56	10.30	<b>16.86</b>	<b>0.049</b>	33.01	-16.15
1855.00	10	QPSK	V	148	299	1 / 25	11.82	9.91	21.73	0.149	33.01	-11.28
1880.00	10	QPSK	V	156	341	1 / 25	11.72	10.10	21.82	0.152	33.01	-11.19
1905.00	10	QPSK	V	141	8	1 / 25	11.57	10.28	<b>21.85</b>	0.153	33.01	-11.16
1905.00	10	16-QAM	V	141	8	1 / 25	10.32	10.28	<b>20.60</b>	0.115	33.01	-12.41
1905.00	10	64-QAM	V	141	8	1 / 25	9.61	10.28	<b>19.89</b>	0.097	33.01	-13.12
1905.00	10	256-QAM	V	141	8	1 / 25	6.53	10.28	<b>16.81</b>	<b>0.048</b>	33.01	-16.20
1857.50	15	QPSK	V	126	340	1 / 0	11.99	9.93	21.92	0.156	33.01	-11.09
1880.00	15	QPSK	V	109	346	1 / 74	11.81	10.10	<b>21.91</b>	0.155	33.01	-11.10
1902.50	15	QPSK	V	154	4	1 / 0	11.53	10.27	21.80	0.151	33.01	-11.21
1857.50	15	16-QAM	V	126	340	1 / 0	10.69	9.93	<b>20.62</b>	0.115	33.01	-12.39
1857.50	15	64-QAM	V	126	340	1 / 0	9.94	9.93	<b>19.87</b>	0.097	33.01	-13.14
1857.50	15	256-QAM	V	126	340	1 / 0	6.95	9.93	<b>16.88</b>	<b>0.049</b>	33.01	-16.13
1860.00	20	QPSK	V	136	347	1 / 99	15.21	9.95	25.16	0.328	33.01	-7.85
1880.00	20	QPSK	V	147	345	1 / 0	15.43	10.10	<b>25.53</b>	<b>0.358</b>	33.01	-7.48
1900.00	20	QPSK	V	130	362	1 / 0	15.07	10.26	25.33	0.341	33.01	-7.68
1880.00	20	16-QAM	V	147	345	1 / 0	13.91	10.10	<b>24.01</b>	0.252	33.01	-9.00
1880.00	20	64-QAM	V	147	345	1 / 0	12.97	10.10	<b>23.07</b>	0.203	33.01	-9.94
1880.00	20	256-QAM	V	147	345	1 / 0	7.43	10.10	<b>17.53</b>	<b>0.057</b>	33.01	-15.48
1880.00	20	QPSK	H	145	244	1 / 0	12.83	10.10	22.93	0.197	33.01	-10.08
1880.00	20 (WCP)	QPSK	H	159	256	1 / 0	12.43	10.10	22.53	0.179	33.01	-10.48
1880.00	20 (WCP + DD)	QPSK	H	159	256	1 / 0	11.32	10.10	21.42	<b>0.139</b>	33.01	-11.59

Table 7-8. EIRP Data (Band 2)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 171 of 302	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2307.50	5	QPSK	V	155	318	1 / 24	9.82	10.23	<b>20.05</b>	0.101	23.98	-3.93
2312.50	5	QPSK	V	141	319	1 / 24	9.72	10.21	19.93	0.098	23.98	-4.05
2312.50	5	16-QAM	V	141	319	1 / 24	8.20	10.21	<b>18.41</b>	0.069	23.98	-5.57
2312.50	5	64-QAM	V	141	319	1 / 24	7.40	10.21	17.61	0.058	23.98	-6.37
2312.50	5	256-QAM	V	141	319	1 / 24	5.32	10.21	<b>15.53</b>	<b>0.036</b>	23.98	-8.45
2310.00	10	QPSK	V	161	318	1 / 0	10.14	10.22	<b>20.36</b>	<b>0.109</b>	23.98	-3.62
2310.00	10	16-QAM	V	161	318	1 / 0	8.68	10.22	18.90	0.078	23.98	-5.08
2310.00	10	64-QAM	V	161	318	1 / 0	7.70	10.22	17.92	0.062	23.98	-6.06
2310.00	10	256-QAM	V	161	318	1 / 0	5.00	10.22	<b>15.22</b>	<b>0.033</b>	23.98	-8.76
2310.00	10	QPSK	H	222	319	1 / 0	8.68	10.22	18.90	0.078	23.98	-5.08
2310.00	10 (WCP)	QPSK	V	161	318	1 / 0	8.96	10.22	19.18	0.083	23.98	-4.80
2310.00	10 (WCP + DD)	QPSK	V	161	318	1 / 0	8.51	10.22	18.73	<b>0.075</b>	23.98	-5.25

**Table 7-9. EIRP Data (Band 30)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 172 of 302	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
2498.50	5	QPSK	V	265	317	1 / 0	12.25	9.40	21.65	0.146	33.01	-11.36
2593.00	5	QPSK	V	251	340	1 / 0	12.21	9.56	<b>21.77</b>	0.150	33.01	-11.24
2687.50	5	QPSK	V	109	131	1 / 0	11.98	9.69	21.67	0.147	33.01	-11.34
2593.00	5	16-QAM	V	251	340	1 / 0	10.86	9.56	<b>20.42</b>	0.110	33.01	-12.59
2593.00	5	64-QAM	V	251	340	1 / 0	9.69	9.56	<b>19.25</b>	0.084	33.01	-13.76
2593.00	5	256-QAM	V	251	340	1 / 0	6.87	9.56	<b>16.43</b>	<b>0.044</b>	33.01	-16.58
2501.00	10	QPSK	V	265	317	1 / 25	12.29	9.40	21.69	0.148	33.01	-11.32
2593.00	10	QPSK	V	251	340	1 / 25	12.28	9.56	<b>21.84</b>	0.153	33.01	-11.17
2685.00	10	QPSK	V	109	131	1 / 25	11.97	9.68	21.65	0.146	33.01	-11.36
2593.00	10	16-QAM	V	251	340	1 / 25	10.93	9.56	<b>20.49</b>	0.112	33.01	-12.52
2593.00	10	64-QAM	V	251	340	1 / 25	9.76	9.56	<b>19.32</b>	0.086	33.01	-13.69
2593.00	10	256-QAM	V	251	340	1 / 25	6.94	9.56	<b>16.50</b>	<b>0.045</b>	33.01	-16.51
2503.50	15	QPSK	V	265	317	1 / 74	12.46	9.39	<b>21.85</b>	0.153	33.01	-11.16
2593.00	15	QPSK	V	251	340	1 / 36	12.28	9.56	21.84	0.153	33.01	-11.17
2682.50	15	QPSK	V	109	131	1 / 36	12.07	9.68	21.75	0.150	33.01	-11.26
2503.50	15	16-QAM	V	265	317	1 / 74	11.11	9.39	<b>20.50</b>	0.112	33.01	-12.51
2503.50	15	64-QAM	V	265	317	1 / 74	9.94	9.39	<b>19.33</b>	0.086	33.01	-13.68
2503.50	15	256-QAM	V	265	317	1 / 74	7.12	9.39	<b>16.51</b>	<b>0.045</b>	33.01	-16.50
2506.00	20	QPSK	V	265	317	1 / 0	12.31	9.39	21.70	0.148	33.01	-11.31
2593.00	20	QPSK	V	251	340	1 / 0	12.41	9.56	<b>21.97</b>	<b>0.157</b>	33.01	-11.04
2680.00	20	QPSK	V	109	131	1 / 99	10.42	9.68	20.10	0.102	33.01	-12.91
2593.00	20	16-QAM	V	251	340	1 / 0	11.34	9.56	<b>20.90</b>	0.123	33.01	-12.11
2593.00	20	64-QAM	V	251	340	1 / 0	10.63	9.56	<b>20.19</b>	0.104	33.01	-12.82
2593.00	20	256-QAM	V	251	340	1 / 0	7.47	9.56	<b>17.03</b>	<b>0.050</b>	33.01	-15.98
2593.00	20	QPSK	H	142	198	1 / 0	12.33	9.56	21.89	0.154	33.01	-11.12
2593.00	20 (WCP)	QPSK	H	115	25	1 / 0	11.10	9.56	20.66	0.116	33.01	-12.35
2593.00	20 (WCP + DD)	QPSK	H	144	305	1 / 0	10.18	9.56	19.74	<b>0.094</b>	33.01	-13.27

Table 7-10. EIRP Data (Band 41 – PC3)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 173 of 302	

## 7.8 Radiated Spurious Emissions Measurements

### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

### Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

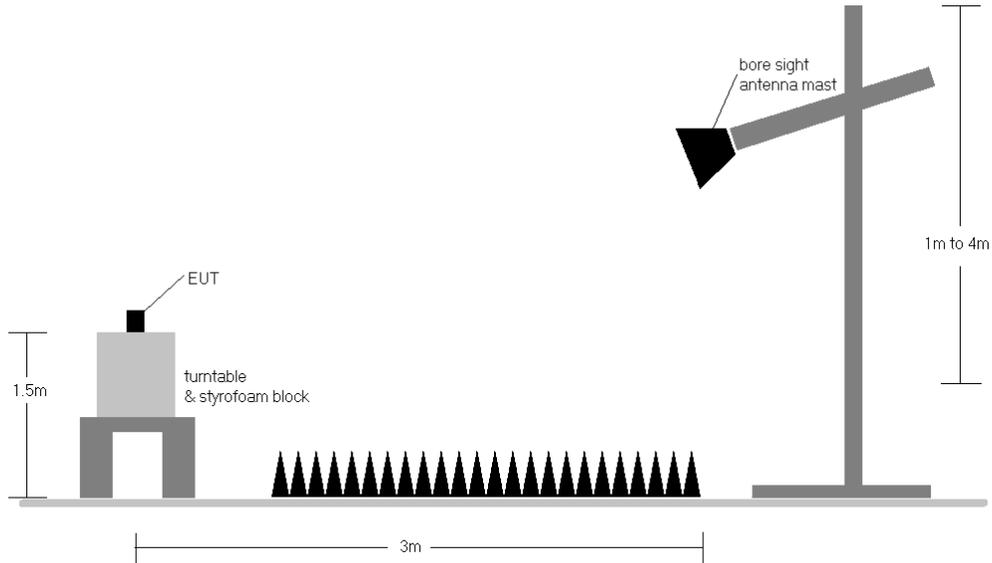
### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq$  3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points  $\geq$  2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: ZNFV600AM	 <b>MEASUREMENT REPORT (CERTIFICATION)</b> 		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 174 of 302

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.



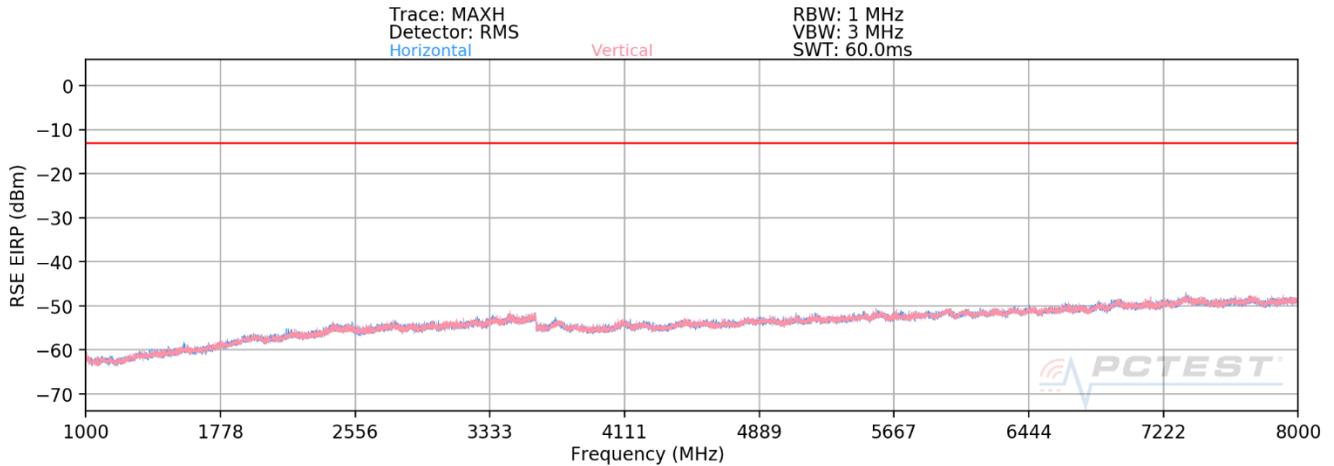
**Figure 7-8. Test Instrument & Measurement Setup**

### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 175 of 302

## Band 12



**Plot 7-277. Radiated Spurious Plot above 1GHz (Band 12)**

OPERATING FREQUENCY: 704.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	V	-	-	-62.21	2.71	-59.50	-46.5
2112.00	V	204	264	-55.81	3.57	-52.24	-39.2
2816.00	V	-	-	-58.52	4.98	-53.54	-40.5
3520.00	V	-	-	-57.59	6.33	-51.26	-38.3

**Table 7-11. Radiated Spurious Data (Band 12 – Low Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 176 of 302

OPERATING FREQUENCY: 707.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	V	-	-	-60.85	2.80	-58.05	-45.0
2122.50	V	202	226	-57.91	3.57	-54.34	-41.3
2830.00	V	-	-	-58.21	5.02	-53.19	-40.2
3537.50	V	-	-	-56.96	6.31	-50.66	-37.7

Table 7-12. Radiated Spurious Data (Band 12 – Mid Channel)

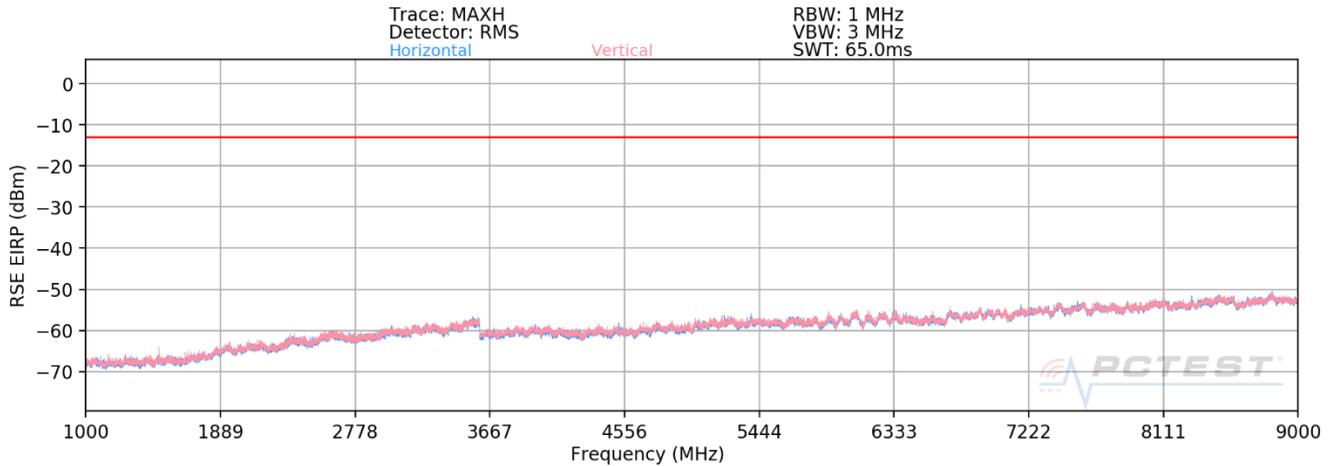
OPERATING FREQUENCY: 711.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	V	-	-	-62.59	2.88	-59.70	-46.7
2133.00	V	221	337	-57.71	3.58	-54.13	-41.1
2844.00	V	-	-	-58.49	5.07	-53.42	-40.4
3555.00	V	-	-	-58.12	6.31	-51.81	-38.8

Table 7-13. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 177 of 302

### Band 5



**Plot 7-278. Radiated Spurious Plot above 1GHz (Band 5)**

OPERATING FREQUENCY: 829.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	-	-	-61.95	3.61	-58.33	-45.3
2487.00	V	-	-	-58.04	4.25	-53.79	-40.8
3316.00	V	-	-	-58.30	5.83	-52.47	-39.5

**Table 7-14. Radiated Spurious Data (Band 5 – Low Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 178 of 302

OPERATING FREQUENCY: 836.50 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	V	-	-	-60.80	3.62	-57.18	-44.2
2509.50	V	-	-	-57.20	4.33	-52.87	-39.9
3346.00	V	-	-	-58.06	5.92	-52.14	-39.1

**Table 7-15. Radiated Spurious Data (Band 5 – Mid Channel)**

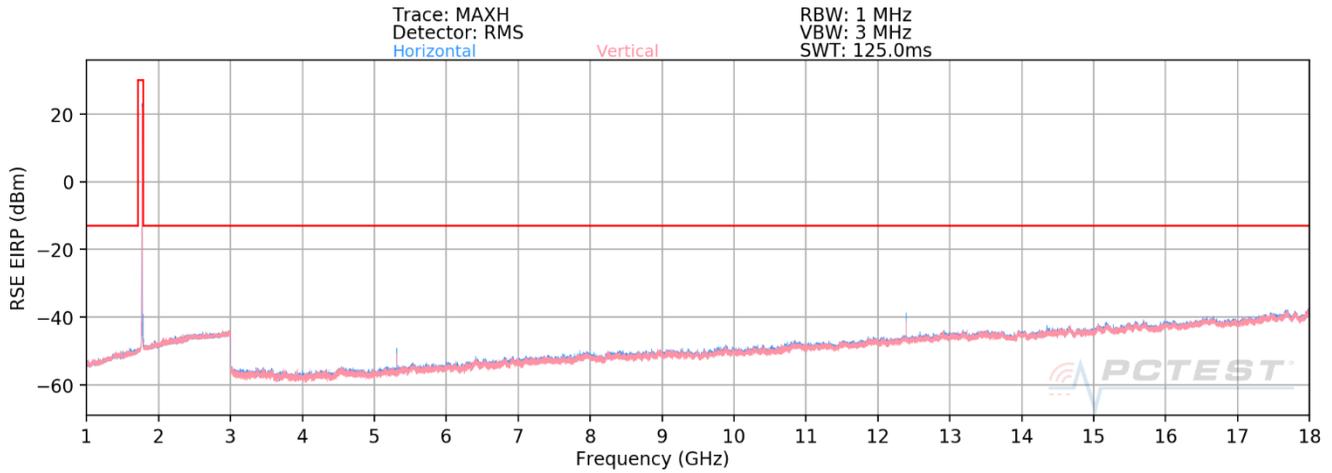
OPERATING FREQUENCY: 844.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	-	-	-61.68	3.63	-58.06	-45.1
2532.00	V	-	-	-58.11	4.47	-53.64	-40.6
3376.00	V	-	-	-57.70	6.05	-51.66	-38.7

**Table 7-16. Radiated Spurious Data (Band 5 – High Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 179 of 302	

### Band 66/4



**Plot 7-279. Radiated Spurious Plot above 1GHz (Band 66/4)**

OPERATING FREQUENCY: 1720.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3440.00	V	-	-	-60.41	6.22	-54.19	-41.2
5160.00	V	400	200	-56.66	8.68	-47.99	-35.0
6880.00	V	-	-	-58.31	8.76	-49.55	-36.6
8600.00	V	-	-	-56.47	9.17	-47.30	-34.3

**Table 7-17. Radiated Spurious Data (Band 66/4 – Low Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 180 of 302	

OPERATING FREQUENCY: 1745.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3490.00	V	-	-	-56.12	6.32	-49.80	-36.8
5235.00	V	368	319	-56.99	8.71	-48.28	-35.3
6980.00	V	-	-	-58.31	8.74	-49.58	-36.6
8725.00	V	-	-	-57.03	9.42	-47.62	-34.6

Table 7-18. Radiated Spurious Data (Band 66/4 – Mid Channel)

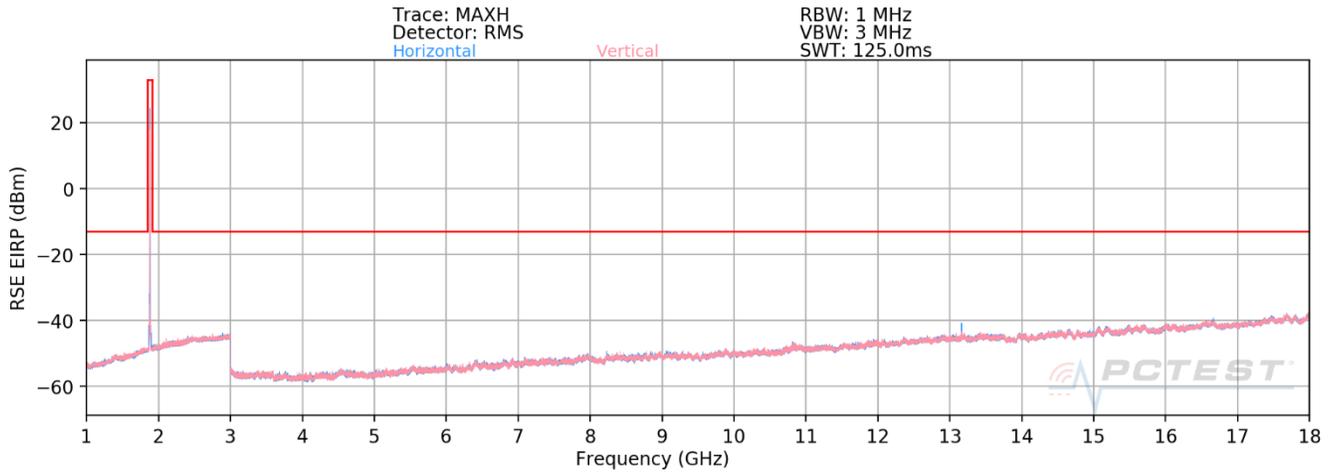
OPERATING FREQUENCY: 1770.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3540.00	V	-	-	-57.50	6.31	-51.19	-38.2
5310.00	V	400	207	-58.50	8.74	-49.76	-36.8
7080.00	V	-	-	-57.15	8.66	-48.49	-35.5
8850.00	V	-	-	-56.55	9.53	-47.02	-34.0

Table 7-19. Radiated Spurious Data (Band 66/4 – High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 181 of 302	

## Band 2



**Plot 7-280. Radiated Spurious Plot above 1GHz (Band 2)**

OPERATING FREQUENCY: 1860.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3720.00	V	-	-	-64.42	6.58	-57.84	-44.8
5580.00	V	104	128	-62.17	8.74	-53.44	-40.4
7440.00	V	-	-	-60.86	8.41	-52.44	-39.4
9300.00	V	-	-	-60.37	9.33	-51.04	-38.0

**Table 7-20. Radiated Spurious Data (Band 2 – Low Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 182 of 302	

OPERATING FREQUENCY: 1880.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3760.00	V	-	-	-63.66	6.67	-56.99	-44.0
5640.00	V	100	127	-59.76	8.81	-50.95	-37.9
7520.00	V	-	-	-60.42	8.48	-51.94	-38.9
9400.00	V	-	-	-59.98	9.32	-50.66	-37.7

Table 7-21. Radiated Spurious Data (Band 2 – Mid Channel)

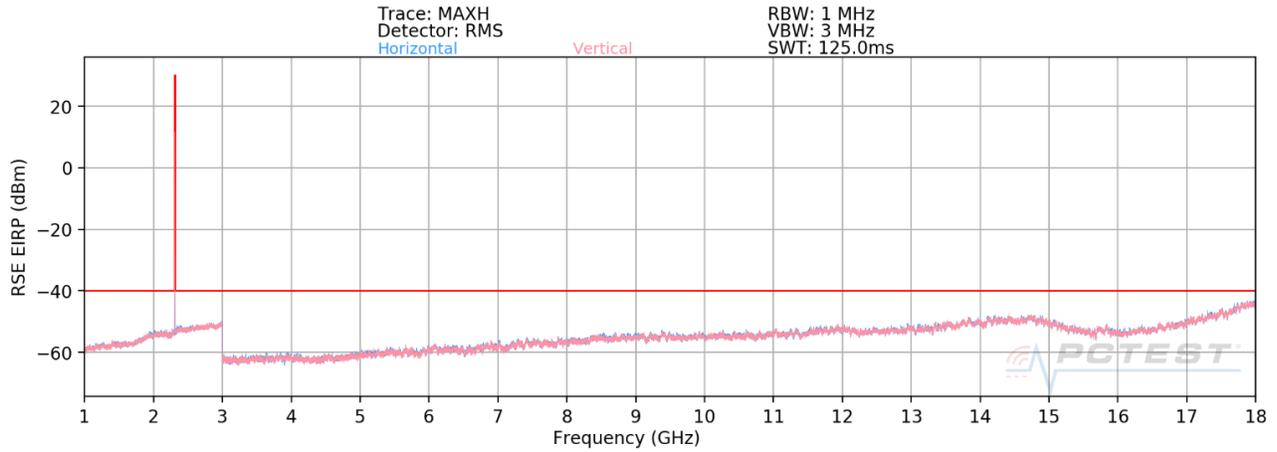
OPERATING FREQUENCY: 1900.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3800.00	V	-	-	-64.66	6.87	-57.78	-44.8
5700.00	V	104	137	-62.37	8.76	-53.60	-40.6
7600.00	V	-	-	-60.70	8.47	-52.23	-39.2
9500.00	V	-	-	-60.08	9.37	-50.71	-37.7

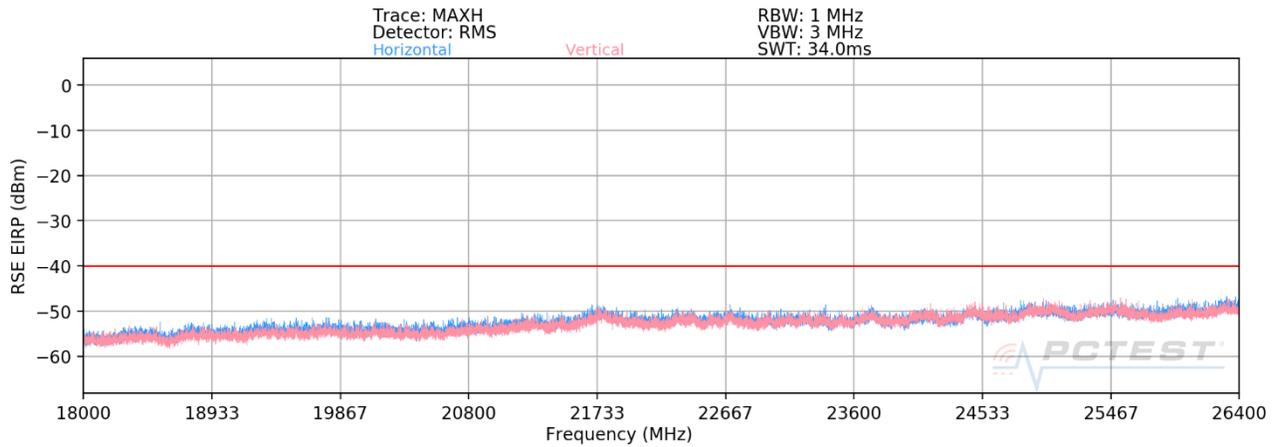
Table 7-22. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 183 of 302	

### Band 30



**Plot 7-281. Radiated Spurious Plot 1GHz - 18GHz (Band 30)**



**Plot 7-282. Radiated Spurious Plot 18GHz - 26.5GHz (Band 30)**

<b>FCC ID:</b> ZNFV600AM	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 184 of 302

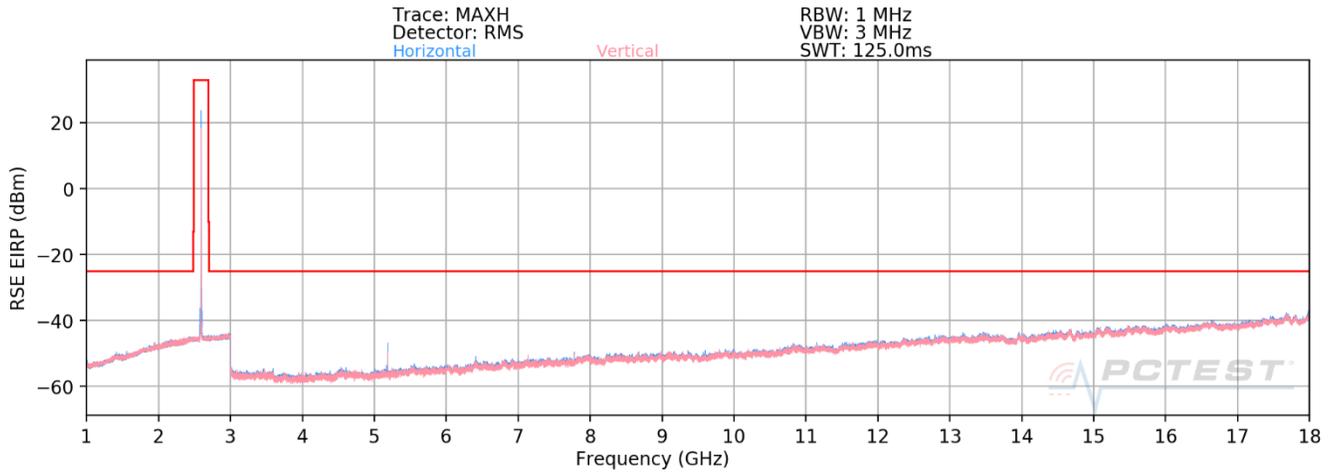
OPERATING FREQUENCY: 2310.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 10.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -40 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
4620.00	V	-	-	-65.62	8.26	-57.36	-17.4
6930.00	V	-	-	-61.58	8.72	-52.86	-12.9
9240.00	V	-	-	-60.85	9.49	-51.36	-11.4
11550.00	V	-	-	-56.79	9.19	-47.60	-7.6

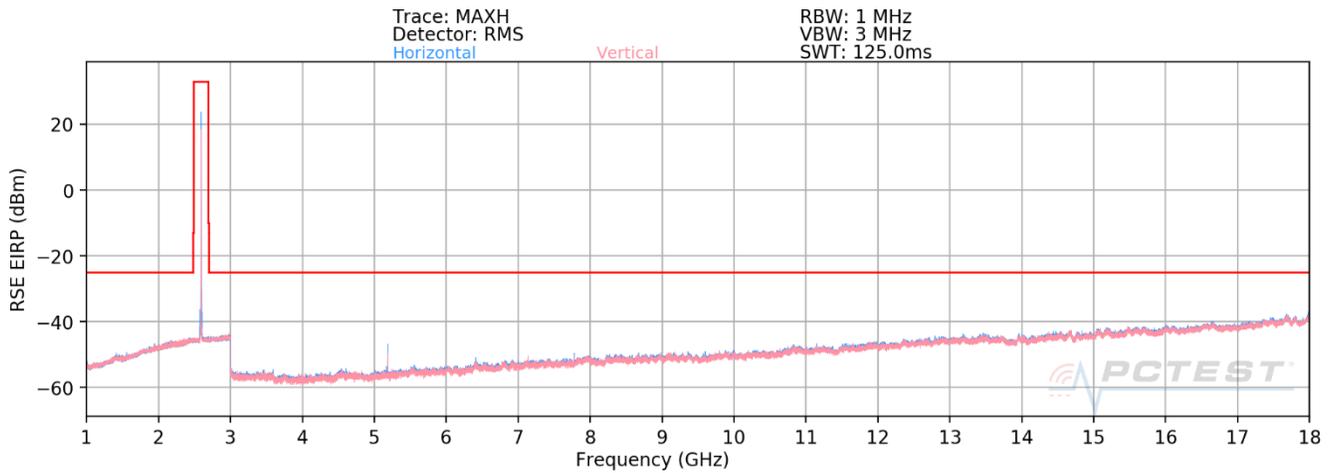
Table 7-23. Radiated Spurious Data (Band 30 – Mid Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 185 of 302

## Band 41



**Plot 7-283. Radiated Spurious Plot 1GHz - 18GHz (Band 41)**



**Plot 7-284. Radiated Spurious Plot 18GHz - 26.5GHz (Band 41)**

FCC ID: ZNFV600AM	PCTEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 186 of 302

OPERATING FREQUENCY: 2506.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5012.00	V	399	204	-57.23	8.56	-48.67	-23.7
7518.00	V	399	191	-55.17	8.49	-46.68	-21.7
10024.00	V	112	332	-56.03	9.85	-46.18	-21.2
12530.00	V	-	-	-53.53	9.07	-44.46	-19.5
15036.00	V	-	-	-50.63	8.77	-41.86	-16.9

Table 7-24. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5186.00	V	125	3	-54.68	8.70	-45.98	-21.0
7779.00	V	117	349	-53.56	8.69	-44.87	-19.9
10372.00	V	132	338	-56.18	9.62	-46.55	-21.6
12965.00	V	-	-	-53.26	8.99	-44.27	-19.3
15558.00	V	-	-	-49.64	8.32	-41.32	-16.3

Table 7-25. Radiated Spurious Data (Band 41 – Mid Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 187 of 302	

OPERATING FREQUENCY: 2680.00 MHz  
 MODULATION SIGNAL: QPSK  
 BANDWIDTH: 20.0 MHz  
 DISTANCE: 3 meters  
 LIMIT: -25 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
5360.00	V	136	354	-54.78	8.70	-46.08	-21.1
8040.00	V	128	349	-53.09	8.95	-44.13	-19.1
10720.00	V	149	325	-55.01	9.32	-45.69	-20.7
13400.00	V	-	-	-52.98	8.77	-44.20	-19.2
16080.00	V	-	-	-48.83	8.01	-40.82	-15.8

**Table 7-26. Radiated Spurious Data (Band 41 – High Channel)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 188 of 302

## 7.9 Uplink Carrier Aggregation Radiated Measurements §2.1053.

### Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as peak measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

### Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

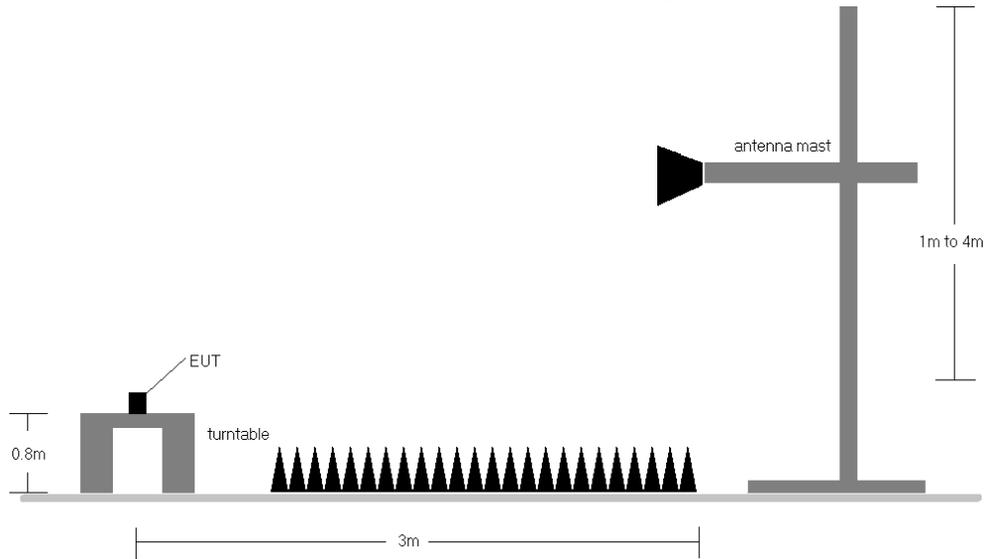
### Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW  $\geq 3 \times$  RBW
3. No. of sweep points  $\geq 2 \times$  span / RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. The trace was allowed to stabilize

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 189 of 302

### Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

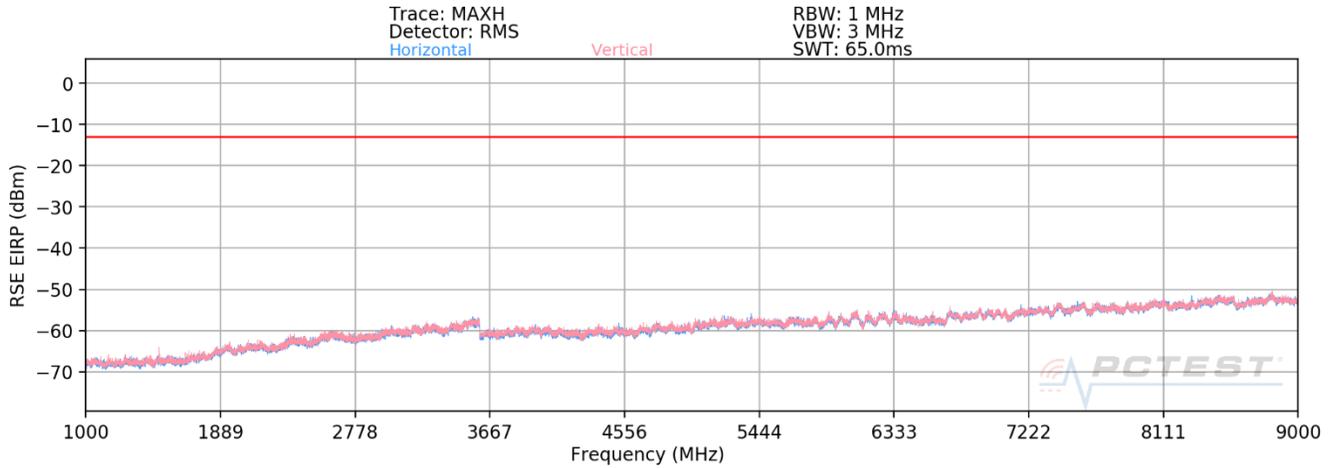


**Figure 7-9. Test Instrument & Measurement Setup**

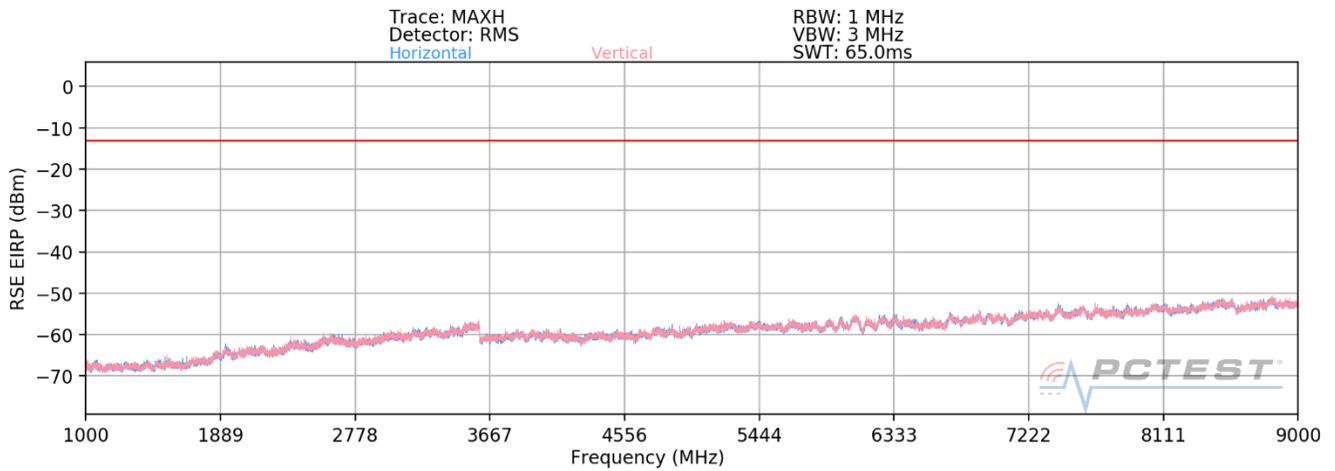
### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) Radiated spurious emissions measurements were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. The worst case (highest) emissions were found while operating with QPSK modulation with both carriers set to transmit using 1RB.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) No significant emissions were found as a result of two uplink carriers operating contiguously.

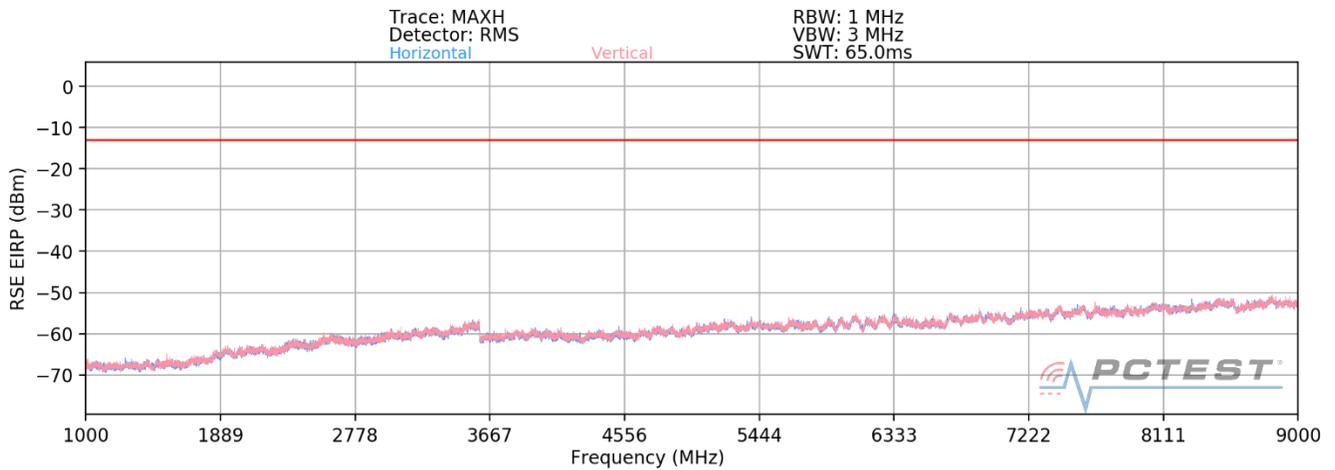
FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 190 of 302



**Plot 7-285. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Low Channel – PCC/SCC: 1RB)**



**Plot 7-286. Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 Mid Channel – PCC/SCC: 1RB)**



**Plot 7-287 . Radiated Spurious Plot 1GHz - 18GHz (ULCA Band 5 High Channel – PCC/SCC: 1RB)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 191 of 302

OPERATING FREQUENCY (PCC): \_\_\_\_\_ 829.00 MHz  
 OPERATING FREQUENCY (SCC): \_\_\_\_\_ 838.90 MHz  
 CHANNEL (PCC): \_\_\_\_\_ 20450  
 CHANNEL (SCC): \_\_\_\_\_ 20549  
 MODULATION SIGNAL: \_\_\_\_\_ QPSK  
 BANDWIDTH: \_\_\_\_\_ 10.0 MHz  
 DISTANCE: \_\_\_\_\_ 3 meters  
 LIMIT: \_\_\_\_\_ -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1658.00	V	170	172	-74.83	8.95	-65.88	-52.9
2487.00	V	185	180	-70.88	9.70	-61.17	-48.2
3316.00	V	-	-	-69.37	9.59	-59.78	-46.8
4145.00	V	-	-	-73.35	10.22	-63.14	-50.1

Plot 7-27. Radiated Spurious Plot (ULCA B5 Left Carrier: RB 1 Offset 49, Right Carrier: RB 1 Offset 0 – Low Channel)

OPERATING FREQUENCY (PCC): \_\_\_\_\_ 844.00 MHz  
 OPERATING FREQUENCY (SCC): \_\_\_\_\_ 834.10 MHz  
 CHANNEL (PCC): \_\_\_\_\_ 20600  
 CHANNEL (SCC): \_\_\_\_\_ 20501  
 MODULATION SIGNAL: \_\_\_\_\_ QPSK  
 BANDWIDTH: \_\_\_\_\_ 10.0 MHz  
 DISTANCE: \_\_\_\_\_ 3 meters  
 LIMIT: \_\_\_\_\_ -13 dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1688.00	V	-	-	-74.38	8.95	-65.42	-52.4
2532.00	V	172	168	-69.53	9.75	-59.78	-46.8
3376.00	V	-	-	-69.02	9.71	-59.32	-46.3
4220.00	V	-	-	-73.90	10.48	-63.41	-50.4

Plot 7-28. Radiated Spurious Data (ULCA B5 Left Carrier: RB 1 Offset 0, Right Carrier: RB 1 Offset 49 - High Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 192 of 302	

## 7.10 Frequency Stability / Temperature Variation

### Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

***For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24, Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.***

### Test Procedure Used

ANSI/TIA-603-E-2016

### Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

### Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

### Test Notes

None

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 193 of 302	

## Band 12 Frequency Stability Measurements

OPERATING FREQUENCY: 707,500,000 Hz  
 CHANNEL: 23790  
 REFERENCE VOLTAGE: 4.18 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	707,500,024	24	0.0000034
100 %		- 20	707,499,770	-230	-0.0000325
100 %		- 10	707,500,035	35	0.0000049
100 %		0	707,500,003	3	0.0000004
100 %		+ 10	707,499,848	-152	-0.0000215
100 %		+ 20	707,499,775	-225	-0.0000318
100 %		+ 30	707,500,027	27	0.0000038
100 %		+ 40	707,500,032	32	0.0000045
100 %		+ 50	707,499,926	-74	-0.0000105
BATT. ENDPOINT		3.14	+ 20	707,499,986	-14

**Table 7-29. Frequency Stability Data (Band 12)**

**Note:**

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 194 of 302	

## Band 12 Frequency Stability Measurements

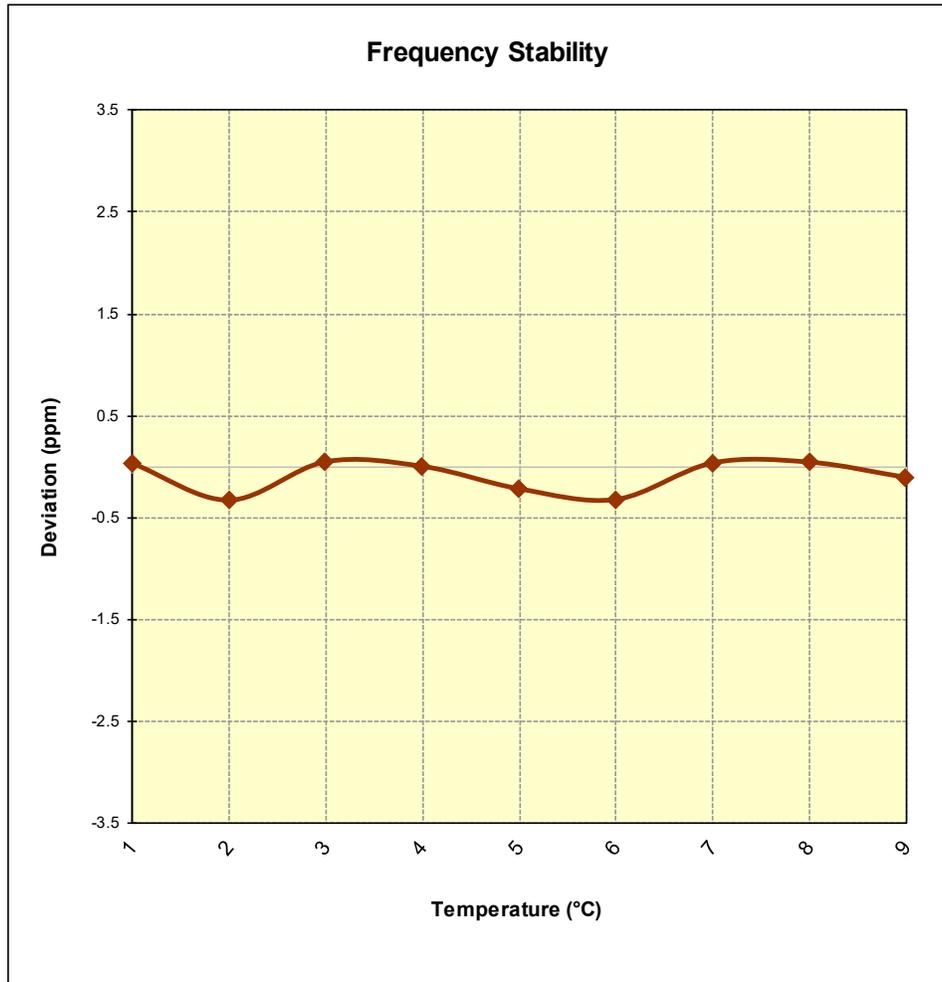


Figure 7-10. Frequency Stability Graph (Band 12)

<b>FCC ID:</b> ZNFV600AM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 195 of 302

## Band 5 Frequency Stability Measurements

OPERATING FREQUENCY: 836,500,000 Hz  
 CHANNEL: 20525  
 REFERENCE VOLTAGE: 4.18 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	836,499,591	-409	-0.0000489
100 %		- 20	836,499,813	-187	-0.0000224
100 %		- 10	836,499,815	-185	-0.0000221
100 %		0	836,499,969	-31	-0.0000037
100 %		+ 10	836,499,766	-234	-0.0000280
100 %		+ 20	836,499,959	-41	-0.0000049
100 %		+ 30	836,499,730	-270	-0.0000323
100 %		+ 40	836,500,043	43	0.0000051
100 %		+ 50	836,500,062	62	0.0000074
BATT. ENDPOINT		3.14	+ 20	836,500,009	9

**Table 7-30. Frequency Stability Data (Band 5)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 196 of 302	

## Band 5 Frequency Stability Measurements

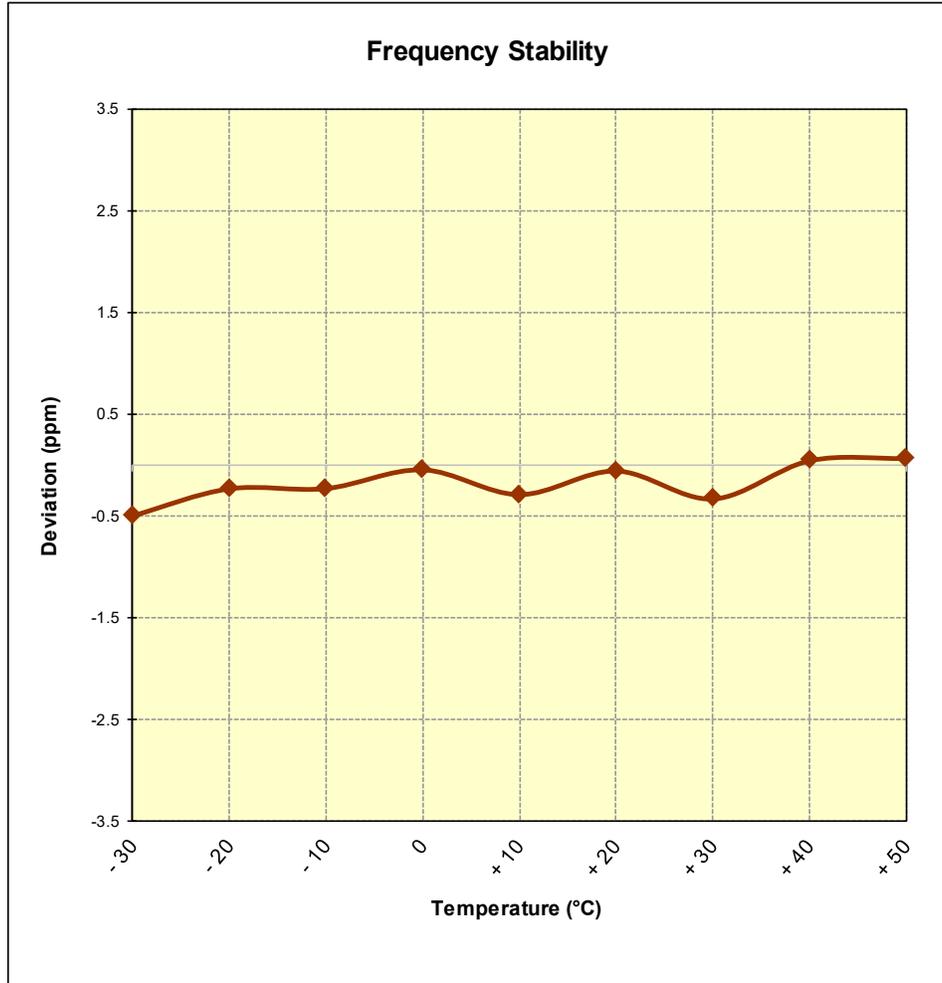


Figure 7-11. Frequency Stability Graph (Band 5)

<b>FCC ID:</b> ZNFV600AM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 197 of 302

## Band 66/4 Frequency Stability Measurements

OPERATING FREQUENCY: 1,745,000,000 Hz  
 CHANNEL: 132322  
 REFERENCE VOLTAGE: 4.18 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	1,744,999,722	-278	-0.0000159
100 %		- 20	1,745,000,075	75	0.0000043
100 %		- 10	1,744,999,685	-315	-0.0000181
100 %		0	1,745,000,386	386	0.0000221
100 %		+ 10	1,744,999,961	-39	-0.0000022
100 %		+ 20	1,745,000,047	47	0.0000027
100 %		+ 30	1,745,000,148	148	0.0000085
100 %		+ 40	1,745,000,464	464	0.0000266
100 %		+ 50	1,744,999,909	-91	-0.0000052
BATT. ENDPOINT		3.14	+ 20	1,745,000,007	7

**Table 7-31. Frequency Stability Data (Band 66/4)**

**Note:**

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 198 of 302	

## Band 66/4 Frequency Stability Measurements

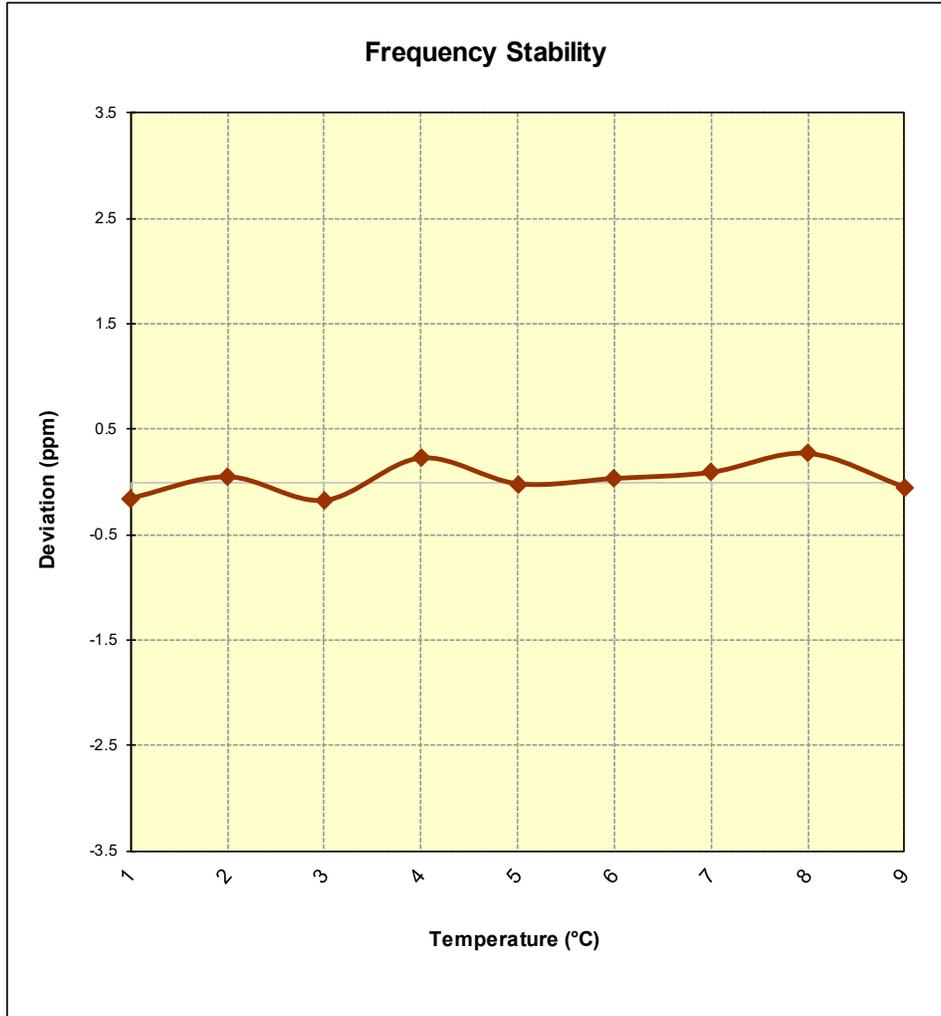


Figure 7-12. Frequency Stability Graph (Band 66/4)

<b>FCC ID:</b> ZNFV600AM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 199 of 302

## Band 2 Frequency Stability Measurements

OPERATING FREQUENCY: 1,880,000,000 Hz  
 CHANNEL: 18900  
 REFERENCE VOLTAGE: 4.18 VDC  
 DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	1,880,000,251	251	0.0000134
100 %		- 20	1,880,000,283	283	0.0000151
100 %		- 10	1,879,999,912	-88	-0.0000047
100 %		0	1,880,000,104	104	0.0000055
100 %		+ 10	1,879,999,806	-194	-0.0000103
100 %		+ 20	1,879,999,780	-220	-0.0000117
100 %		+ 30	1,880,000,019	19	0.0000010
100 %		+ 40	1,879,999,856	-144	-0.0000077
100 %		+ 50	1,880,000,339	339	0.0000180
BATT. ENDPOINT		3.14	+ 20	1,880,000,020	20

**Table 7-32. Frequency Stability Data (Band 2)**

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 200 of 302	

## Band 2 Frequency Stability Measurements

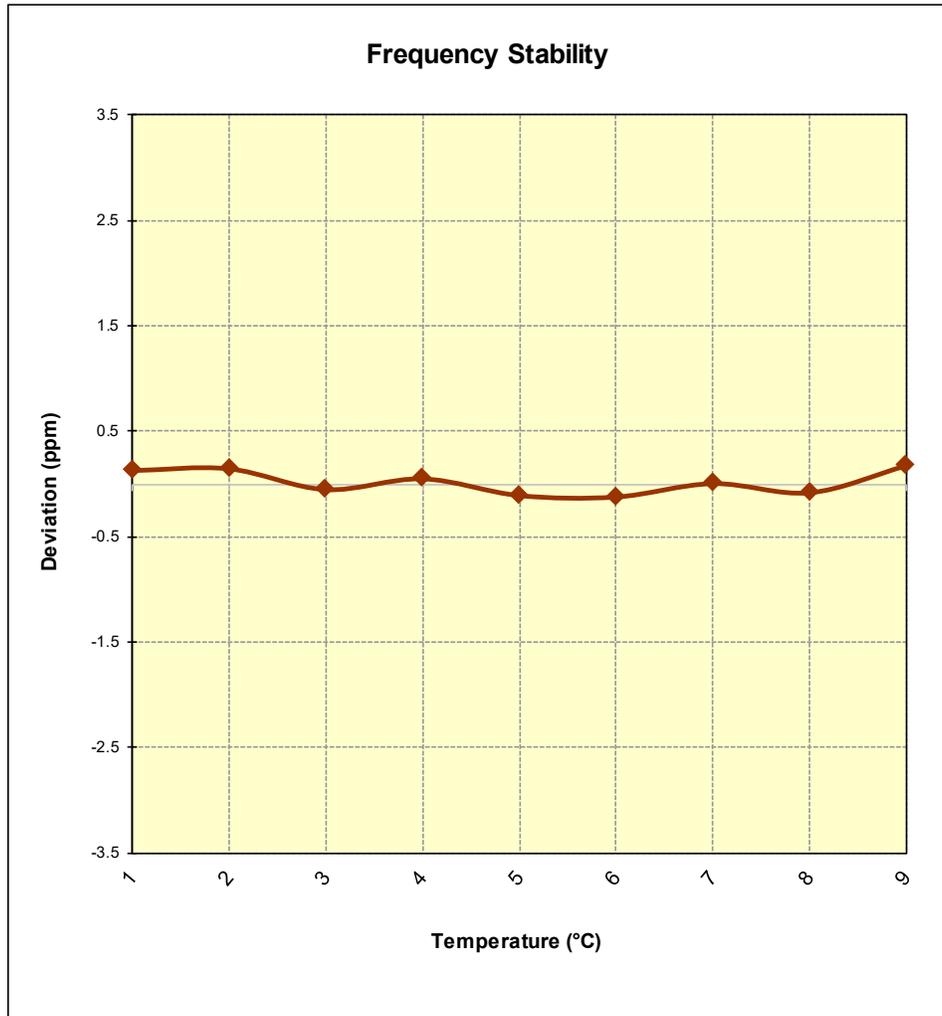


Figure 7-13. Frequency Stability Graph (Band 2)

<b>FCC ID:</b> ZNFV600AM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 201 of 302

## Band 30 Frequency Stability Measurements

OPERATING FREQUENCY: 2,310,000,000 Hz  
 CHANNEL: 27710  
 REFERENCE VOLTAGE: 4.18 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	2,310,000,014	14	0.0000006
100 %		- 20	2,310,000,002	2	0.0000001
100 %		- 10	2,310,000,011	11	0.0000005
100 %		0	2,309,999,951	-49	-0.0000021
100 %		+ 10	2,310,000,180	180	0.0000078
100 %		+ 20	2,309,999,872	-128	-0.0000055
100 %		+ 30	2,309,999,886	-114	-0.0000049
100 %		+ 40	2,309,999,799	-201	-0.0000087
100 %		+ 50	2,310,000,249	249	0.0000108
BATT. ENDPOINT		3.14	+ 20	2,309,999,935	-65

**Table 7-33. Frequency Stability Data (Band 30)**

**Note:**

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 202 of 302	

## Band 30 Frequency Stability Measurements

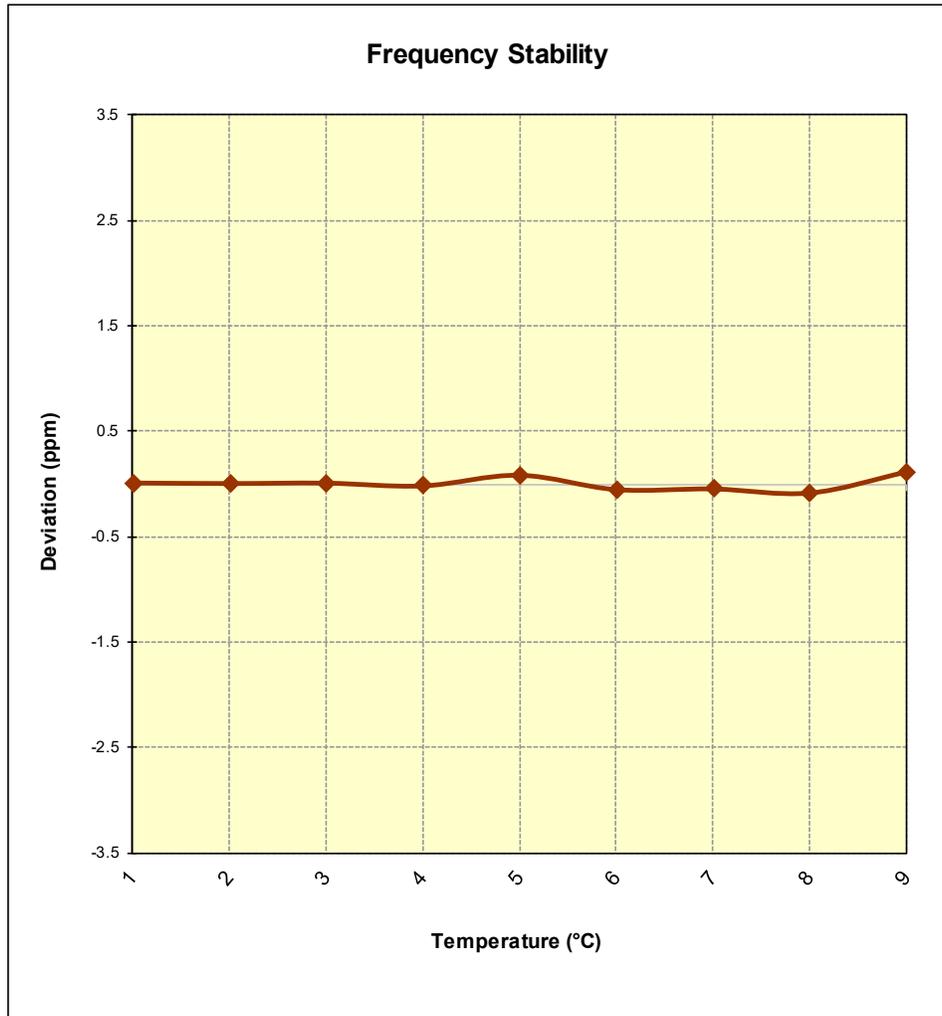


Figure 7-14. Frequency Stability Graph (Band 30)

<b>FCC ID:</b> ZNFV600AM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	 <b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1912300229-03.ZNF	<b>Test Dates:</b> 12/30/2019 - 2/14/2020	<b>EUT Type:</b> Portable Handset	Page 203 of 302

## Band 41 Frequency Stability Measurements

OPERATING FREQUENCY: 2,593,000,000 Hz  
 CHANNEL: 40620  
 REFERENCE VOLTAGE: 4.18 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.18	- 30	2,593,000,147	147	0.0000057
100 %		- 20	2,592,999,774	-226	-0.0000087
100 %		- 10	2,592,999,946	-54	-0.0000021
100 %		0	2,593,000,246	246	0.0000095
100 %		+ 10	2,592,999,918	-82	-0.0000032
100 %		+ 20	2,592,999,914	-86	-0.0000033
100 %		+ 30	2,592,999,906	-94	-0.0000036
100 %		+ 40	2,592,999,899	-101	-0.0000039
100 %		+ 50	2,593,000,073	73	0.0000028
BATT. ENDPOINT		3.14	+ 20	2,593,000,339	339

**Table 7-34. Frequency Stability Data (Band 41)**

**Note:**

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 204 of 302	

## Band 41 Frequency Stability Measurements

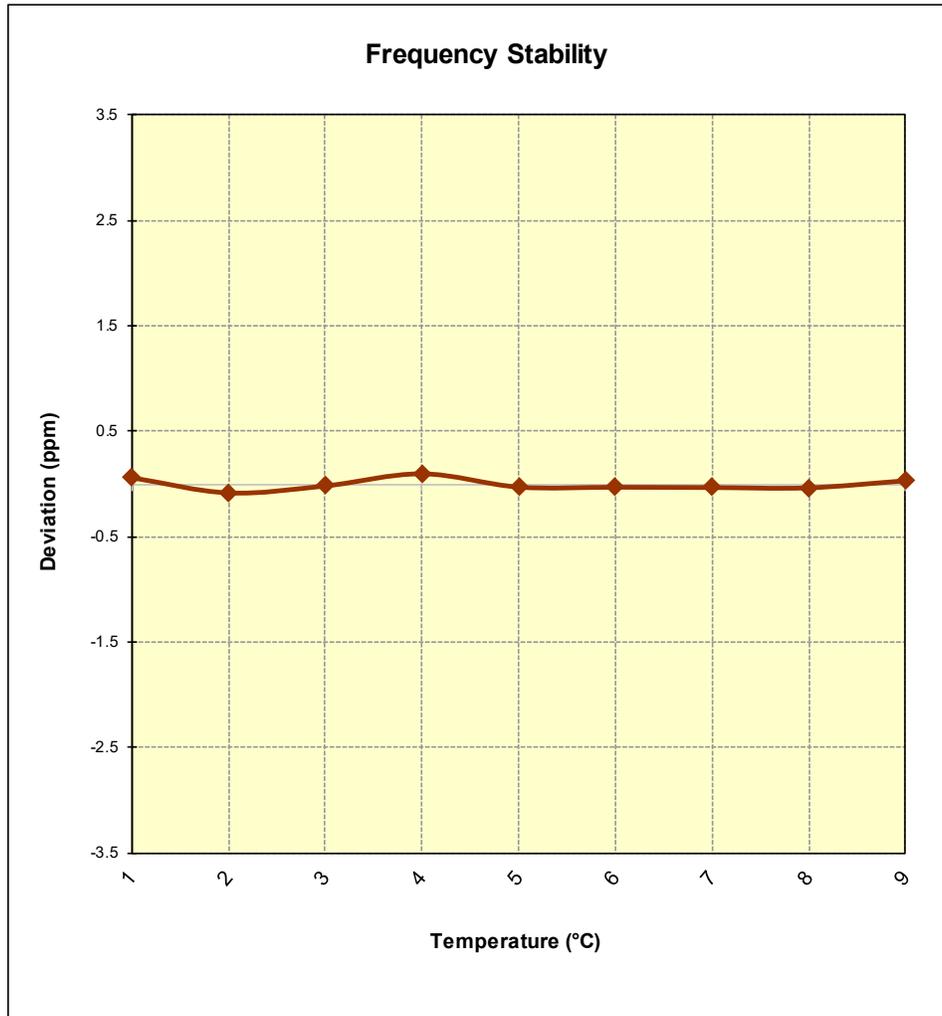


Figure 7-15. Frequency Stability Graph (Band 41)

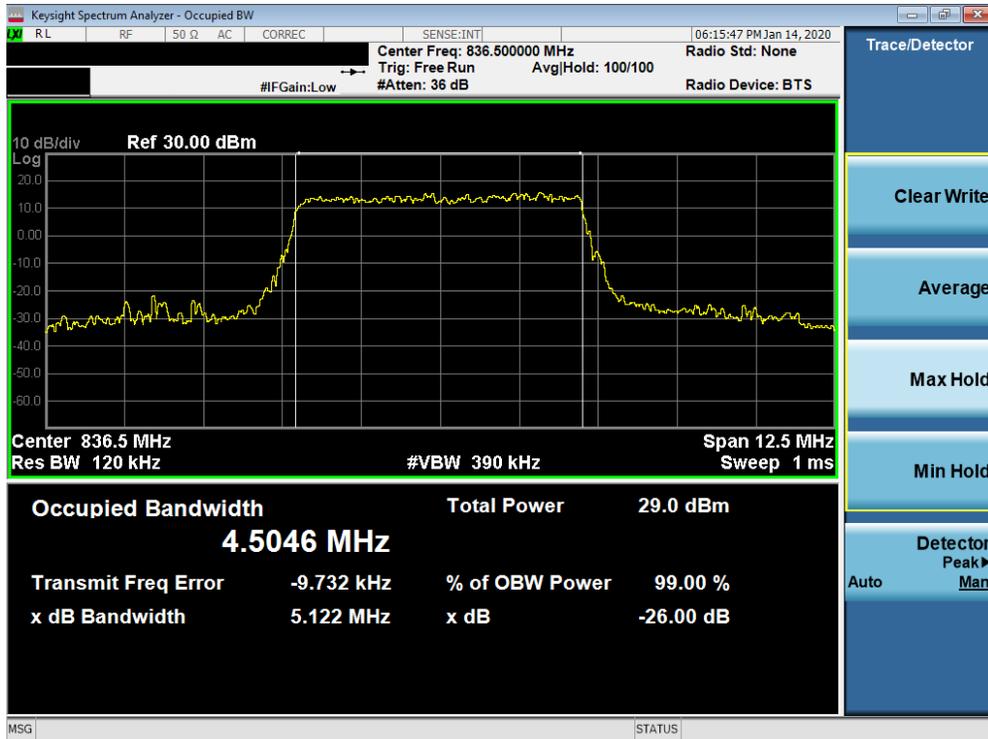
FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)	 LG	Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset	Page 205 of 302	

## 7.11 Sub 6GHz NR / EN-DC Test Results

### Occupied Bandwidth

All SCS's and Waveforms (CP-OFDM vs DFT-s OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

### NR Band n5

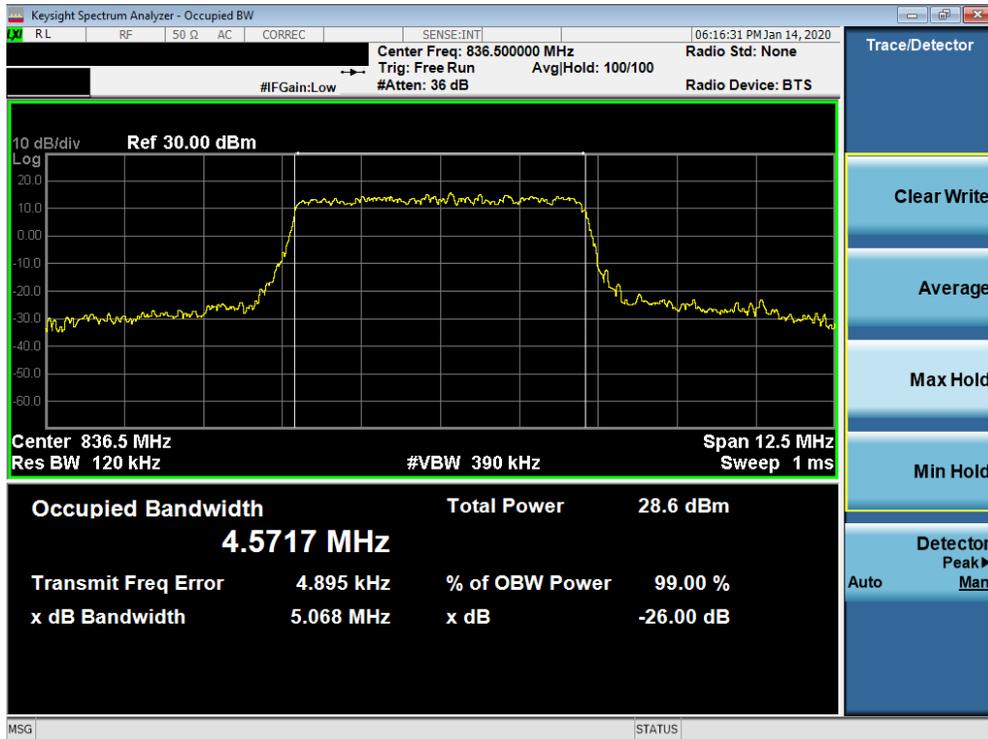


Plot 7-288. Occupied Bandwidth Plot (n5 5MHz QPSK-DFT-s-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 206 of 302

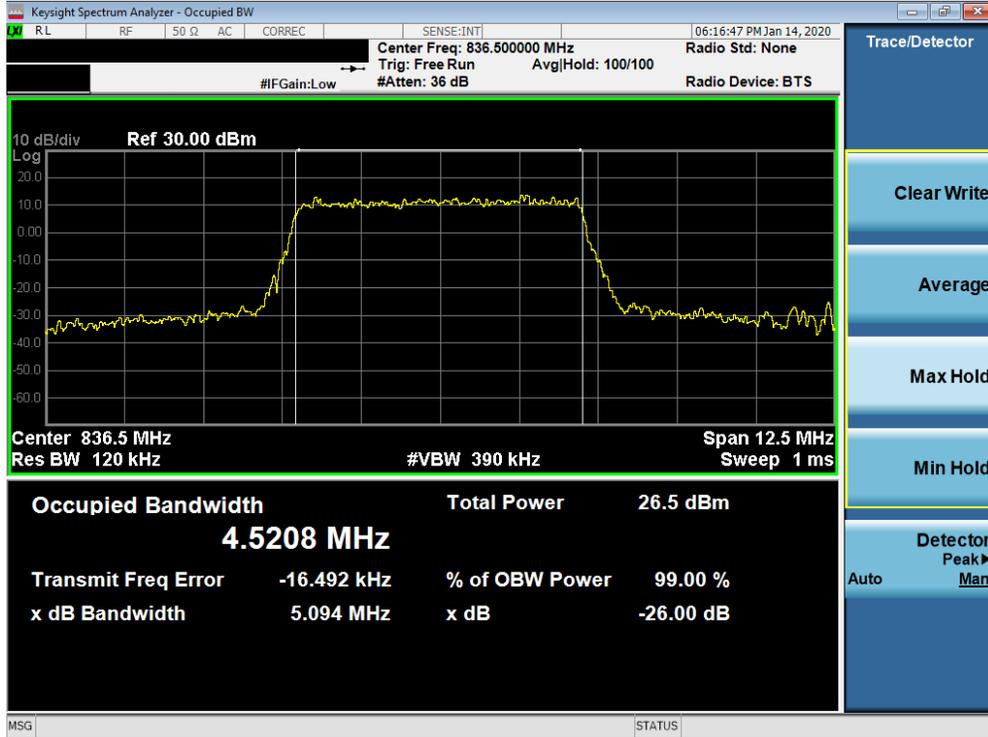


Plot 7-289. Occupied Bandwidth Plot (n5 5MHz 16QAM-CP-OFDM - Full RB Configuration)



Plot 7-290. Occupied Bandwidth Plot (n5 5MHz 64QAM-CP-OFDM- Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 207 of 302



Plot 7-291. Occupied Bandwidth Plot (n5 5MHz 256QAM-CP-OFDM - Full RB Configuration)



Plot 7-292. Occupied Bandwidth Plot (n5 10MHz QPSK-CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 208 of 302

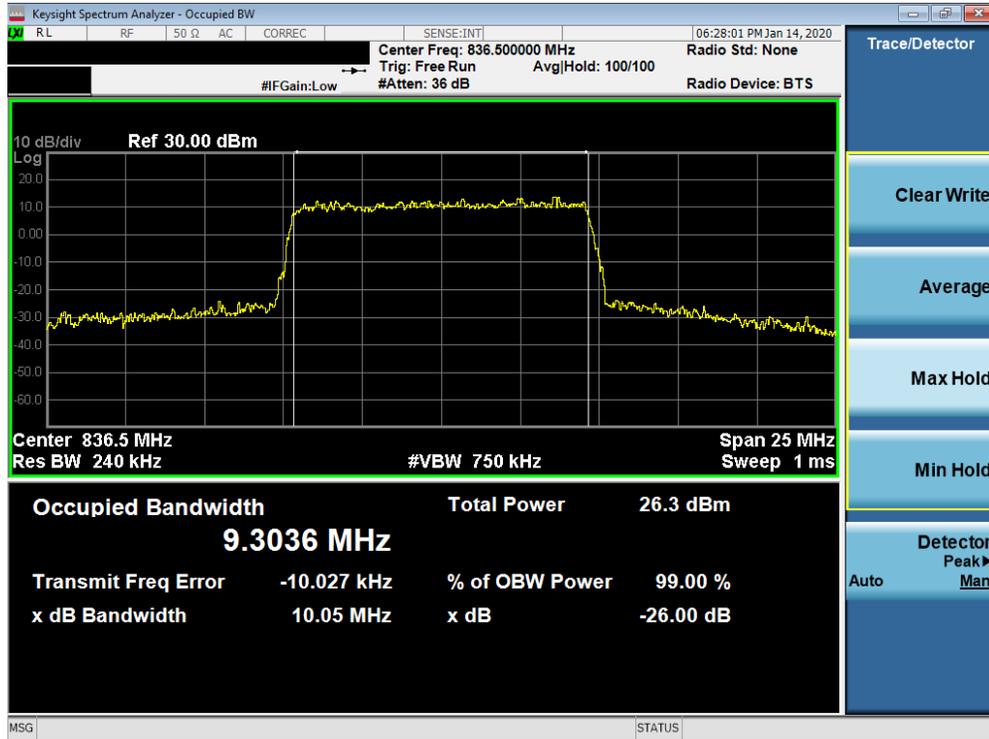


Plot 7-293. Occupied Bandwidth Plot (n5 10MHz 16QAM - CP-OFDM - Full RB Configuration)



Plot 7-294. Occupied Bandwidth Plot (n5 10MHz 64QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 209 of 302



Plot 7-295. Occupied Bandwidth Plot (n5 10MHz 256QAM - CP-OFDM - Full RB Configuration)



Plot 7-296. Occupied Bandwidth Plot (n5 15MHz QPSK - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 210 of 302

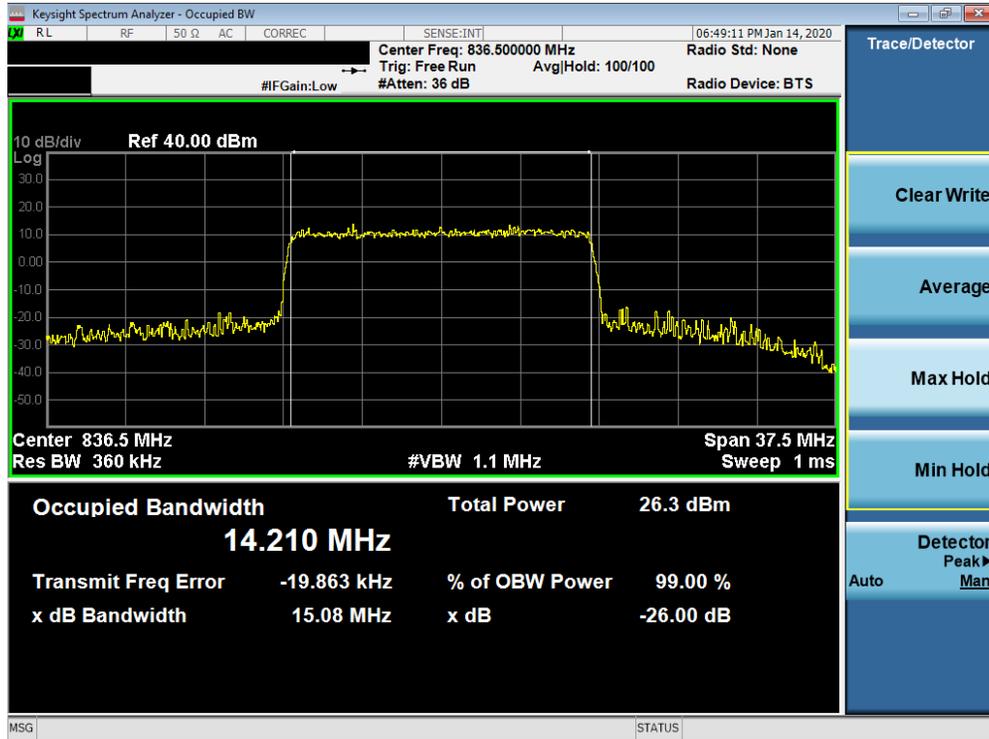


Plot 7-297. Occupied Bandwidth Plot (n5 15MHz 16QAM - CP-OFDM - Full RB Configuration)



Plot 7-298. Occupied Bandwidth Plot (n5 15MHz 64QAM - CP-OFDM- Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 211 of 302



Plot 7-299. Occupied Bandwidth Plot (n5 15MHz 256QAM - CP-OFDM - Full RB Configuration)

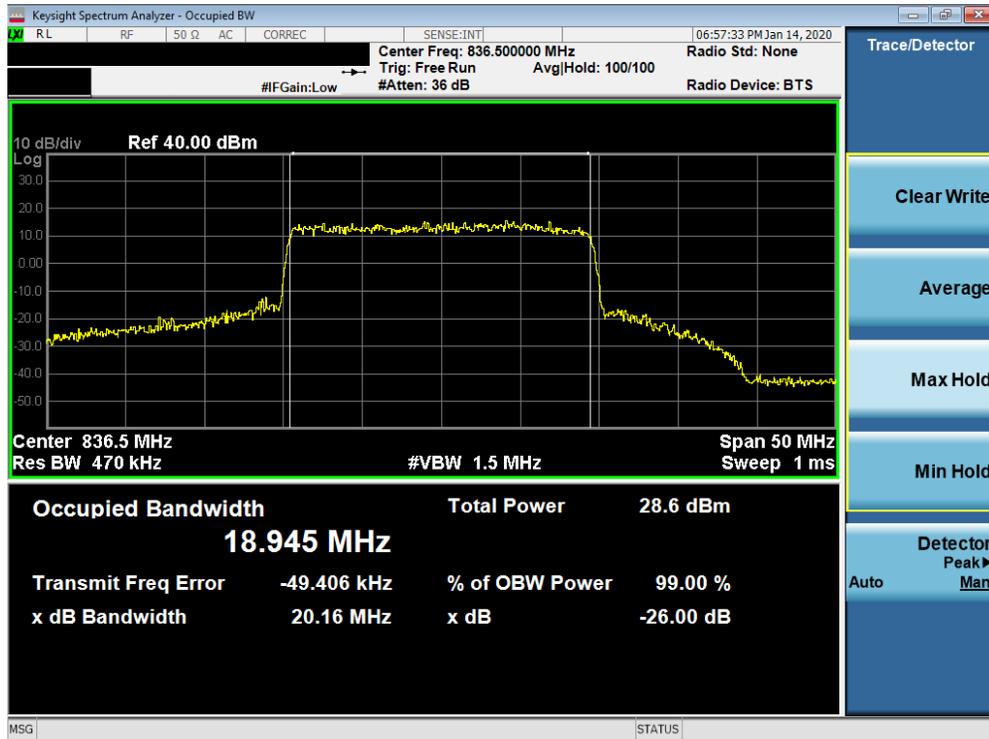


Plot 7-300. Occupied Bandwidth Plot (n5 20MHz QPSK - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 212 of 302

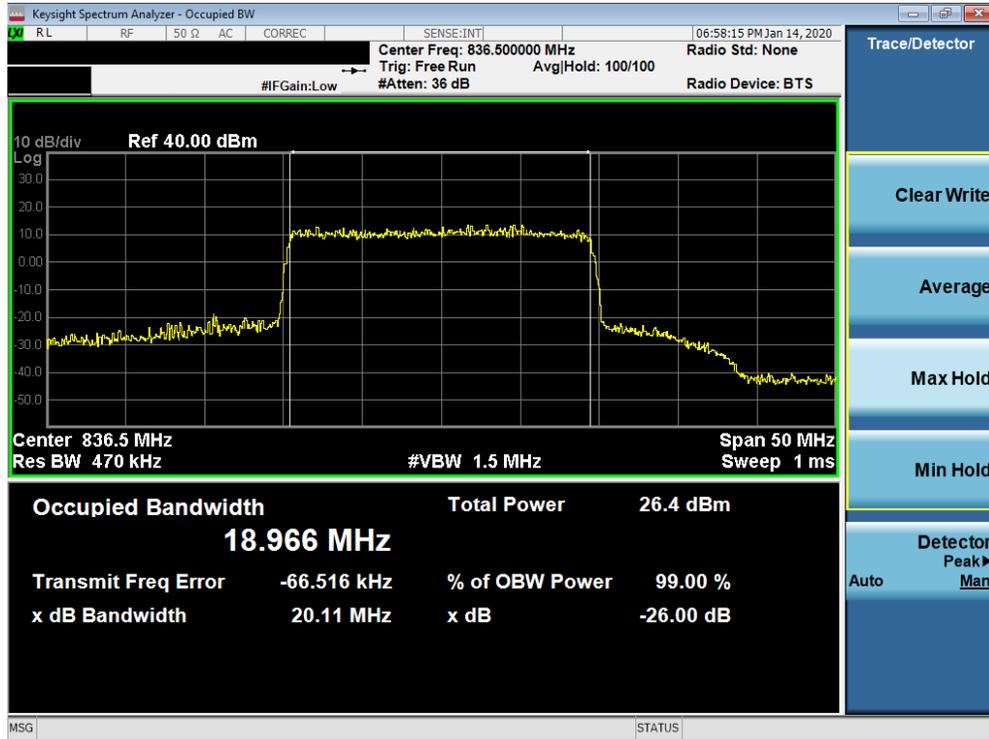


Plot 7-301. Occupied Bandwidth Plot (n5 20MHz 16QAM - CP-OFDM - Full RB Configuration)



Plot 7-302. Occupied Bandwidth Plot (n5 20MHz 64QAM - CP-OFDM- Full RB Configuration)

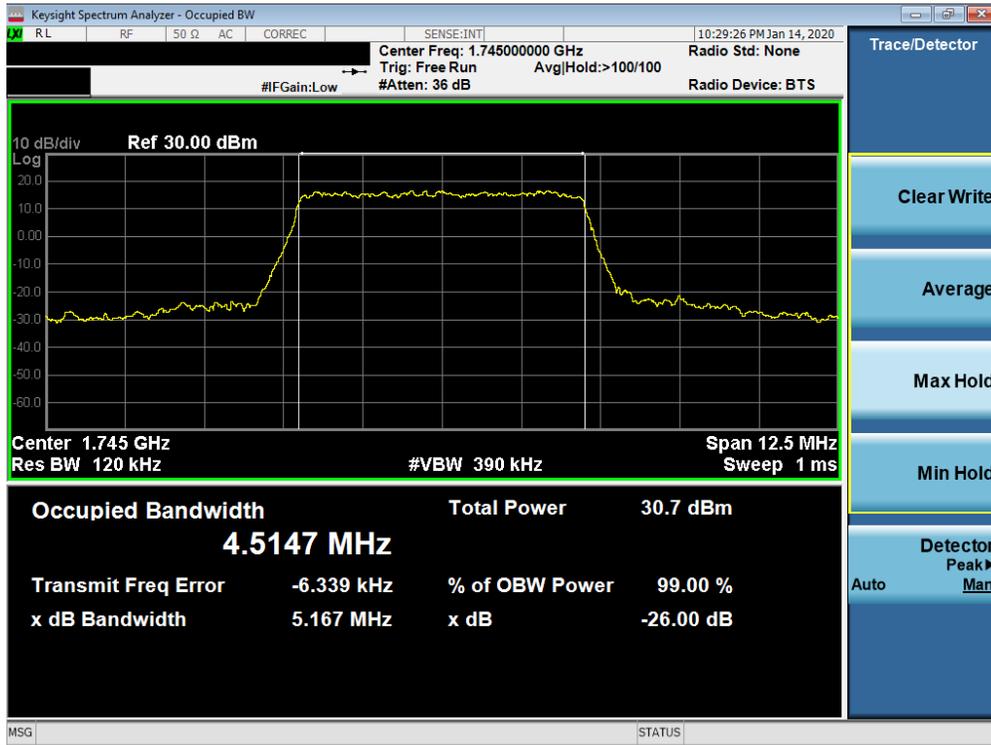
FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 213 of 302



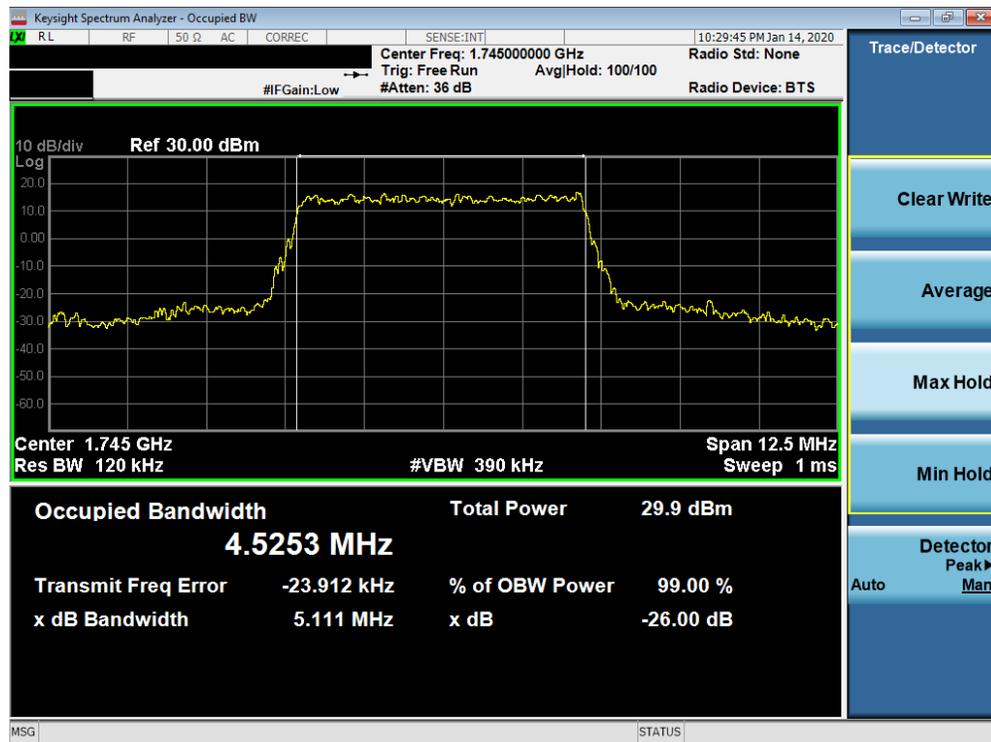
Plot 7-303. Occupied Bandwidth Plot (n5 20MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 214 of 302

## NR Band n66

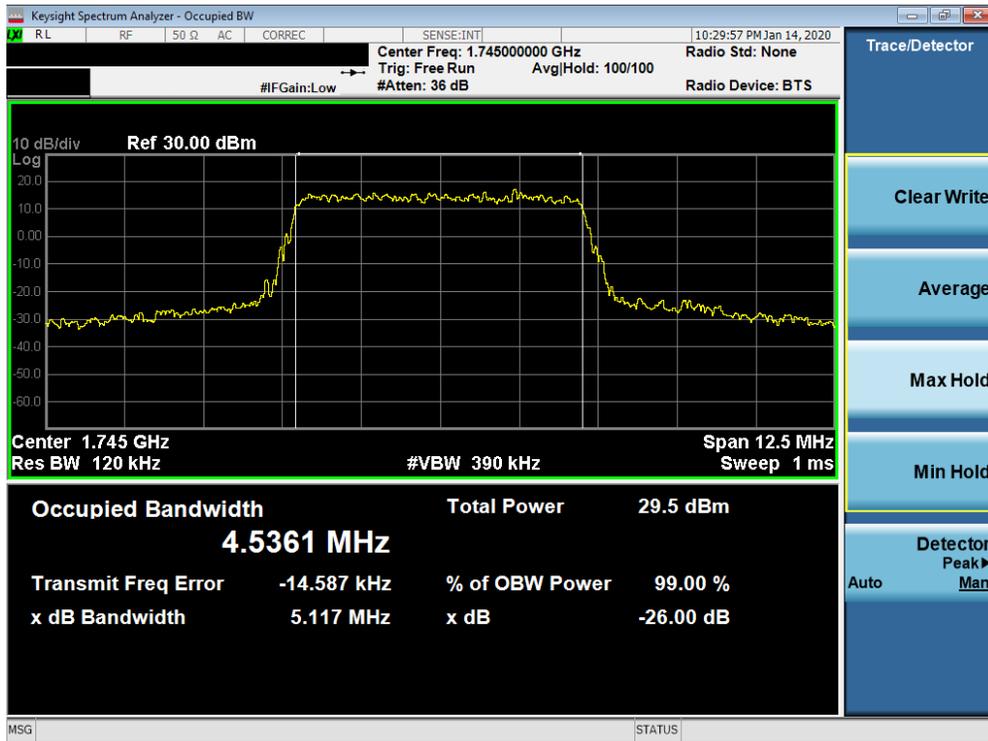


Plot 7-304. Occupied Bandwidth Plot (n66 5MHz QPSK - CP-OFDM - Full RB Configuration)

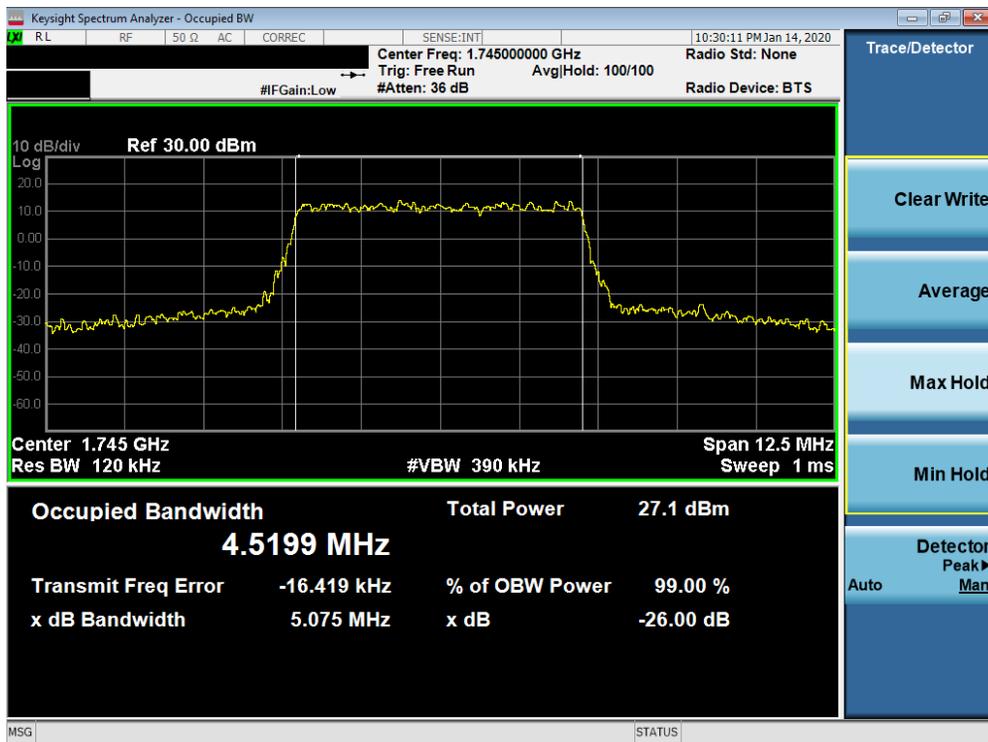


Plot 7-305. Occupied Bandwidth Plot (n66 5MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 215 of 302

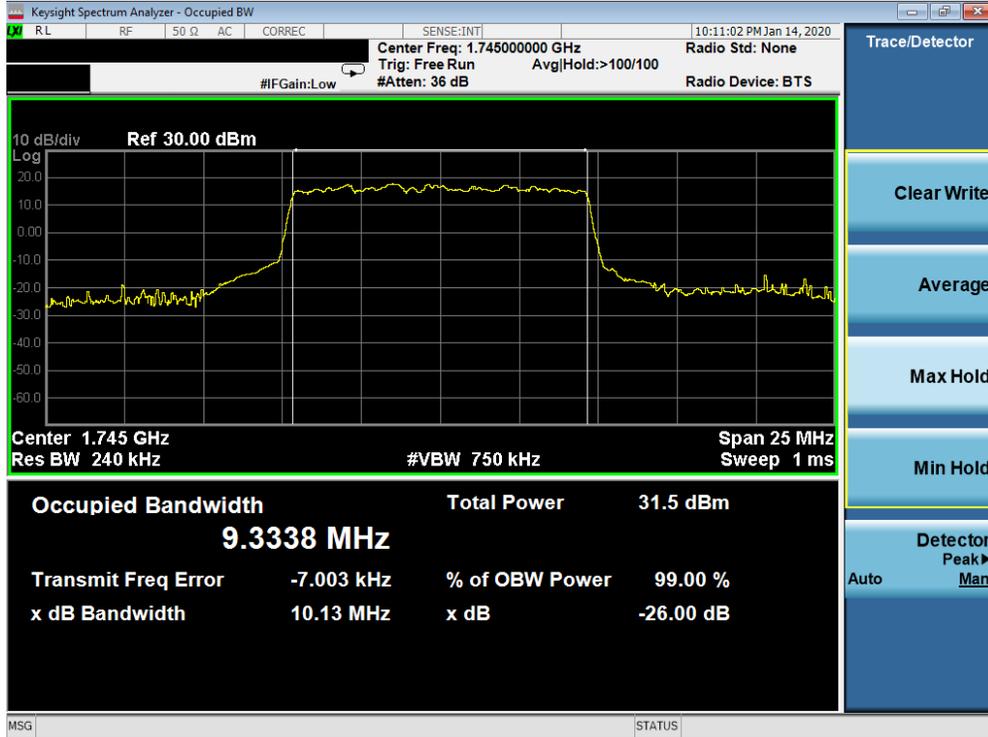


Plot 7-306. Occupied Bandwidth Plot (n66 5MHz 64QAM - CP-OFDM- Full RB Configuration)

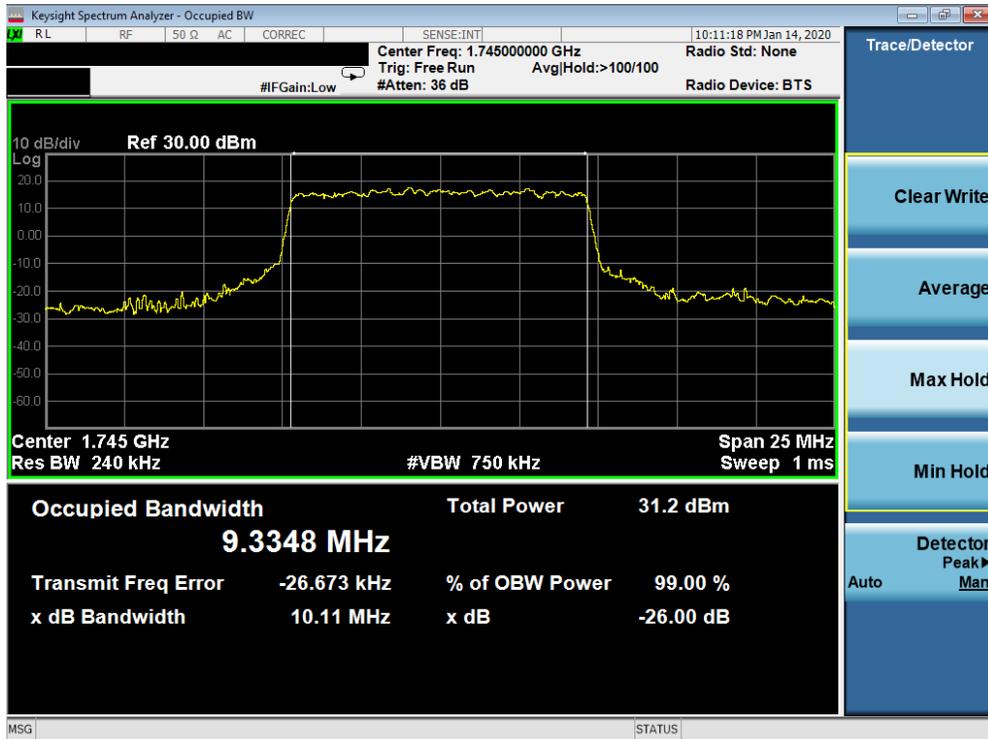


Plot 7-307. Occupied Bandwidth Plot (n66 5MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 216 of 302

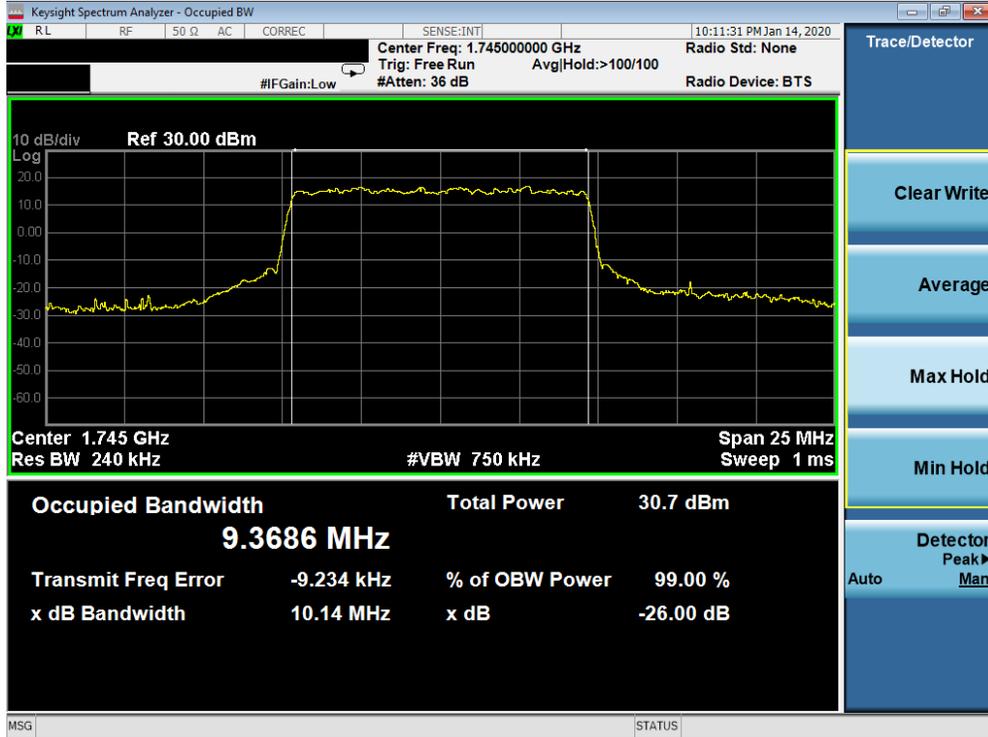


Plot 7-308. Occupied Bandwidth Plot (n66 10MHz QPSK - CP-OFDM - Full RB Configuration)

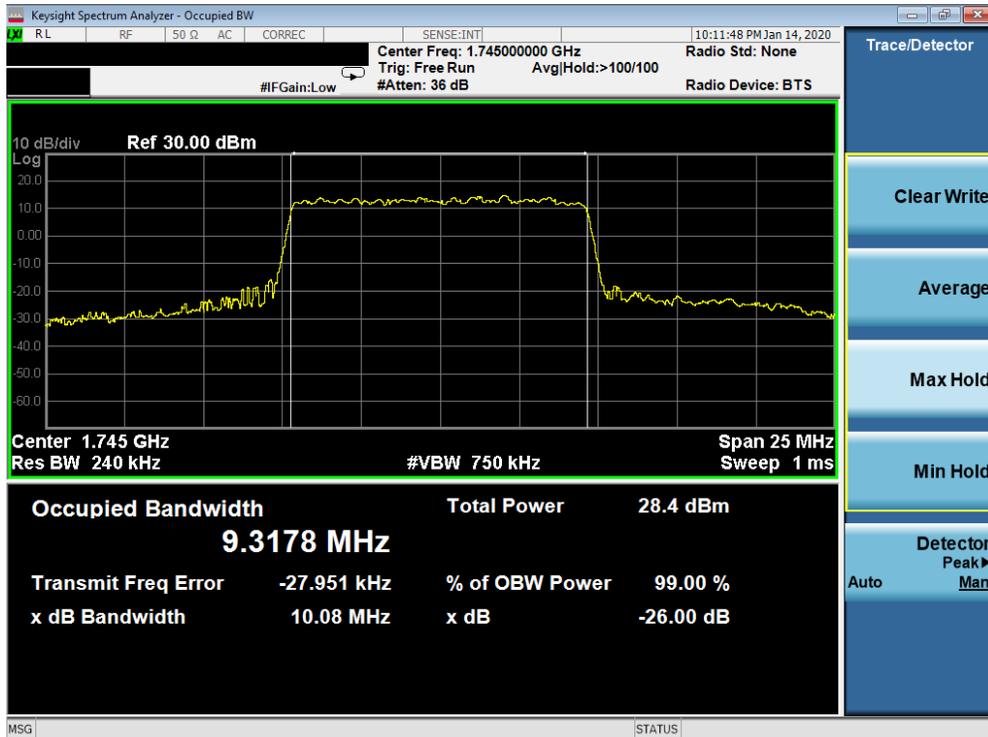


Plot 7-309. Occupied Bandwidth Plot (n66 10MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 217 of 302

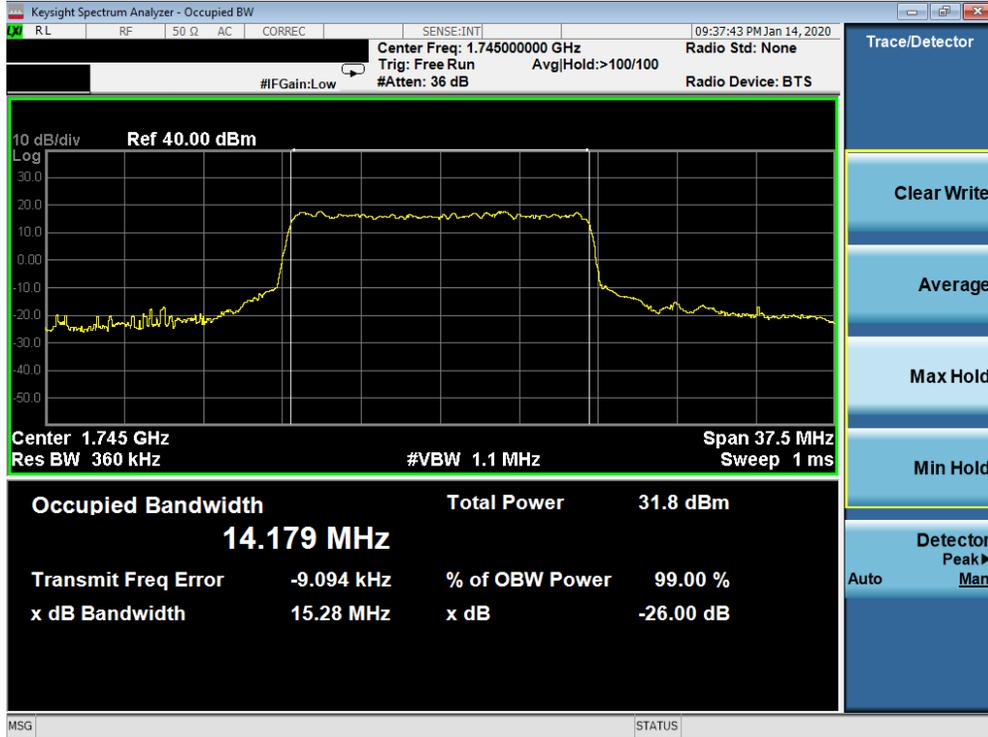


Plot 7-310. Occupied Bandwidth Plot (n66 10MHz 64QAM - CP-OFDM- Full RB Configuration)

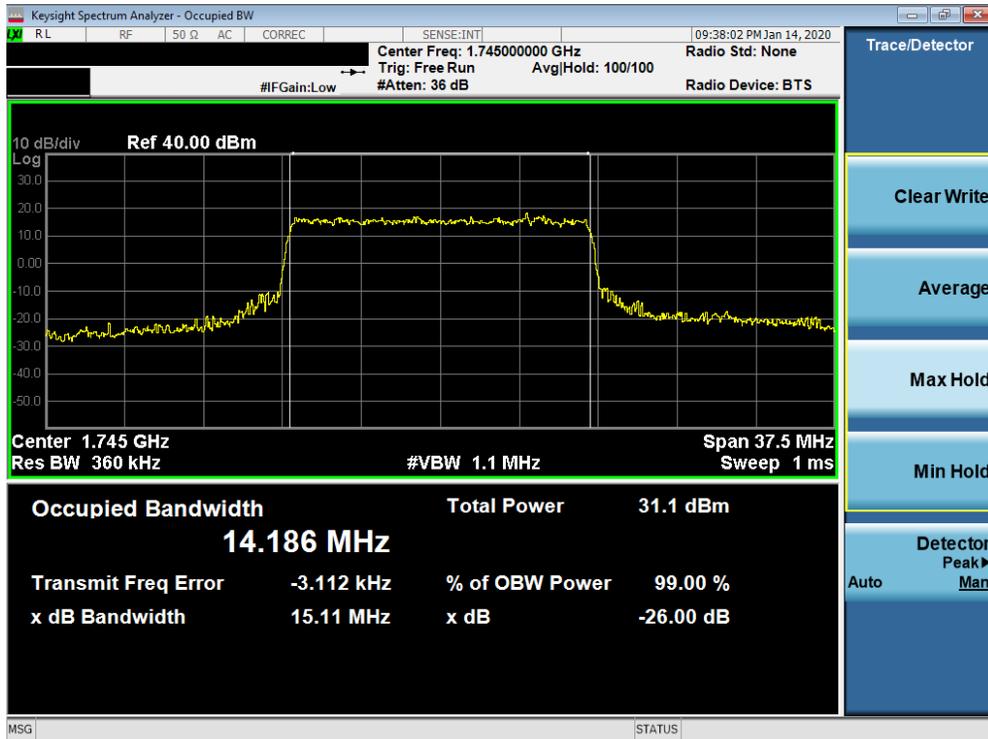


Plot 7-311. Occupied Bandwidth Plot (n66 10MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 218 of 302



Plot 7-312. Occupied Bandwidth Plot (n66 15MHz QPSK - CP-OFDM - Full RB Configuration)

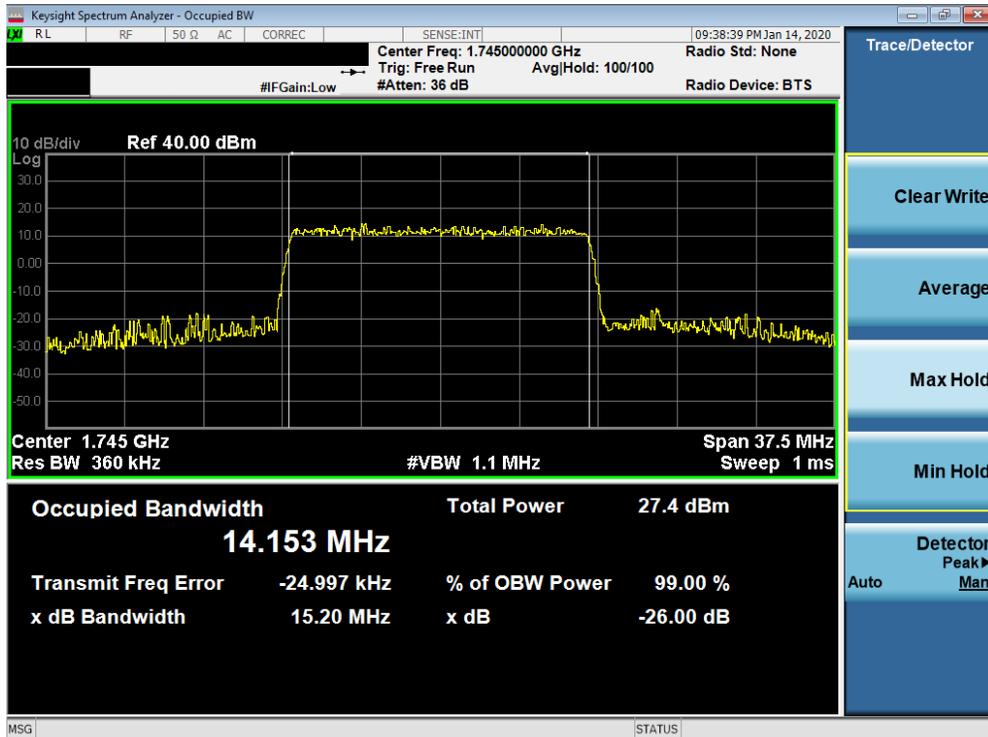


Plot 7-313. Occupied Bandwidth Plot (n66 15MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 219 of 302

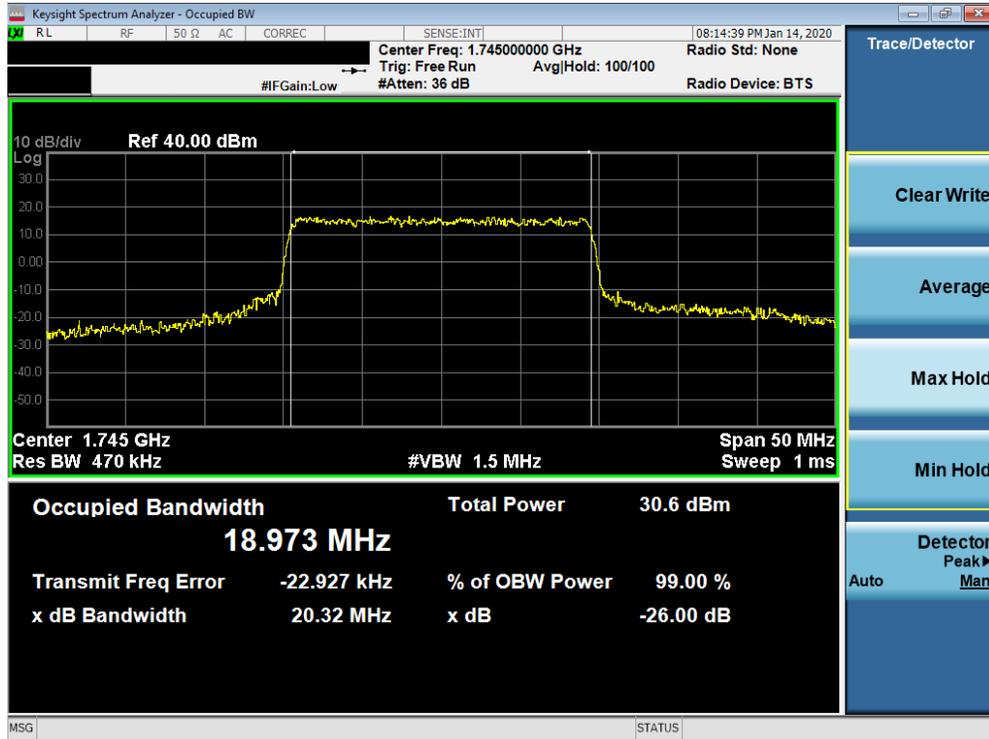


Plot 7-314. Occupied Bandwidth Plot (n66 15MHz 64QAM - CP-OFDM- Full RB Configuration)



Plot 7-315. Occupied Bandwidth Plot (n66 15MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 220 of 302

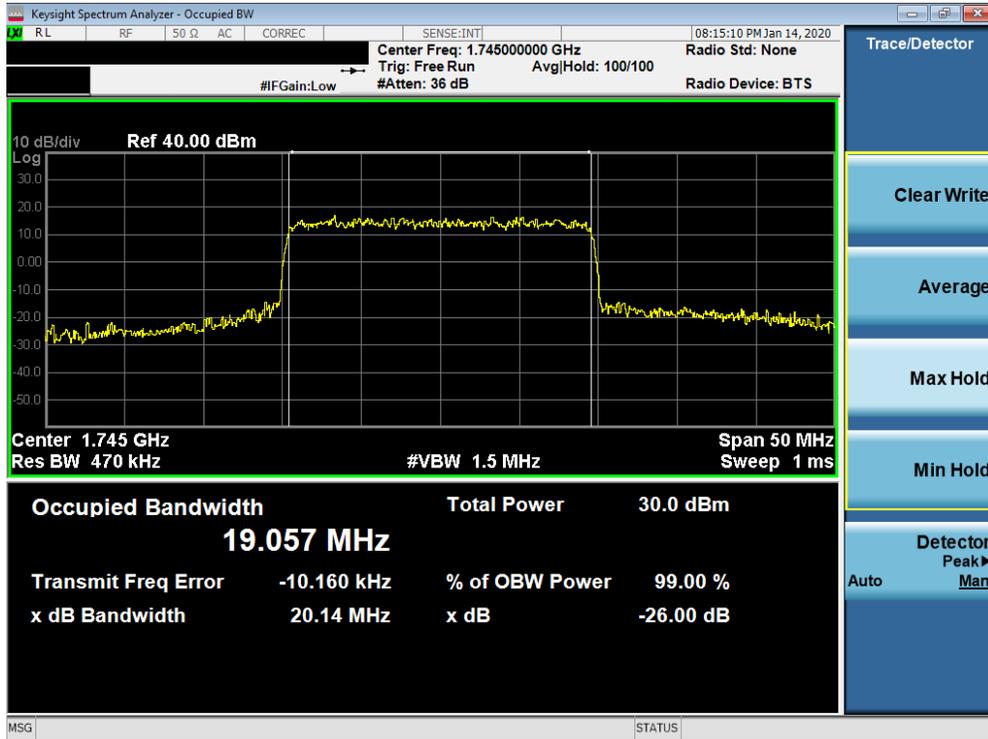


Plot 7-316. Occupied Bandwidth Plot (n66 20MHz QPSK - CP-OFDM - Full RB Configuration)

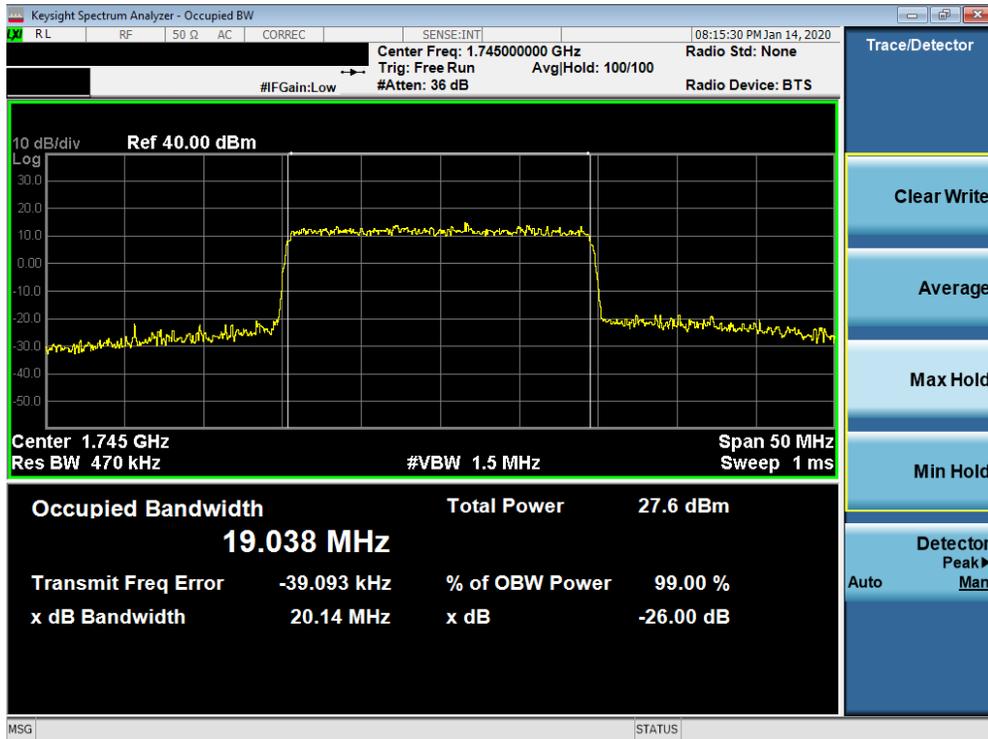


Plot 7-317. Occupied Bandwidth Plot (n66 20MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 221 of 302



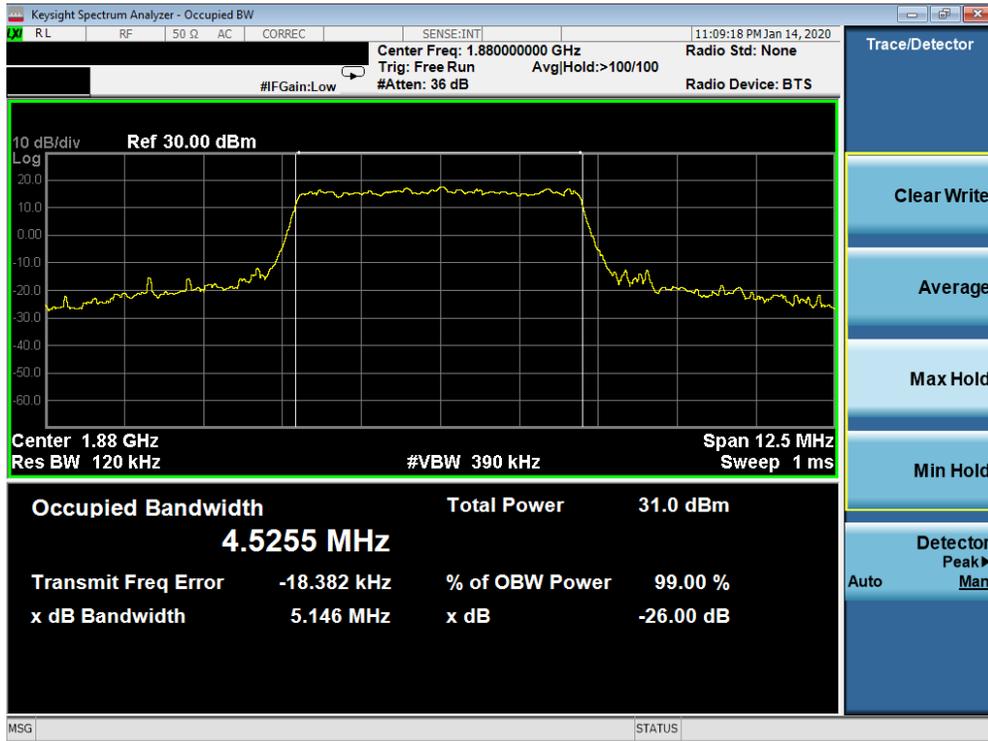
Plot 7-318. Occupied Bandwidth Plot (n66 20MHz 64QAM - CP-OFDM- Full RB Configuration)



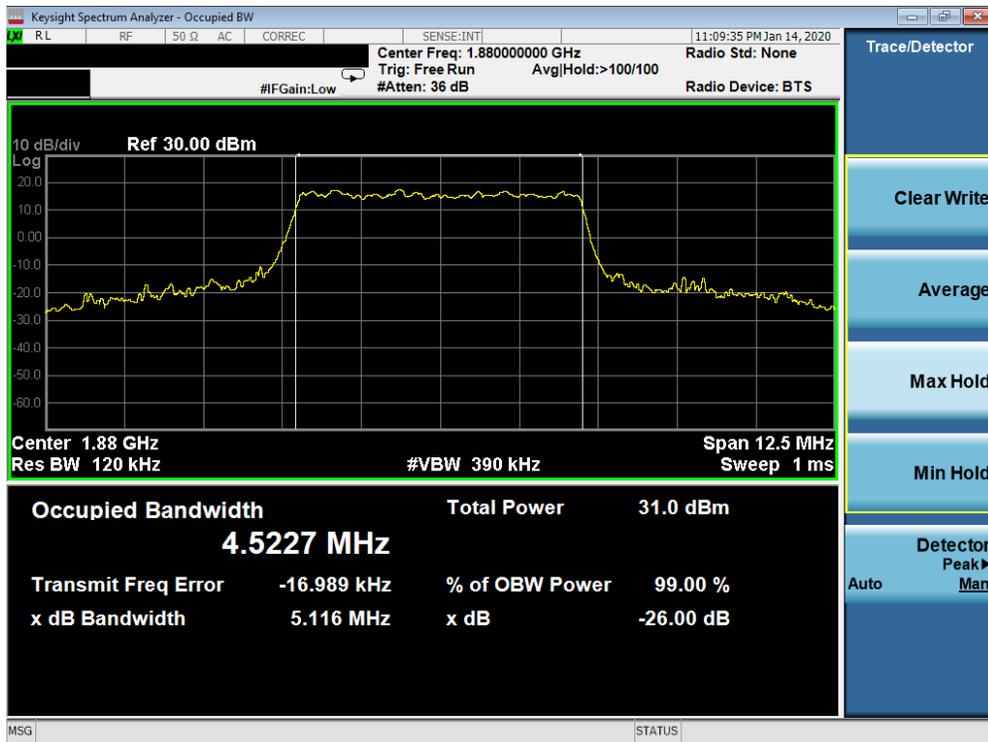
Plot 7-319. Occupied Bandwidth Plot (n66 20MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 222 of 302

## NR Band n2

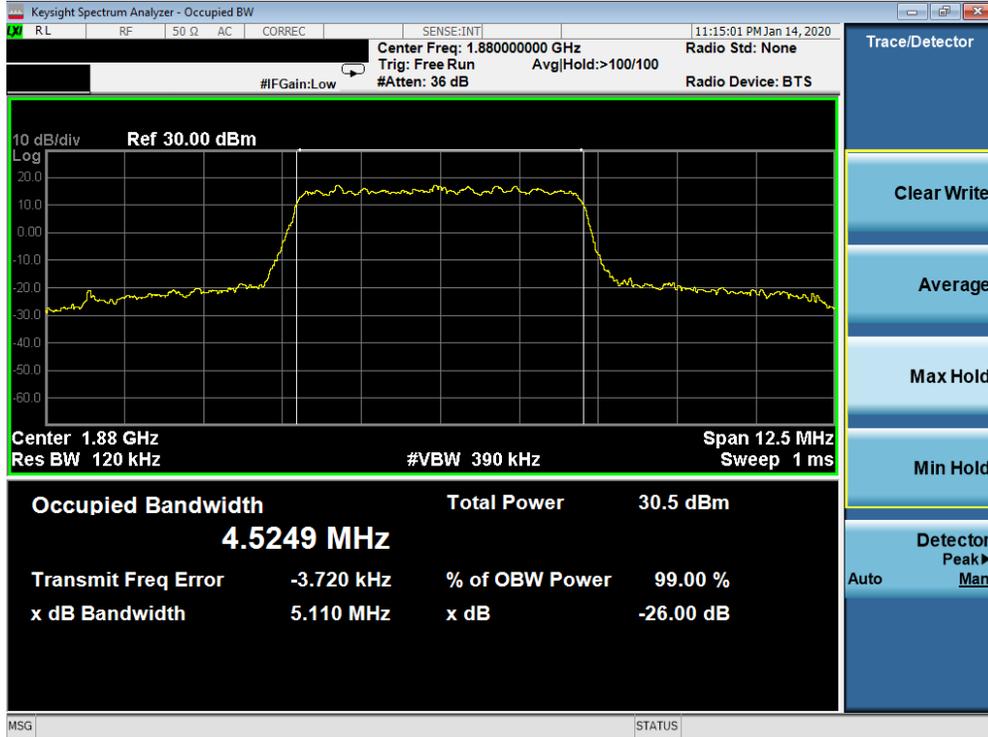


Plot 7-320. Occupied Bandwidth Plot (n2 5MHz QPSK - CP-OFDM - Full RB Configuration)

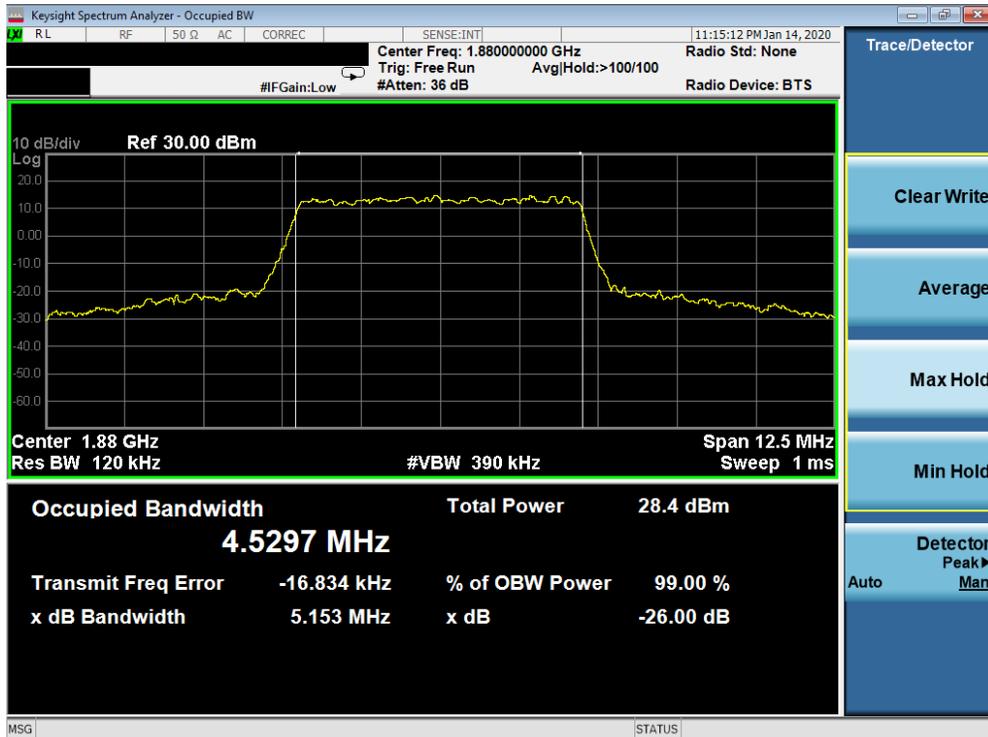


Plot 7-321. Occupied Bandwidth Plot (n2 5MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 223 of 302

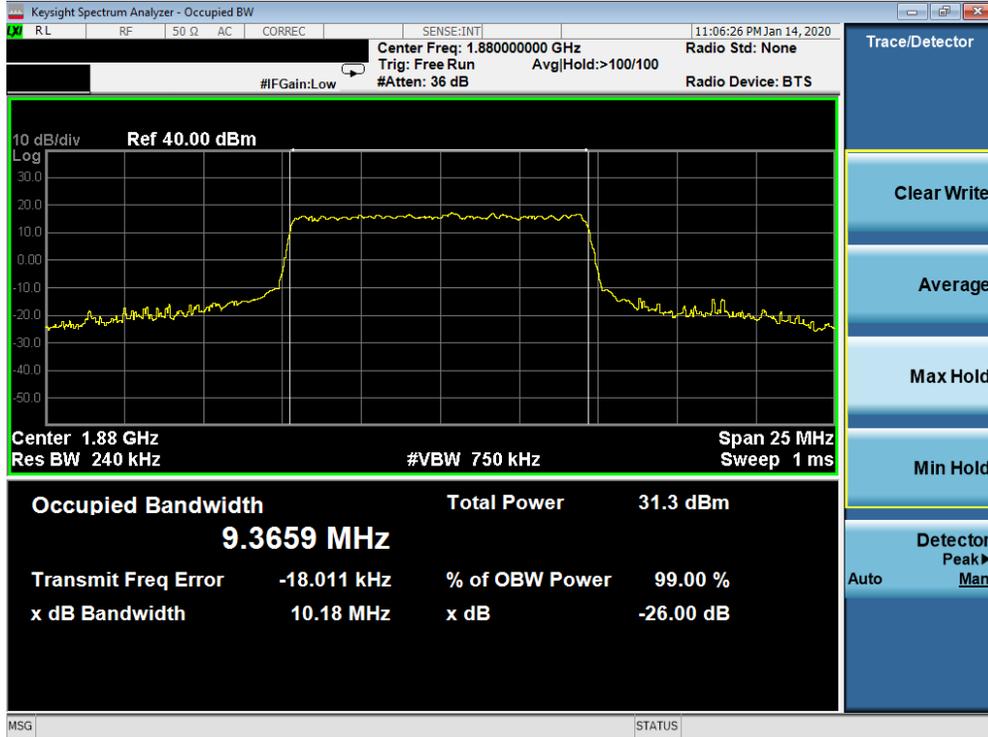


Plot 7-322. Occupied Bandwidth Plot (n2 5MHz 64QAM - CP-OFDM- Full RB Configuration)

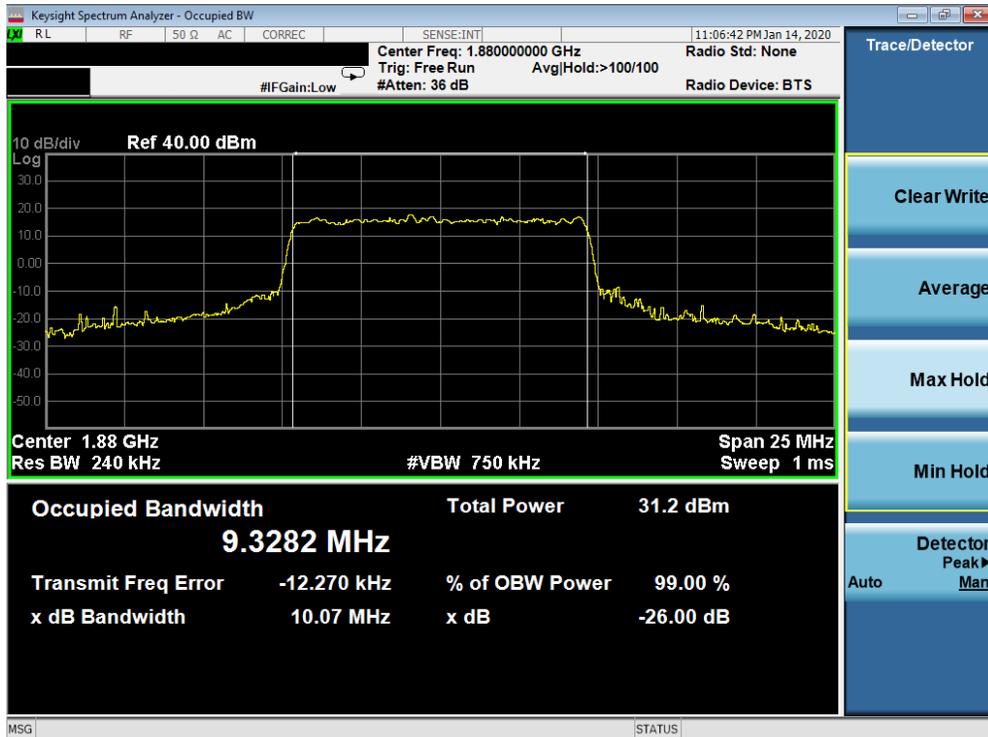


Plot 7-323. Occupied Bandwidth Plot (n2 5MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 224 of 302

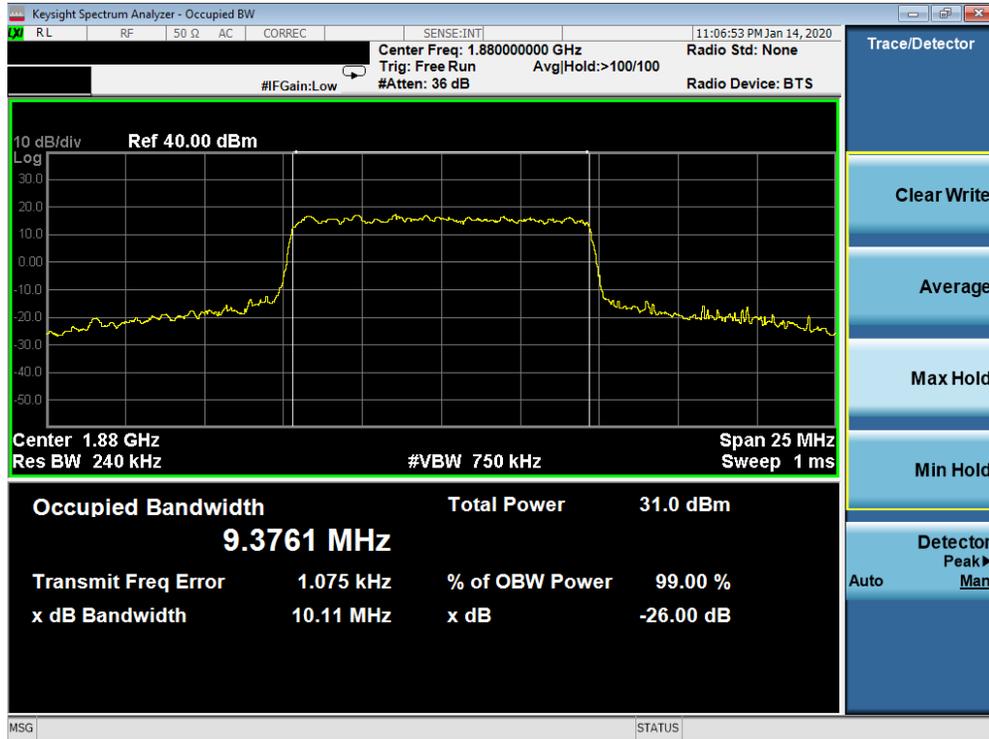


Plot 7-324. Occupied Bandwidth Plot (n2 10MHz QPSK - CP-OFDM - Full RB Configuration)

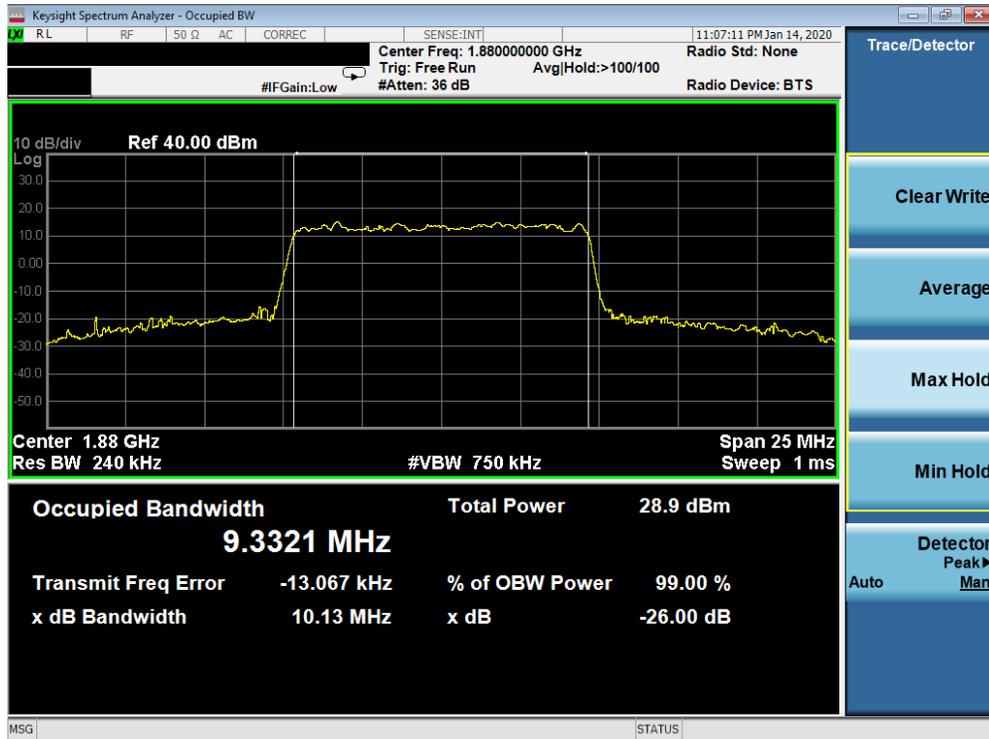


Plot 7-325. Occupied Bandwidth Plot (n2 10MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 225 of 302

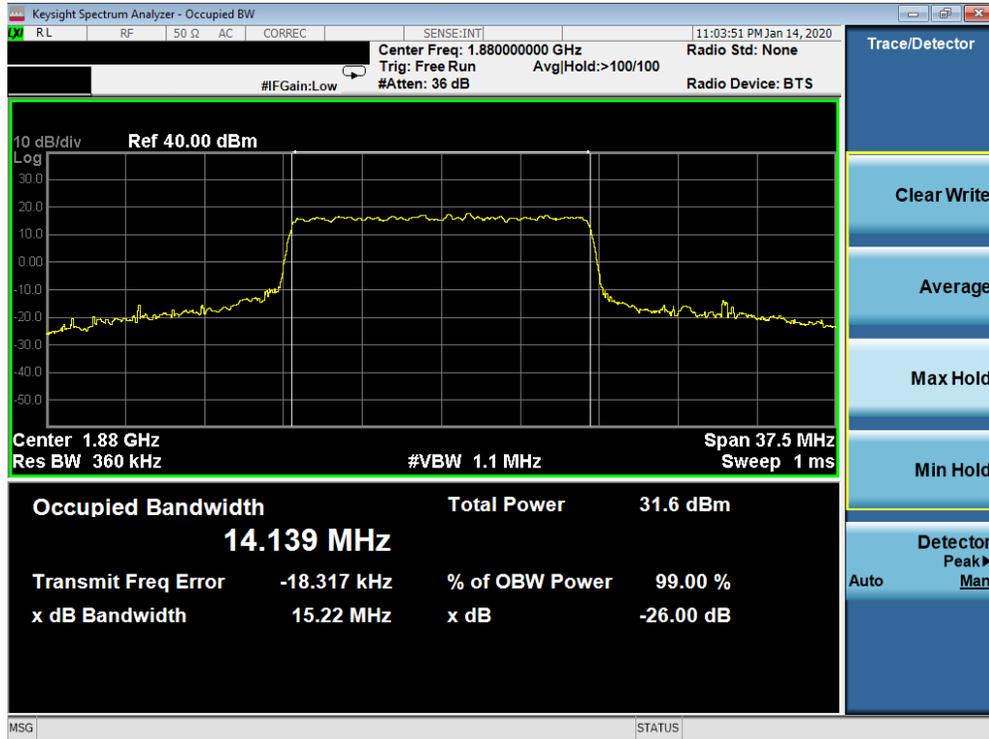


Plot 7-326. Occupied Bandwidth Plot (n2 10MHz 64QAM - CP-OFDM- Full RB Configuration)

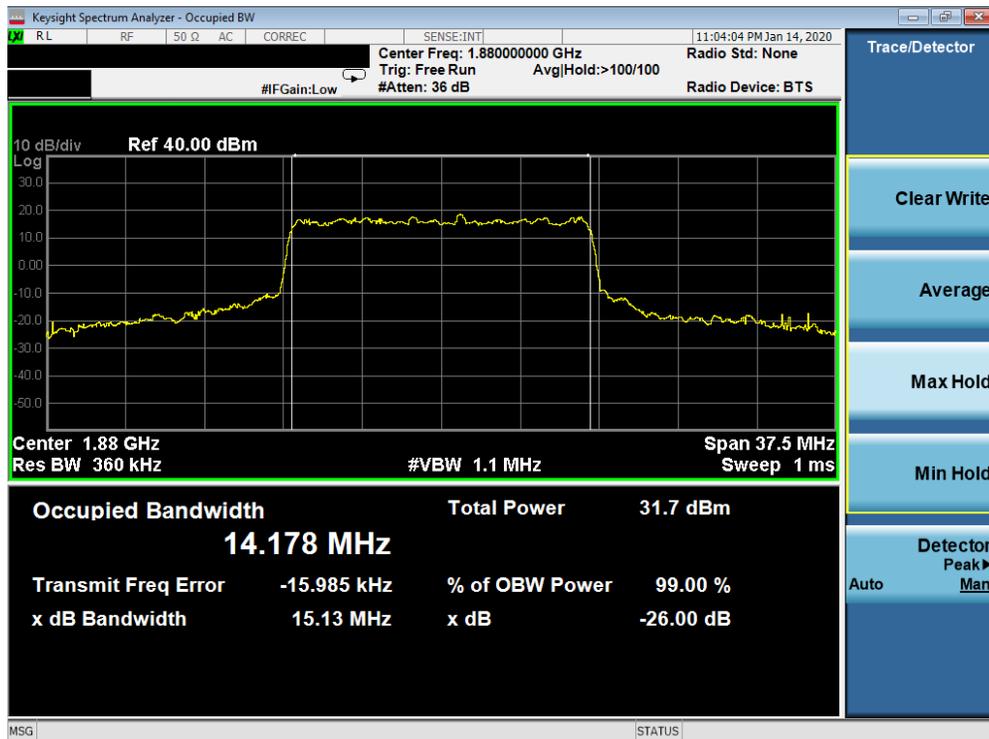


Plot 7-327. Occupied Bandwidth Plot (n2 10MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 226 of 302



Plot 7-328. Occupied Bandwidth Plot (n2 15MHz QPSK - CP-OFDM - Full RB Configuration)

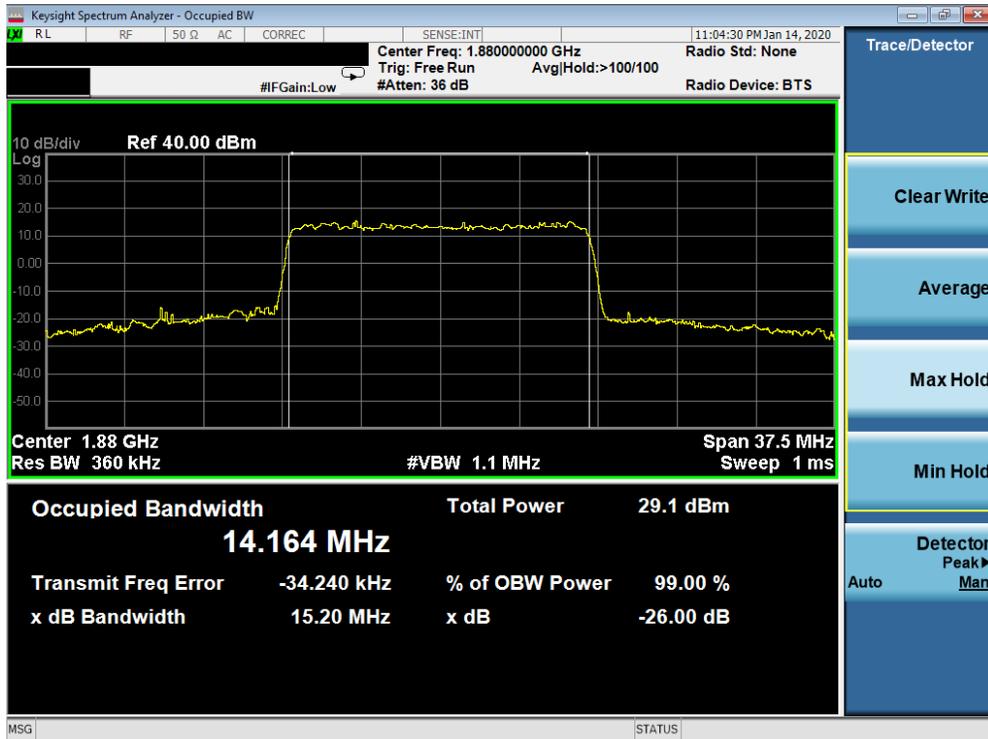


Plot 7-329. Occupied Bandwidth Plot (n2 15MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 227 of 302

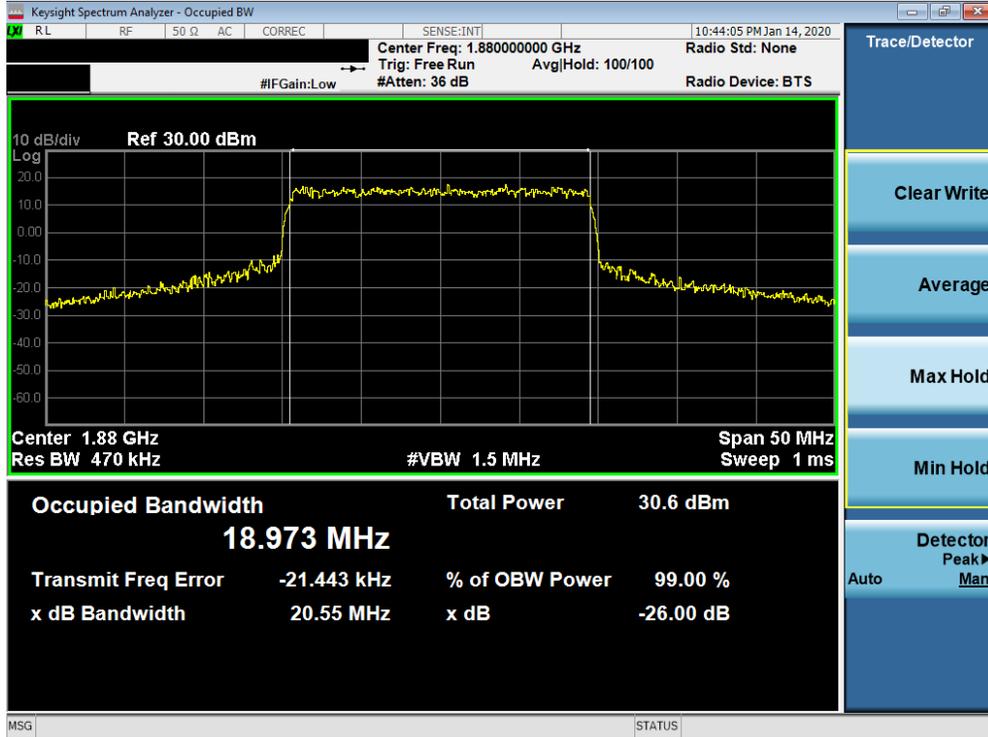


Plot 7-330. Occupied Bandwidth Plot (n2 15MHz 64QAM - CP-OFDM- Full RB Configuration)

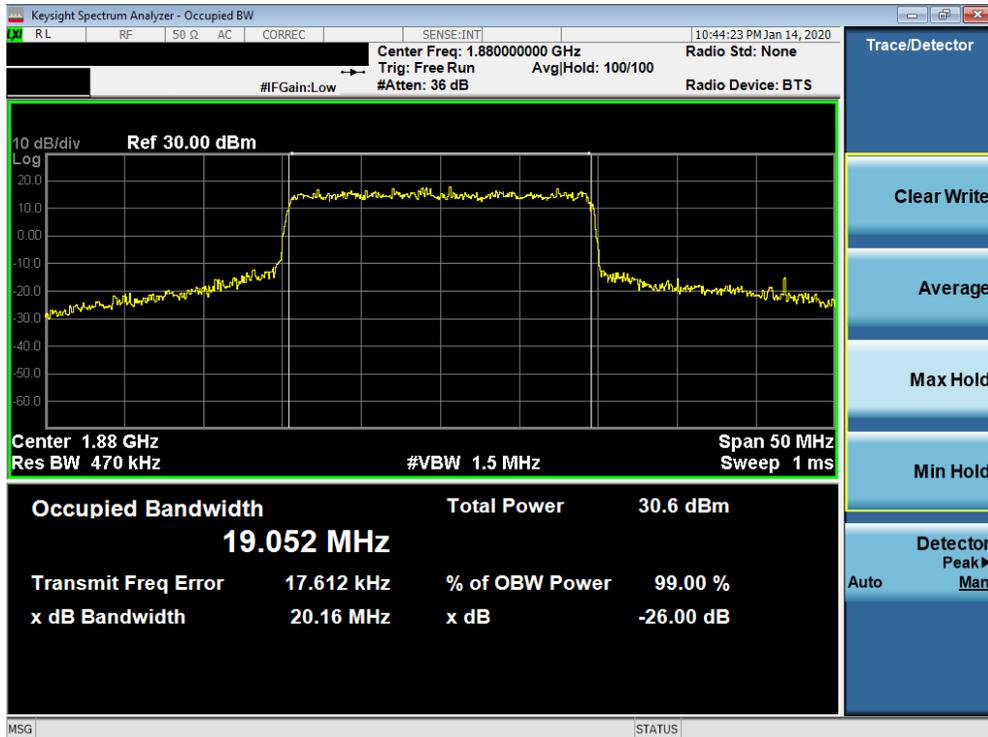


Plot 7-331. Occupied Bandwidth Plot (n2 15MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 228 of 302

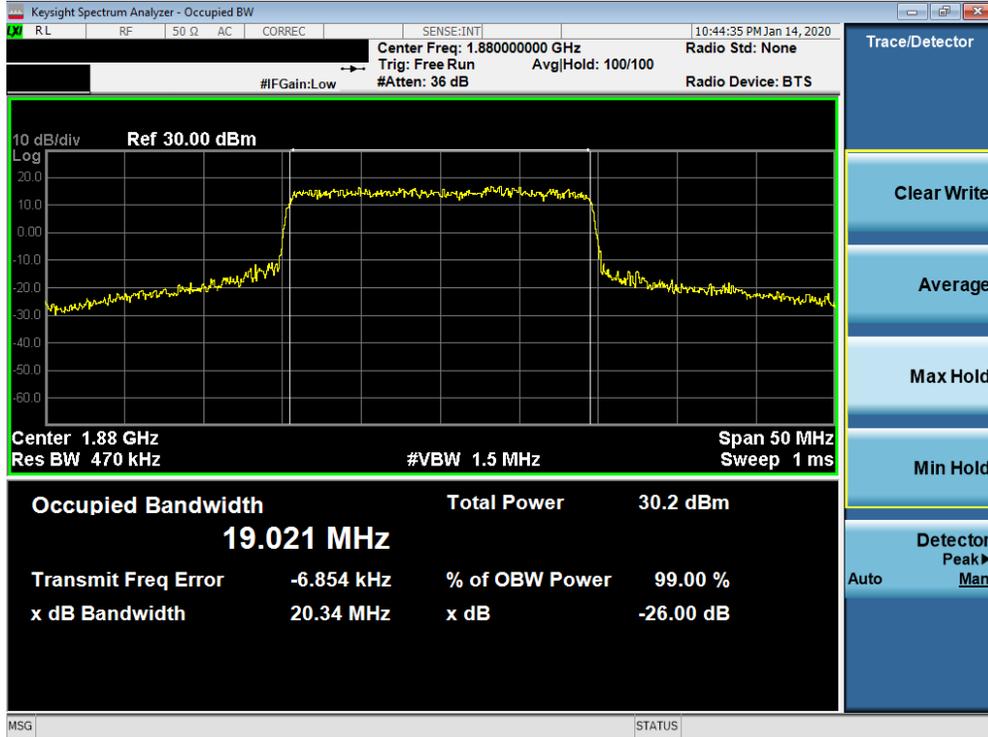


Plot 7-332. Occupied Bandwidth Plot (n2 20MHz QPSK - CP-OFDM - Full RB Configuration)

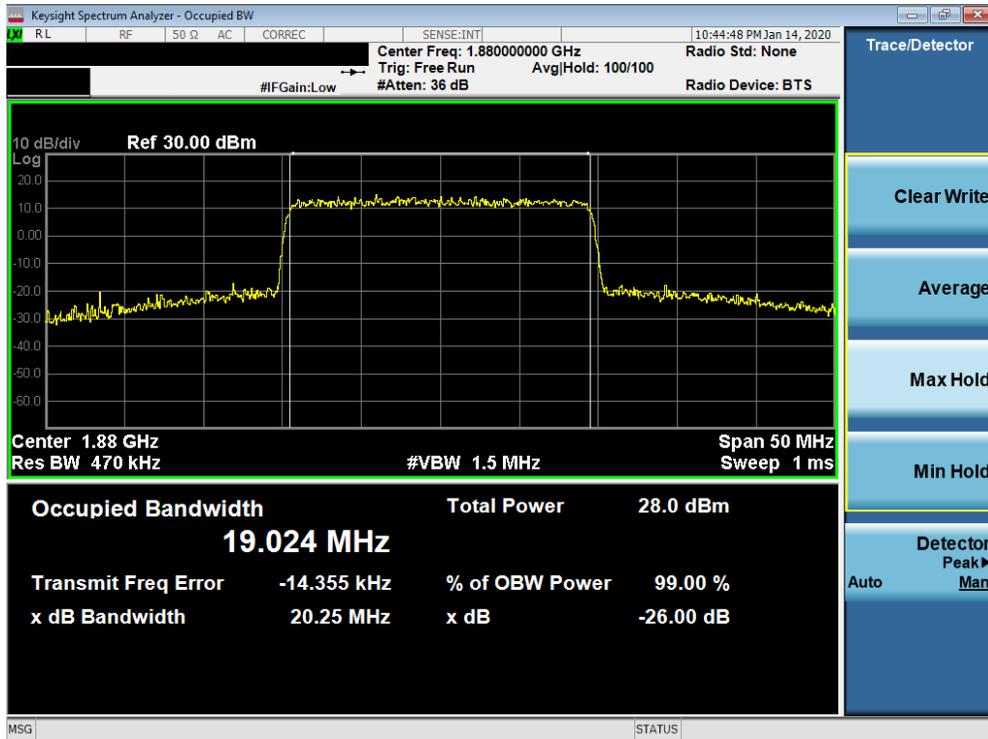


Plot 7-333. Occupied Bandwidth Plot (n2 20MHz 16QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 229 of 302



Plot 7-334. Occupied Bandwidth Plot (n2 20MHz 64QAM - CP-OFDM- Full RB Configuration)



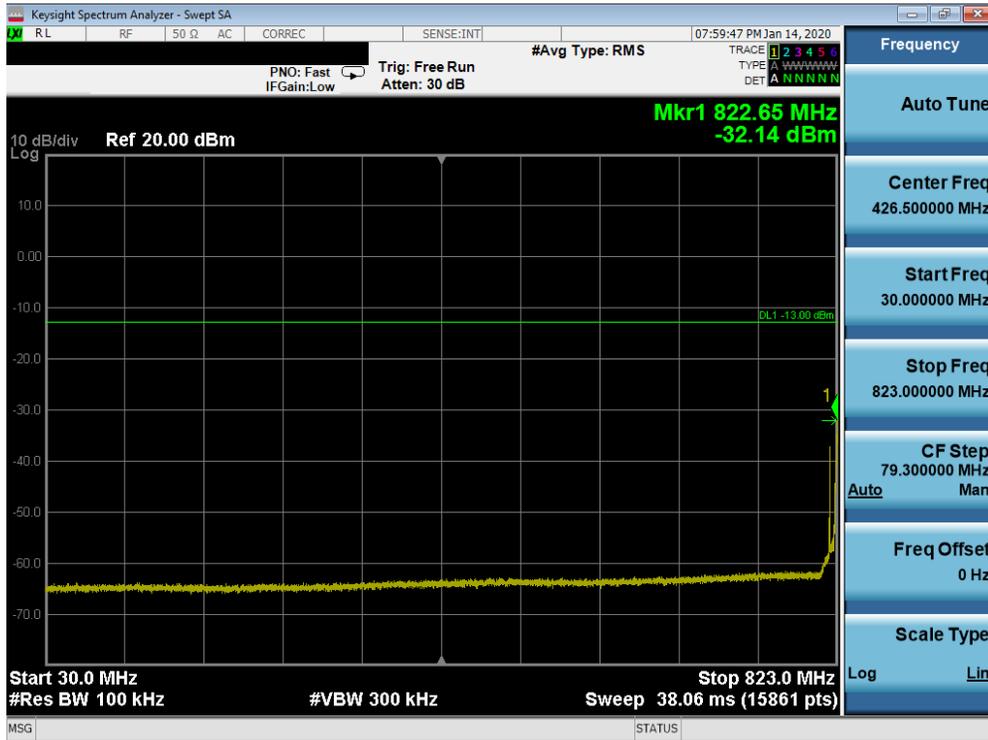
Plot 7-335. Occupied Bandwidth Plot (n2 20MHz 256QAM - CP-OFDM - Full RB Configuration)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 230 of 302

## Spurious and Harmonic Emissions at the Antenna Terminal

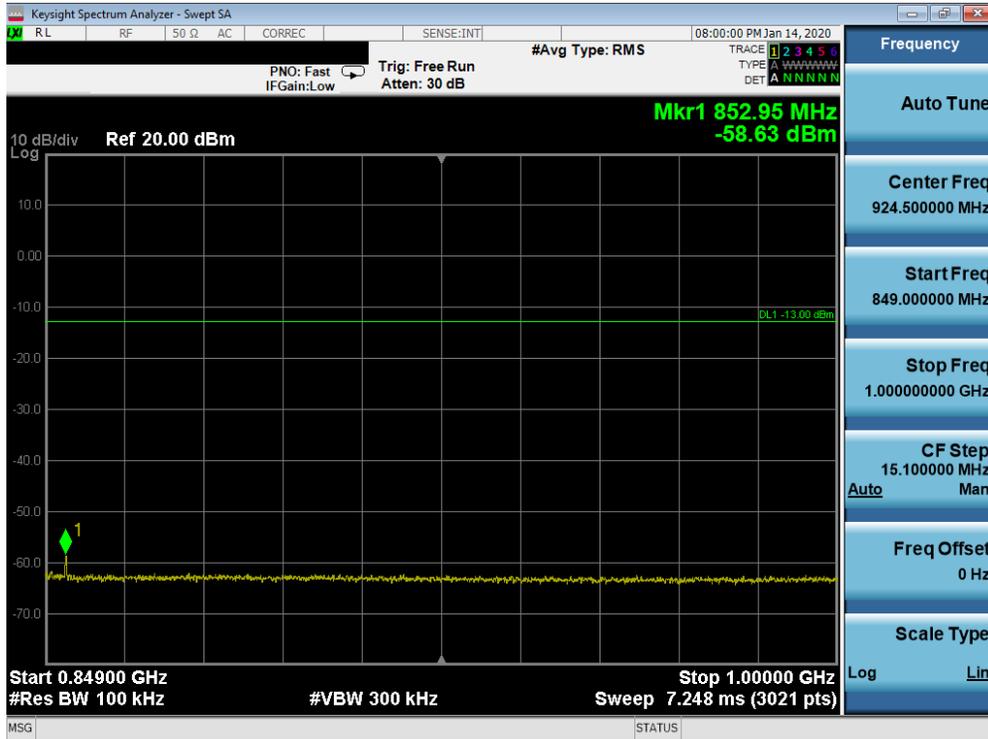
All SCS's and Waveforms (CP-OFDM vs DFT-s OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

### NR Band n5

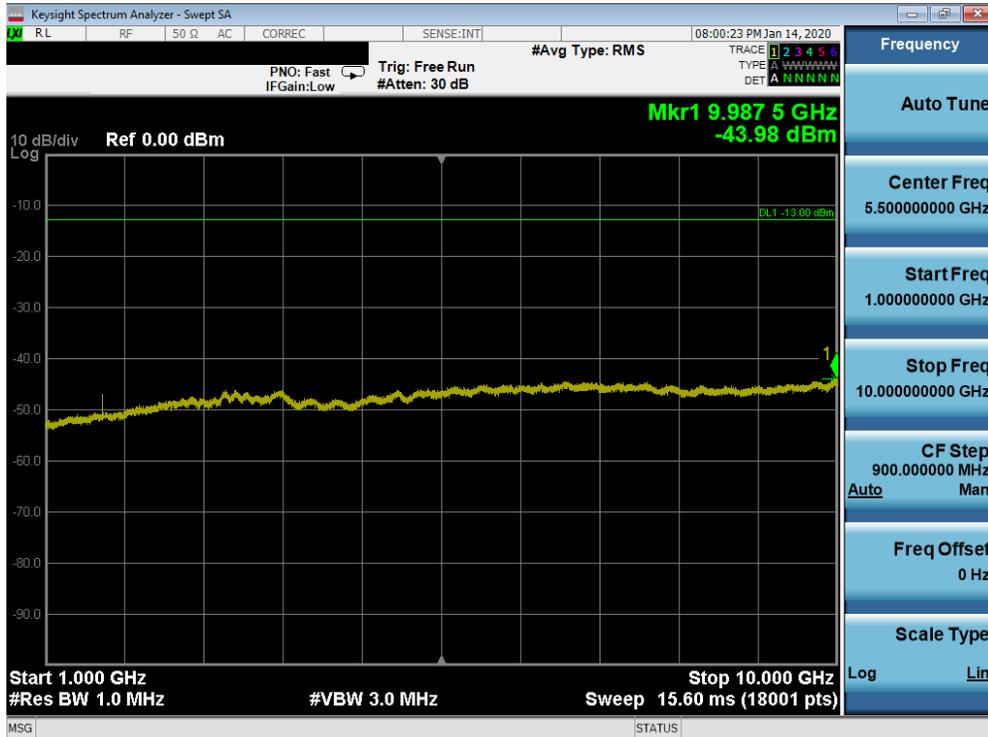


Plot 7-336. Conducted Spurious Plot (n5 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 1 - Low Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 231 of 302

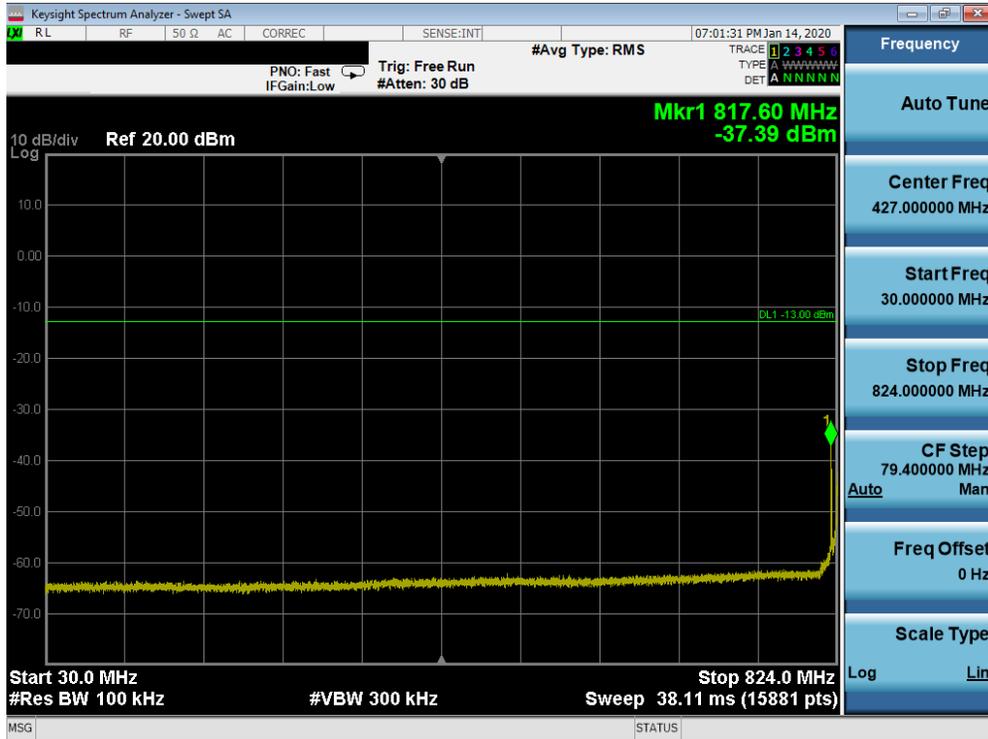


Plot 7-337. Conducted Spurious Plot (n5 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 1 - Low Channel)

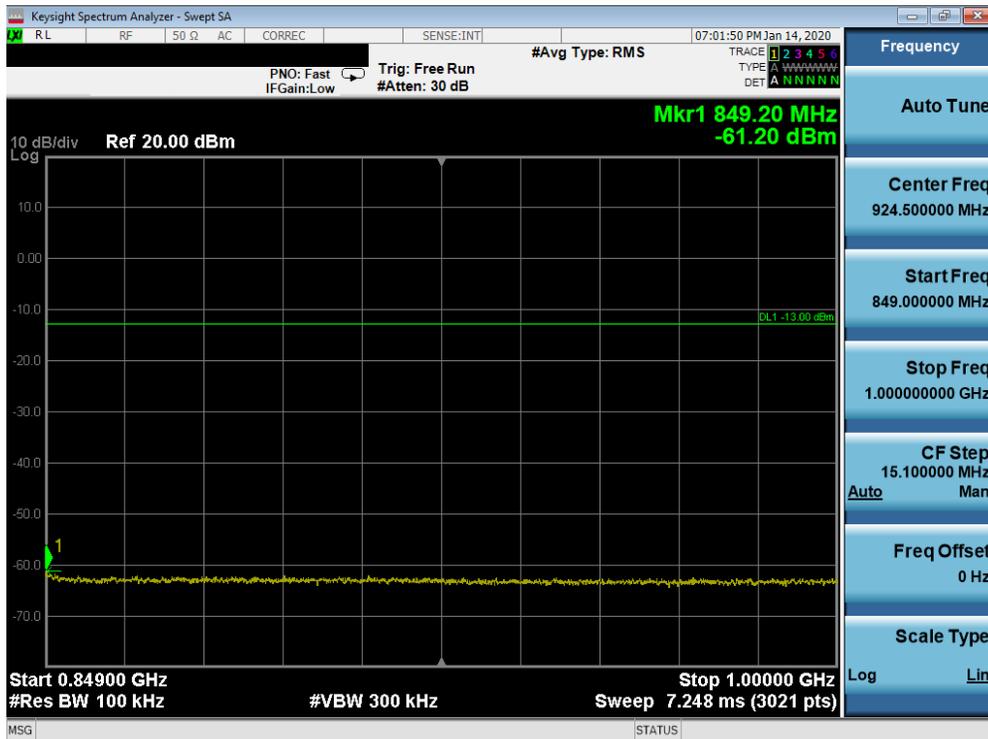


Plot 7-338. Conducted Spurious Plot (n5 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 1 - Low Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 232 of 302



Plot 7-339. Conducted Spurious Plot (n5 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 1 - Mid Channel)



Plot 7-340. Conducted Spurious Plot (n5 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 1 - Mid Channel)

FCC ID: ZNFV600AM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1912300229-03.ZNF	Test Dates: 12/30/2019 - 2/14/2020	EUT Type: Portable Handset		Page 233 of 302