



Plot 7-116. Upper Band Edge Plot (NR Band n2 - 10.0MHz - Full RB)



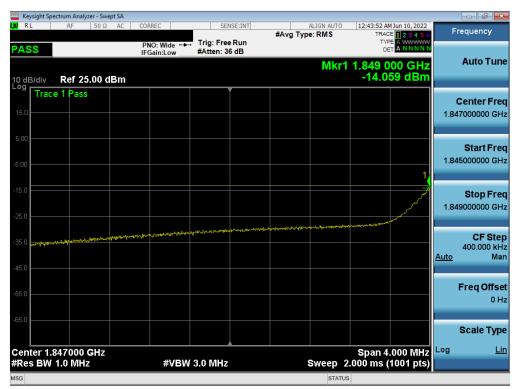
Plot 7-117. Upper Extended Band Edge Plot (NR Band n2 – 10.0MHz - Full RB)

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🔤 Keysight Spectrum Ana										
LXIRL RF	50 Ω AC	CORREC	SEN	ISE:INT	#Avg Typ	ALIGN AUTO		4 Jun 10, 2022	Fre	equency
PASS		PNO: Wide ++	Trig: Free #Atten: 36		"a)P		TYP			
10 dB/div Ref 2	!5.00 dBm					Mkr1 1	.849 98 -26.	7 5 GHz 94 dBm		Auto Tune
15.0	S									enter Freq 0000000 GHz
-5.00									1.843	Start Freq 750000 GHz
-15.0				1					1.856	Stop Freq 250000 GHz
-35.0	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~~~					La	1. <u>Auto</u>	CF Step 250000 MHz Man
-55.0									F	F req Offset 0 Hz
-65.0 Center 1.850000							Spop 1	2.50 MIL	tog	Scale Type Lin
#Res BW 62 kH		#VBW	220 kHz			Sweep 1	.400 ms (2.50 MHz 1001 pts)		
MSG						STATUS	3			

Plot 7-118. Lower Band Edge Plot (NR Band n2 – 5.0MHz - Full RB)



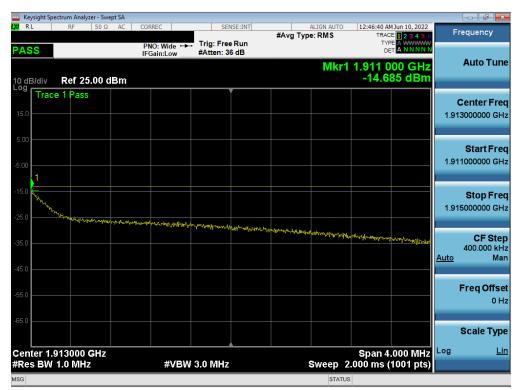
Plot 7-119. Lower Extended Band Edge Plot (NR Band n2 – 5.0MHz - Full RB)

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	ctrum Analyzer -									
X/RL	RF 50	Ω AC	CORREC	SEI	NSE:INT	#Avg Typ	ALIGN AUTO		4 Jun 10, 2022	Frequency
PASS			PNO: Wide ↔ IFGain:Low	Trig: Free #Atten: 3		0,1		TYF De		Auto Tune
10 dB/div Log	Ref 25.00	dBm					Mkr1 1	.910 01: -26.	2 5 GHz 44 dBm	
Trace	e 1 Pass									Center Freq
15.0										1.910000000 GHz
5.00										
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m						Start Freq 1.903750000 GHz
-5.00										1.903750000 GH2
-15.0										Stop Fred
-25.0					1					1.916250000 GHz
-23.0	1									0.5.0%
-35.0	⁻				- Jorgen Market	mm	m.			CF Step 1.250000 MHz <u>Auto</u> Mar
45.0							~	Jours	w.	
-55.0										Freq Offset
										0 Hz
-65.0										Scale Type
Center 1.9	010000 GH	Z						Span 1	2.50 MHz	Log <u>Lin</u>
#Res BW			#VBW	220 kHz			Sweep 1	.400 ms (	1001 pts)	
MSG							STATUS	3		

Plot 7-120. Upper Band Edge Plot (NR Band n2 – 5.0MHz - Full RB)



Plot 7-121. Upper Extended Band Edge Plot (NR Band n2 – 5.0MHz - Full RB)

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# 7.6 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.

### The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

### Test Procedure Used

ANSI C63.26-2015 - Section 5.2.3.4

### Test Settings

- 1. The signal analyzer's CCDF measurement profile is enabled
- 2. Frequency = carrier center frequency
- 3. Measurement BW ≥ 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 7-5. Test Instrument & Measurement Setup

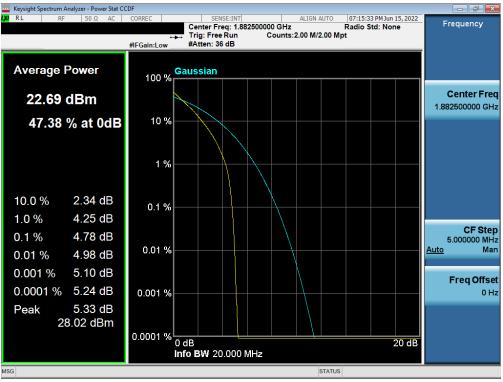
### Test Notes

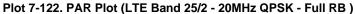
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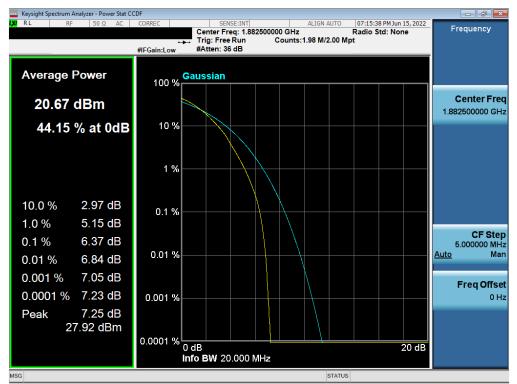
FCC ID: PY7-76056F		PART 24 MEASUREMENT REPORT	
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# LTE Band 25/2



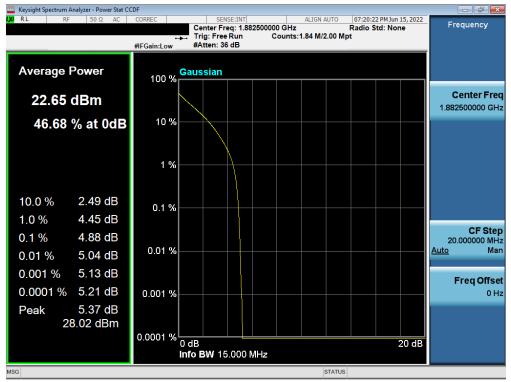


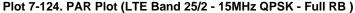


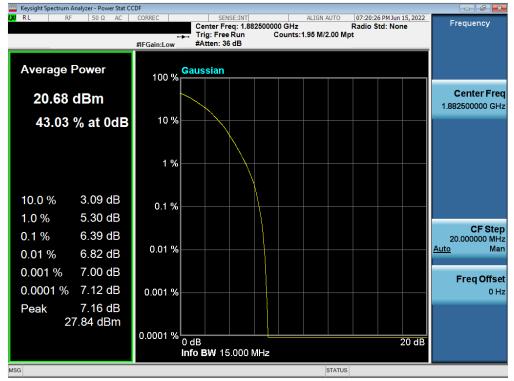
#### Plot 7-123. PAR Plot (LTE Band 25/2 - 20MHz 64-QAM - Full RB)

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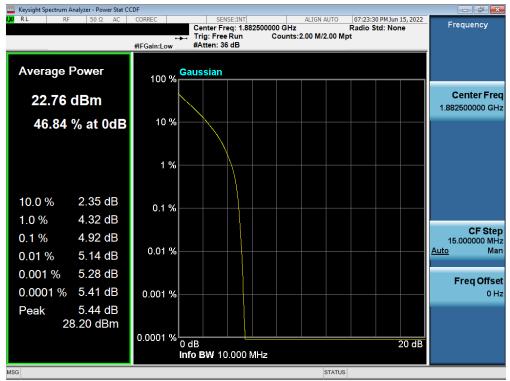


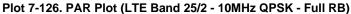


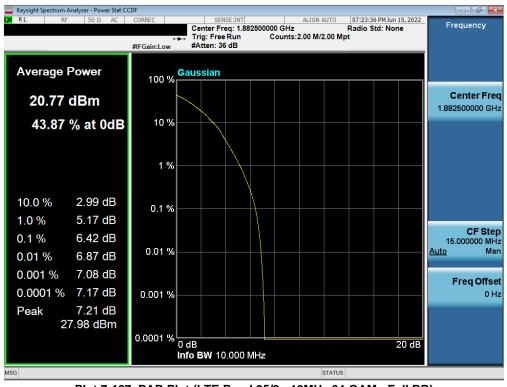
Plot 7-125. PAR Plot (LTE Band 25/2 - 15MHz 64-QAM - Full RB)

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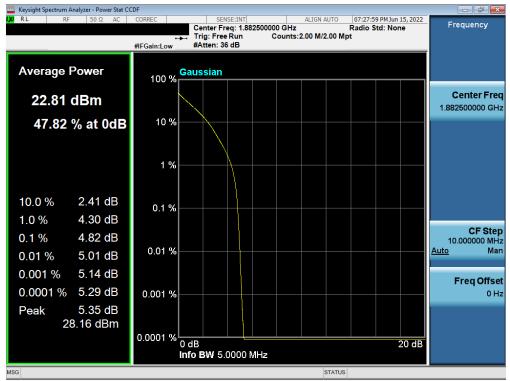


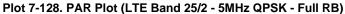


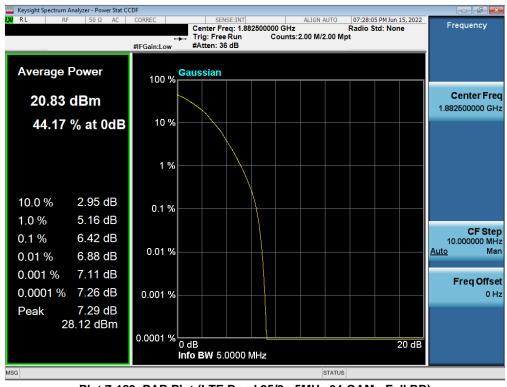
Plot 7-127. PAR Plot (LTE Band 25/2 - 10MHz 64-QAM - Full RB)

FCC ID: PY7-76056F		PART 24 MEASUREMENT REPORT	
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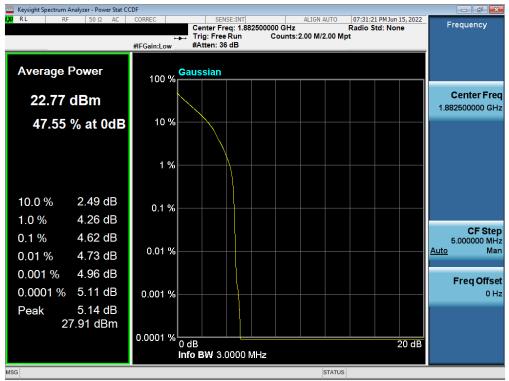


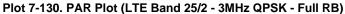


Plot 7-129. PAR Plot (LTE Band 25/2 - 5MHz 64-QAM - Full RB)

FCC ID: PY7-76056F	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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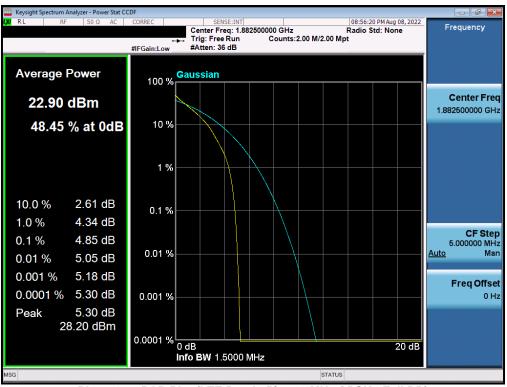


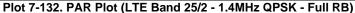


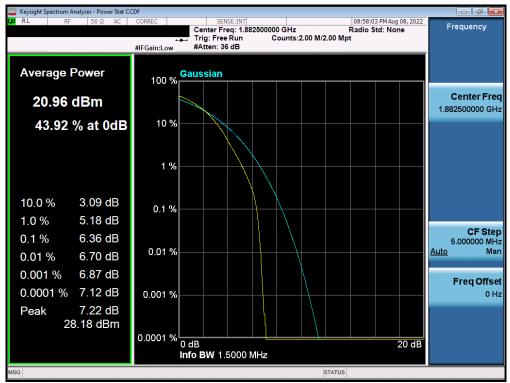
Plot 7-131. PAR Plot (LTE Band 25/2 - 3MHz 64-QAM - Full RB)

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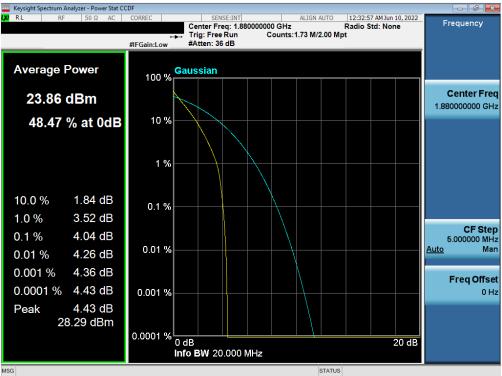


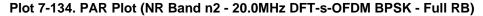
#### Plot 7-133. PAR Plot (LTE Band 25/2 - 1.4MHz 64-QAM - Full RB)

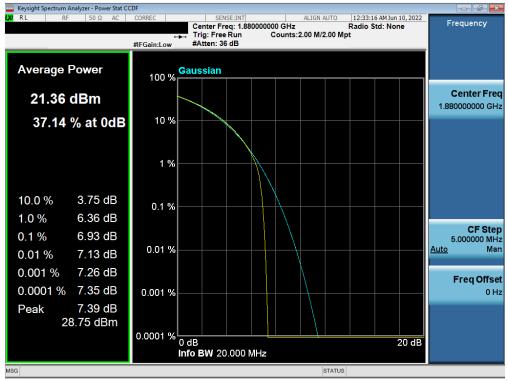
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## NR Band n2



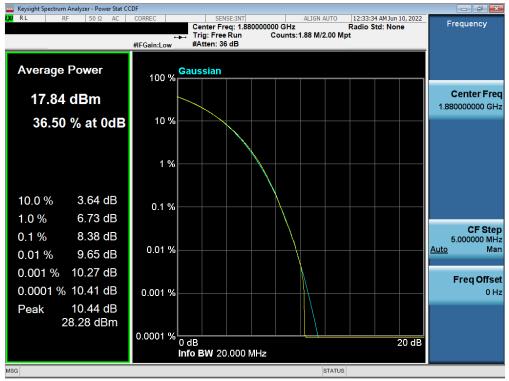


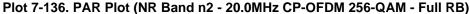


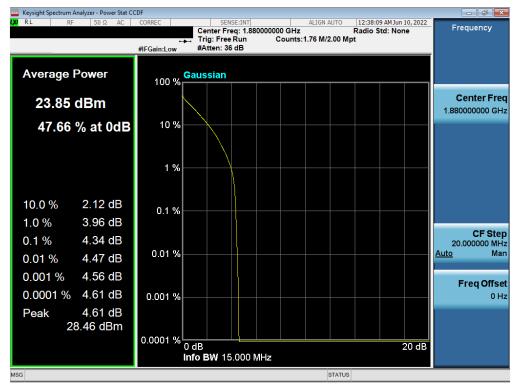
### Plot 7-135. PAR Plot (NR Band n2 - 20.0MHz CP-OFDM QPSK - Full RB)

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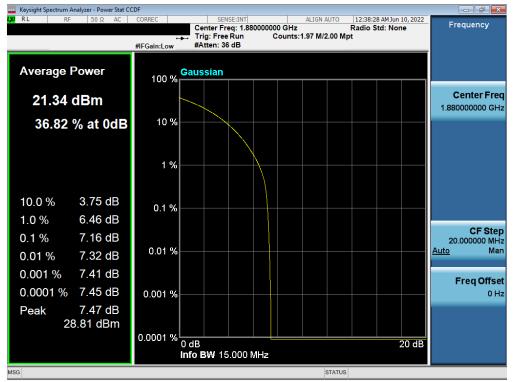


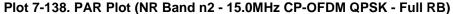


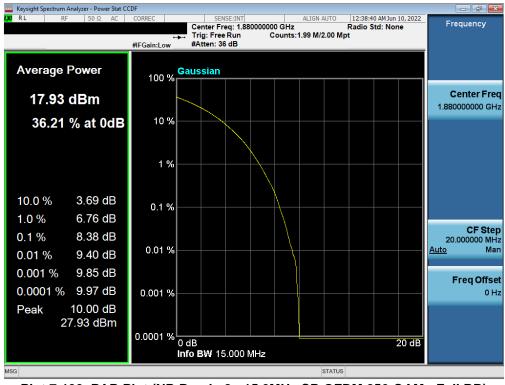
Plot 7-137. PAR Plot (NR Band n2 - 15.0MHz DFT-s-OFDM BPSK - Full RB)

FCC ID: PY7-76056F		PART 24 MEASUREMENT REPORT			
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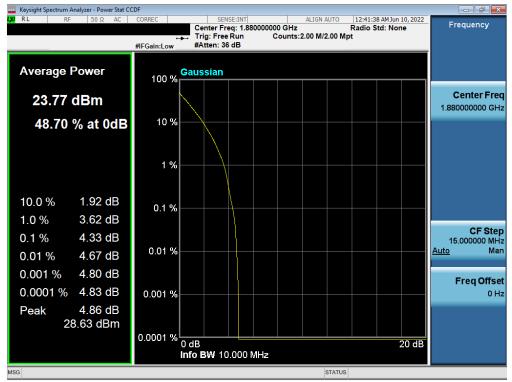


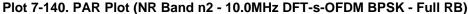


Plot 7-139. PAR Plot (NR Band n2 - 15.0MHz CP-OFDM 256-QAM - Full RB)

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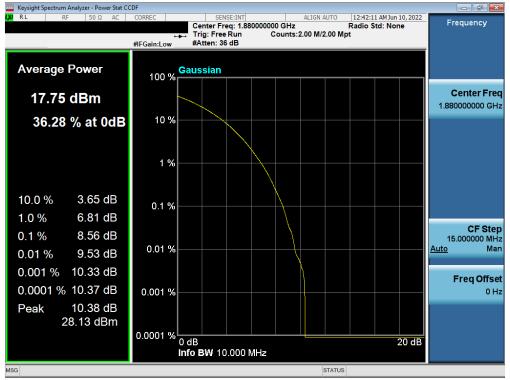


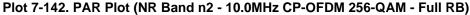


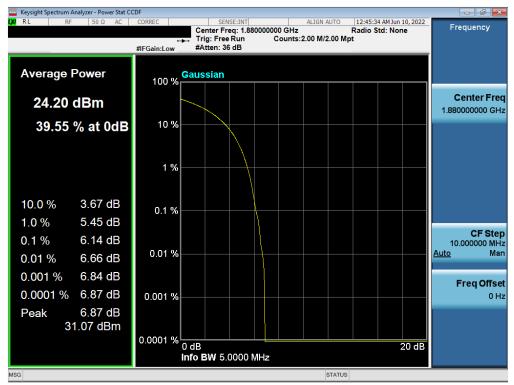
Plot 7-141. PAR Plot (NR Band n2 - 10.0MHz CP-OFDM QPSK - Full RB)

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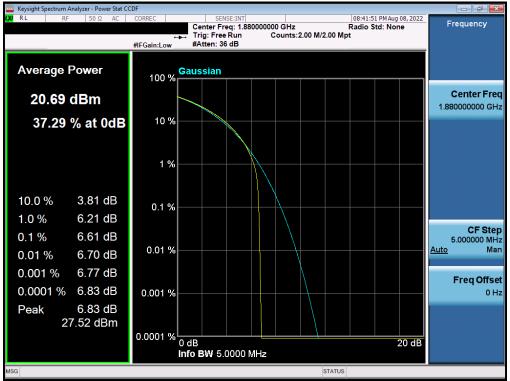




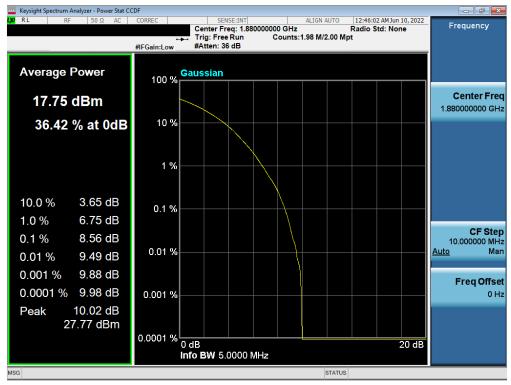
Plot 7-143. PAR Plot (NR Band n2 - 5.0MHz DFT-s-OFDM BPSK - Full RB)

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Plot 7-144. PAR Plot (NR Band n2 - 5.0MHz CP-OFDM QPSK - Full RB)



Plot 7-145. PAR Plot (NR Band n2 - 5.0MHz CP-OFDM 256-QAM - Full RB)

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# 7.7 Radiated Power (EIRP)

### **Test Overview**

Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### Test Procedures Used

ANSI C63.26-2015 - Section 5.2.4.4

### Test Settings

- 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  $\geq 2 \times \text{span} / \text{RBW}$
- 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.

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

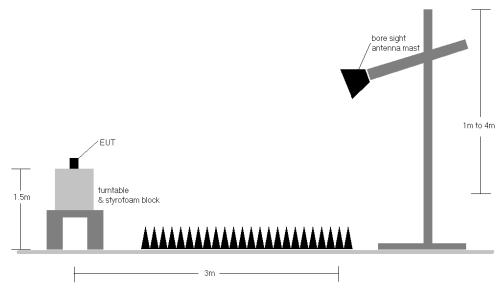


Figure 7-6. Radiated Test Setup >1GHz

#### Test Notes

- 1) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 2) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 3) 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.
- 4) This unit was tested with its standard battery.
- 5) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and 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.

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Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.20	GPRS1900	Н	205	149	15.52	9.41	24.93	0.311	33.01	- <mark>8.0</mark> 8
1880.00	GPRS1900	Н	195	145	14.05	9.79	23.84	0.242	33.01	-9.17
1909.80	GPRS1900	Н	220	140	12.06	10.25	22.31	0.170	33.01	-10.70
1850.20	GPRS1900	V	156	204	12.58	9.41	21.99	0.158	33.01	-11.02
1850.20	EDGE1900	Н	205	149	14.08	9.41	23.49	0.223	33.01	-9.52
1850.20	GPRS1900 (WCP)	Н	235	137	12.49	9.41	21.90	0.155	33.01	-11.11

### Table 7-4. EIRP Data (GPRS PCS)

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1852.40	WCDMA1900	Н	149	147	7.03	9.44	16.47	0.044	33.01	-16.54
1880.00	WCDMA1900	Н	158	133	7.48	9.79	17.27	0.053	33.01	-15.74
1907.60	WCDMA1900	Н	149	142	7.20	10.21	17.41	0.055	33.01	-15.60
1907.60	WCDMA1900	V	182	79	5.82	10.19	16.01	0.040	33.01	-17.00
1907.60	WCDMA1900 (WCP)	Н	142	135	5.79	10.21	16.00	0.040	33.01	-17.01

## Table 7-5. EIRP Data (WCDMA PCS)

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
z	QPSK	1860.0	V	156	330	9.68	1 / 50	11.85	21.53	0.142	33.01	-11.48
H	QPSK	1882.5	V	140	340	9.99	1/0	11.38	21.37	0.137	33.01	-11.64
20 MHz	QPSK	1905.0	V	149	334	10.18	1/0	10.65	20.83	0.121	33.01	-12.18
2	16-QAM	1860.0	V	156	330	9.68	1 / 50	11.19	20.87	0.122	33.01	-12.14
z	QPSK	1857.5	V	156	330	9.66	1/0	11.88	21.54	0.143	33.01	-11.47
15 MHz	QPSK	1882.5	V	140	340	9.99	1 / 37	11.43	21.42	0.139	33.01	-11.59
5 1	QPSK	1907.5	V	149	334	10.19	1 / 37	10.58	20.77	0.119	33.01	-12.24
-	16-QAM	1857.5	V	156	330	9.66	1 / 74	11.14	20.80	0.120	33.01	-12.21
N	QPSK	1855.0	V	156	330	9.64	1 / 25	12.04	21.68	0.147	33.01	-11.33
Ŧ	QPSK	1882.5	V	140	340	9.99	1/0	11.59	21.57	0.144	33.01	-11.44
10 MHz	QPSK	1910.0	V	149	334	10.20	1 / 25	10.68	20.88	0.122	33.01	-12.13
Ļ	16-QAM	1855.0	V	156	330	9.64	1 / 49	11.33	20.98	0.125	33.01	-12.03
N	QPSK	1852.5	V	156	330	9.63	1 / 12	12.10	21.72	0.149	33.01	-11.29
5 MHz	QPSK	1882.5	V	140	340	9.99	1 / 24	11.77	21.75	0.150	33.01	-11.26
N	QPSK	1912.5	V	149	334	10.21	1/0	10.60	20.80	0.120	33.01	-12.21
47	16-QAM	1852.5	V	156	330	9.63	1 / 12	11.51	21.14	0.130	33.01	-11.87
N	QPSK	1851.5	V	156	330	9.62	1/0	12.00	21.62	0.145	33.01	-11.39
MHz	QPSK	1882.5	V	140	340	9.99	1/0	11.72	21.70	0.148	33.01	-11.31
3 N	QPSK	1913.5	V	149	334	10.21	1/7	10.55	20.76	0.119	33.01	-12.25
	16-QAM	1851.5	V	156	330	9.62	1 / 7	11.27	20.89	0.123	33.01	-12.12
z	QPSK	1850.7	V	156	330	9.61	1/3	12.03	21.64	0.146	33.01	-11.37
1.4 MHz	QPSK	1882.5	V	140	340	9.99	1/0	11.65	21.64	0.146	33.01	-11.37
4	QPSK	1914.3	V	149	334	10.21	1/0	10.56	20.77	0.120	33.01	-12.24
-	16-QAM	1850.7	V	156	330	9.61	1/0	11.48	21.10	0.129	33.01	-11.91
20 MHz	Opposite Pol.	1860.0	H	104	18	9.83	1/50	11.64	21.47	0.140	33.01	-11.54
	WCP	1860.0	Н	146	141	9.83	1/50	13.04	22.87	0.194	33.01	-10.14

Table 7-6. EIRP Data (LTE Band 25/2)

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Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
	π/2 BPSK	1860.0	Н	156	26	9.55	1 / 53	11.91	21.46	0.140	33.01	-11.55
	π/2 BPSK	1880.0	Н	146	12	9.79	1 / 79	12.45	22.24	0.168	33.01	-10.77
	π/2 BPSK	1900.0	Н	144	20	10.07	1 / 53	11.54	21.61	0.145	33.01	-11.40
20 MHz	QPSK	1860.0	Н	156	26	9.55	1 / 53	11.83	21.38	0.137	33.01	-11.63
	QPSK	1880.0	Η	146	12	9.79	1 / 79	12.43	22.22	0.167	33.01	-10.79
	QPSK	1900.0	Н	144	20	10.07	1 / 53	11.60	21.67	0.147	33.01	-11.34
	16-QAM	1880.0	Н	146	12	9.79	1 / 79	11.47	21.26	0.134	33.01	-11.75
	π/2 BPSK	1857.5	Н	156	26	9.51	1 / 58	11.97	21.48	0.141	33.01	-11.53
	π/2 BPSK	1880.0	Н	146	12	9.79	1 / 39	12.42	22.21	0.166	33.01	-10.80
	π/2 BPSK	1902.5	Н	144	20	10.11	1 / 39	11.62	21.74	0.149	33.01	-11.27
15 MHz	QPSK	1857.5	Η	156	26	9.51	1 / 58	11.76	21.27	0.134	33.01	-11.74
	QPSK	1880.0	Н	146	12	9.79	1 / 39	12.61	22.40	0.174	33.01	-10.61
	QPSK	1902.5	Н	144	20	10.11	1 / 58	11.49	21.61	0.145	33.01	-11.40
	16-QAM	1880.0	Н	146	12	9.79	1 / 58	11.40	21.19	0.132	33.01	-11.82
	π/2 BPSK	1855.0	Η	156	26	9.48	1 / 26	11.83	21.31	0.135	33.01	-11.70
	π/2 BPSK	1880.0	Н	146	12	9.79	1 / 26	12.20	22.00	0.158	33.01	-11.01
	π/2 BPSK	1905.0	Н	144	20	10.16	1 / 26	11.45	21.61	0.145	33.01	-11.40
10 MHz	QPSK	1855.0	Н	156	26	9.48	1 / 26	11.79	21.26	0.134	33.01	-11.75
	QPSK	1880.0	Н	146	12	9.79	1 / 26	12.51	22.30	0.170	33.01	-10.71
	QPSK	1905.0	Н	144	20	10.16	1 / 26	11.41	21.57	0.144	33.01	-11.44
	16-QAM	1880.0	Н	146	12	9.79	1 / 26	11.44	21.23	0.133	33.01	-11.78
	π/2 BPSK	1852.5	Н	156	26	9.44	1 / 12	11.70	21.15	0.130	33.01	-11.86
	π/2 BPSK	1880.0	Н	146	12	9.79	1 / 12	12.03	21.82	0.152	33.01	-11.19
	π/2 BPSK	1907.5	Н	144	20	10.21	1 / 12	11.32	21.53	0.142	33.01	-11.48
5 MHz	QPSK	1852.5	Н	156	26	9.44	1 / 12	11.71	21.15	0.130	33.01	-11.86
	QPSK	1880.0	Н	146	12	9.79	1 / 12	12.43	22.22	0.167	33.01	-10.79
	QPSK	1907.5	Н	144	20	10.21	1 / 12	11.23	21.44	0.139	33.01	-11.57
	16-QAM	1880.0	Н	146	12	9.79	1 / 12	11.40	21.19	0.132	33.01	-11.82
	QPSK (CP-OFDM)	1880.0	Н	142	14	9.79	1/79	10.64	20.43	0.110	33.01	-12.58
20 MHz	QPSK (Opposite Pol.)	1880.0	V	269	86	9.96	1/53	9.75	19.71	0.094	33.01	-13.30
	QPSK (WCP)	1880.0	Н	146	12	9.79	1/79	8.73	18.52	0.071	33.01	-14.49

Table 7-7. EIRP Data (NR Band n2)

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## 7.8 Radiated Spurious Emissions Measurements

#### **Test Overview**

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

#### **Test Procedures Used**

ANSI C63.26-2015 - Section 5.5.4

#### **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 > 2 x span / RBW
- 5. Detector = RMS
- 6. Trace mode = Average (Max Hold for pulsed emissions)
- 7. The trace was allowed to stabilize

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

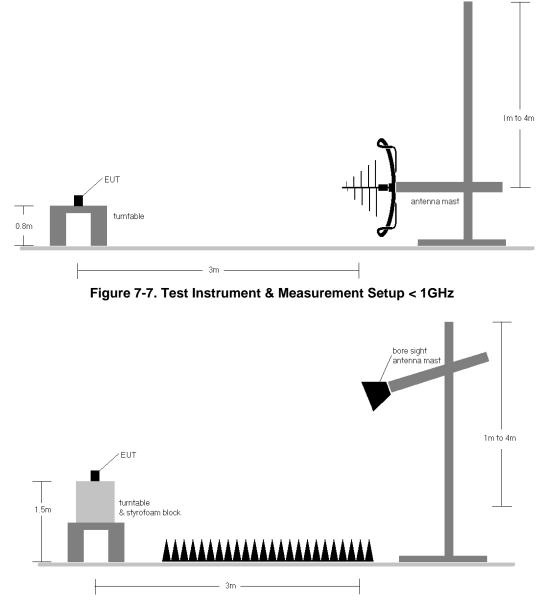


Figure 7-8. Test Instrument & Measurement Setup >1 GHz

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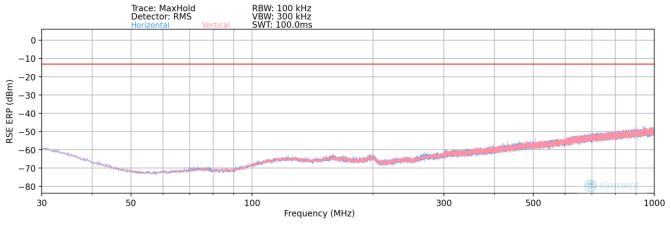
### Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
  - a)  $E(dB\mu V/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m) b) EIRP (dBm) = E(dB\mu V/m) + 20logD 104.8; where D is the measurement distance in meters.$
- 2) This device employs GSM, GPRS, and EDGE capabilities. The EUT was tested under all configurations and the highest powers are reported in GPRS mode while transmitting with one slot active.
- 3) This device employs UMTS technology with WCDMA (AMR/RMC) and HSDPA capabilities. The EUT was tested under all configurations and the highest powers are reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1".
- 4) 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.
- 5) This unit was tested with its standard battery.
- 6) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 7) 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.
- 8) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 9) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and 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.
- 10) Spurious emissions shown in this section are measured while operating in EN-DC mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor). Spurious emissions from the NR carrier device are subject to the rules under which the NR carrier operates. Spurious emissions caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

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# **GSM/GPRS PCS**



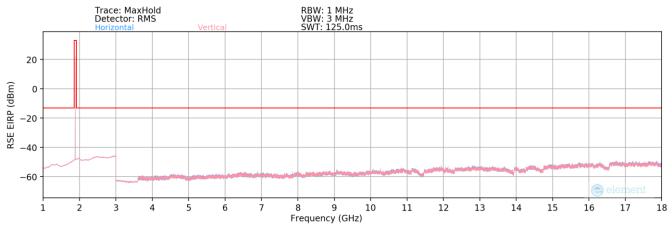


Mode:	GPRS 1 Tx Slot								
Channel:	512								
Frequency (MHz):	Frequency (MHz): 1850.2								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
432.00	Н	-	-	-87.90	24.66	43.76	-53.65	-13.00	-40.65
Table 7-8. Radiated Spurious Data (GPRS PCS – 30MHz-1GHz)									

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### Plot 7-147. Radiated Spurious Plot (GPRS PCS – 1GHz-18GHz)

Mode:	GPRS 1 Tx Slot
Channel:	512
Frequency (MHz):	1850.2

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3700.40	Н	123	347	-74.08	3.47	36.39	-58.87	-13.00	-45.87
5550.60	Н	138	230	-76.53	5.13	35.60	-59.66	-13.00	-46.66
7400.80	Н	-	-	-77.81	7.51	36.70	-58.56	-13.00	-45.56
9251.00	Н	-	-	-78.13	8.83	37.70	-57.56	-13.00	-44.56
11101.20	Н	-	-	-78.97	12.04	40.07	- <mark>5</mark> 5.19	-13.00	-42.19

Table 7-9. Radiated Spurious Data (GPRS PCS – Low Channel)

Mode:	GPRS 1 Tx Slot
Channel:	661
Frequency (MHz):	1880

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	Н	-	-	-76.05	3.03	33.98	-61.28	-13.00	-48.28
5640.00	Н	-	-	-76.91	5.48	35.57	-59.69	-13.00	-46.69
7520.00	Н	-	-	-78.69	7.34	35.65	-59.61	-13.00	-46.61

Table 7-10. Radiated Spurious Data (GPRS PCS – Mid Channel)

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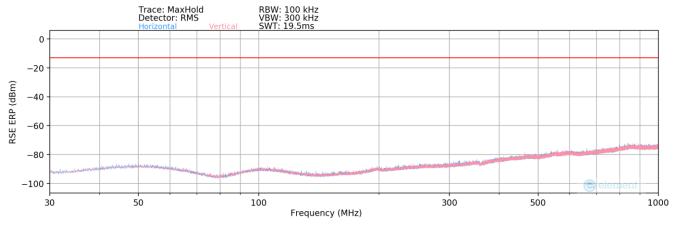
Mode:		GPRS 1 Tx Slot							
Channel:		810							
Frequency (MHz):		1909.8							
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3819.60	Н	160	166	-75.75	2.94	34.19	-61.07	-13.00	-48.07
5729.40	Н	-	-	-77.05	5.40	35.35	-59.91	-13.00	-46.91
7639.20	Н	-	-	-78.28	7.59	36.31	-58.95	-13.00	-45.95
9549.00	Н	-	-	-79.88	9.96	37.08	-58.18	-13.00	-45.18

Table 7-11. Radiated Spurious Data (GPRS PCS – High Channel)

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# WCDMA PCS





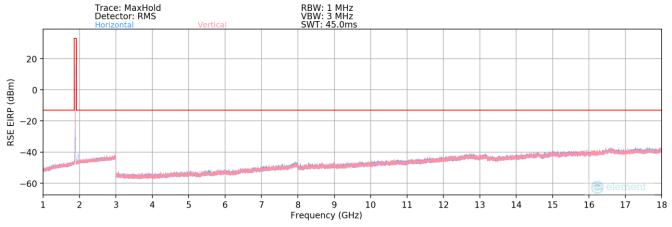
Mode:	WCDMA RMC					
Channel:	9400					
Frequency (MHz):		1800				

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
518.80	Н	-	-	-89.98	25.92	42.94	-54.47	-13.00	-41.47

Table 7-12. Radiated Spurious Data (WCDMA PCS – 30MHz-1GHz)

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Mode:	WCDMA RMC
Channel:	9262
Frequency (MHz):	1852.4

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3704.80	Н	-	-	-79.13	3.45	31.32	-63.94	-13.00	-50.94
5557.20	Н	-	-	-78.90	5.17	33.27	-61.99	-13.00	-48.99
7409.60	Н	-	-	-80.08	7.44	34.36	-60.90	-13.00	-47.90

## Table 7-13. Radiated Spurious Data (WCDMA PCS – Low Channel)

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30

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	Н	-	-	-79.12	3.03	30.91	-64.35	-13.00	-51.35
5640.00	Н	-	-	-79.12	5.48	33.36	-61.90	-13.00	-48.90
7520.00	Н	-	-	-79.85	7.34	34.49	-60.77	-13.00	-47.77

### Table 7-14. Radiated Spurious Data (WCDMA PCS – Mid Channel)

Mode:	WCDMA RMC
Channel:	9538
Frequency (MHz):	1907.6

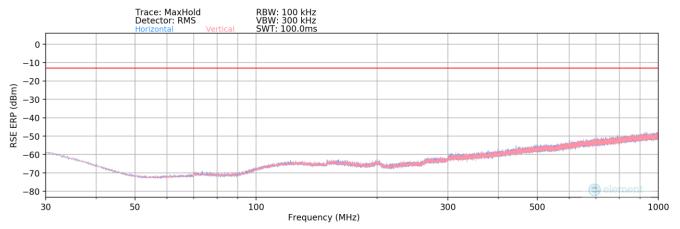
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3815.20	Н	-	-	-78.51	2.95	31.44	-63.82	-13.00	-50.82
5722.80	Н	-	-	-79.43	5.36	32.93	-62.33	-13.00	-49.33
7630.40	Н	-	-	-80.22	7.65	34.43	-60.83	-13.00	-47.83

### Table 7-15. Radiated Spurious Data (WCDMA PCS – High Channel)

FCC ID: PY7-76056F		PART 24 MEASUREMENT REPORT			
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# LTE Band 25/2





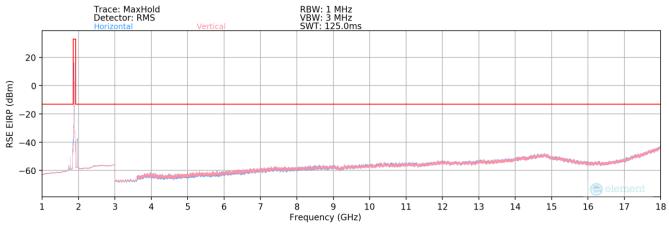
Bandwidth (MHz):	20								
Frequency (MHz):	1882.5								
RB / Offset:	1/50								
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
505.90	V	-	-	-75.46	25.60	57.14	-40.27	-13.00	-27.27
Т	Table 7-16. Radiated Spurious Data (LTE Band 25/2 – 30MHz-1GHz)								

 
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 Approved by: Technical Manager

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Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3720.00	V	-	-	-81.00	7.96	33.96	-61.30	-13.00	-48.30
5580.00	V	-	-	-82.86	11.80	35.94	-59.32	-13.00	-46.32
7440.00	V	-	-	-83.84	16.02	39.18	-56.08	-13.00	-43.08

Table 7-17. Radiated Spurious Data (LTE Band 25/2 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1882.5
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3765.00	V	-	-	-80.89	8.26	34.37	-60.89	-13.00	-47.89
5647.50	V	-	-	-82.51	11.46	35.95	-59.30	-13.00	-46.30
7530.00	V	-	-	-83.32	16.19	39.87	-55.39	-13.00	-42.39

Table 7-18. Radiated Spurious Data (LTE Band 25/2 – Mid Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1905
RB / Offset:	1 / 50

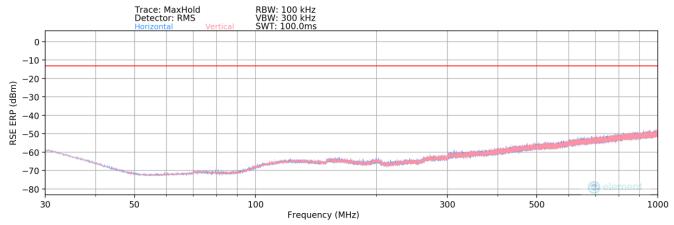
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3810.00	V	-	-	-81.56	8.32	33.76	-61.50	-13.00	-48.50
5715.00	V	-	-	-82.17	11.75	36.58	-58.68	-13.00	-45.68
7620.00	V	-	-	-83.48	16.42	39.94	-55.32	-13.00	-42.32

#### Table 7-19. Radiated Spurious Data (LTE Band 25/2 – High Channel)

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# NR Band n2





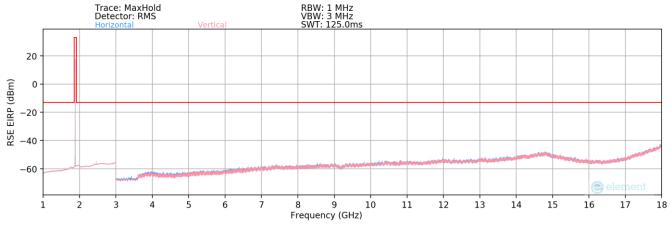
Bandwidth (MHz):	20	20				
Frequency (MHz):	1860	1860				
RB / Offset:	1 / 53					
Mode:	Stand Alone					

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
293.00	V	-	-	-73.63	20.74	54.11	-43.30	-13.00	-30.30
 Table 7-20, Padjated Spurious Data (NP Band n2 – 30MHz-1GHz)									

Table 7-20. Radiated Spurious Data (NR Band n2 – 30MHz-1GHz)

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Bandwidth (MHz):	20
Frequency (MHz):	1860
RB / Offset:	1/53
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3720.00	V	118	131	-77.29	-0.43	29.28	-65.98	-13.00	-52.98
5580.00	V	122	118	-75.09	2.73	34.64	-60.62	-13.00	-47.62
7440.00	V	-	-	-80.59	7.26	33.67	-61.58	-13.00	-48.58
9300.00	V	-	-	-82.14	9.85	34.71	-60.55	-13.00	-47.55
11160.00	V	-	-	-81.92	11.43	36.51	-58.75	-13.00	-45.75

Table 7-21. Radiated Spurious Data (NR Band n2 – Low Channel)

Bandwidth (MHz):	20
Frequency (MHz):	1880
RB / Offset:	1 / 53
Mode:	Stand Alone

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3760.00	V	-	-	-76.98	0.44	30.46	-64.80	-13.00	-51.80
5640.00	V	400	55	-77.50	2.78	32.28	-62.98	-13.00	-49.98
7520.00	V	-	-	-78.88	6.83	34.95	-60.31	-13.00	-47.31
9400.00	V	-	-	-80.88	9.76	35.88	-59.37	-13.00	-46.37
11280.00	V	-	-	-81.35	11.60	37.25	-58.01	-13.00	-45.01

Table 7-22. Radiated Spurious Data (NR Band n2 – Mid Channel)

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Bandwidth (MHz):	20
Frequency (MHz):	1900
RB / Offset:	1 / 53
Mode:	Stand Alone

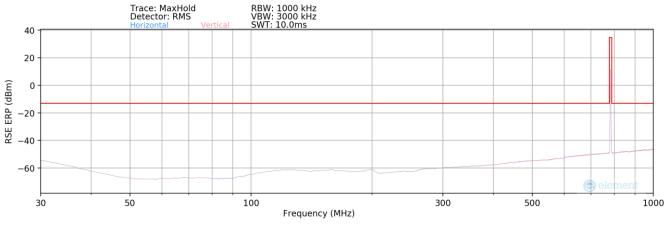
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3800.00	V	109	301	-75.90	0.76	31.86	-63.39	-13.00	-50.39
5700.00	V	117	315	-76.11	3.15	34.04	-61.22	-13.00	-48.22
7600.00	V	-	-	-80.30	7.30	34.00	-61.26	-13.00	-48.26
9500.00	V	-	-	-81.50	9.85	35.35	-59.91	-13.00	-46.91
11400.00	V	-	-	-82.43	11.29	35.86	-59.39	-13.00	-46.39

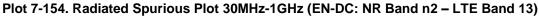
Table 7-23. Radiated Spurious Data (NR Band n2 – High Channel)

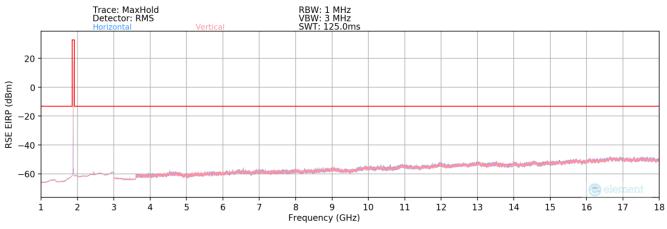
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# EN-DC: NR Band n2 – LTE Band 13







Plot 7-155. Radiated Spurious Plot 1-18GHz (EN-DC: NR Band n2 – LTE Band 13)

Bandwidth (MHz):	20 &10
Frequency (MHz):	1880 & 782
RB / Offset:	1/50 & 1/25
Mode:	EN-DC
Anchor Band:	LTE Band 13

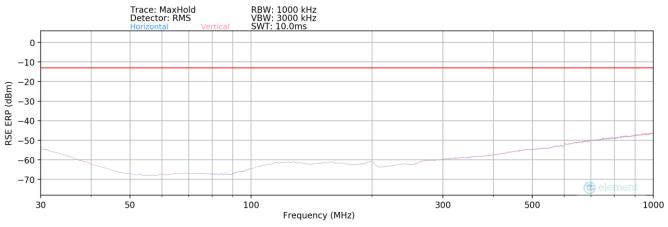
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP / EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
632.00	Н	-	-	-89.13	27.77	45.64	-51.77	-13.00	-38.77
1564.00	Н	-	-	-77.26	-4.11	25.63	-69.63	-13.00	-56.63
2346.00	Н	-	-	-77.77	0.50	29.73	-65.53	-13.00	-52.53
3128.00	H	-	•	-78.17	3.17	32.00	-63.26	-13.00	-50.26

Table 7-24. Radiated Spurious Data (EN-DC: NR Band n2 – LTE Band 13)

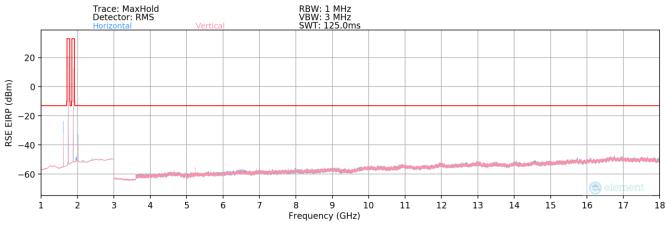
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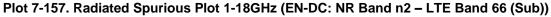


# EN-DC: NR Band n2 – LTE Band 66 (Sub)



Plot 7-156. Radiated Spurious Plot 30MHz-1GHz (EN-DC: NR Band n2 - LTE Band 66 (Sub))





Bandwidth (MHz):	20 & 20
Frequency (MHz):	1880 <b>&amp;</b> 1745
RB / Offset:	1/53 & 1/50
Mode:	EN-DC
Anchor Band:	LTE Band 66

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP / EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
135.0	н	-	-	-84.00	20.09	43.09	-54.31	-13.00	-41.31
270.0	Н	-	-	-83.90	20.60	43.70	-53.71	-13.00	-40.71
1610.0	Н	155	233	-36.06	5.45	76.39	-18.87	-13.00	-5.87
2015.0	Н	157	236	-49.62	9.39	66.77	-28.49	-13.00	-15.49
3625.0	Н	-	-	-77.79	2.76	31.97	-63.29	-13.00	-50.29
5235.0	V	301	5	-70.72	4.98	41.26	-54.00	-13.00	-41.00
5370.0	Н	-	-	-78.04	4.87	33.83	-61.42	-13.00	-48.42
8860.0	Н	-	-	-78.95	8.59	36.64	-58.62	-13.00	-45.62

Table 7-25. Radiated Spurious Data (EN-DC: NR Band n2 – LTE Band 66 (Sub))

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## 7.9 Frequency Stability / Temperature Variation

#### Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. 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 24, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### Test Procedure Used

ANSI C63.26-2015 – Section 5.6

#### 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

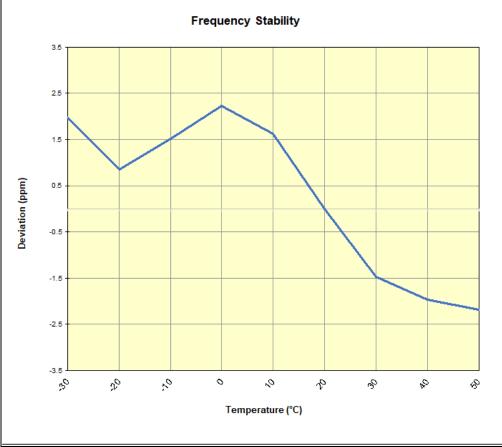
None

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GSM/GPRS PCS							
	Operating F	requency (Hz):	1,880,0	00,000	]		
	Ref.	Voltage (VDC):	4.2	28			
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	1,880,006,050	3,739	0.0001989		
		- 20	1,880,003,915	1,604	0.0000853		
		- 10	1,880,005,175	2,864	0.0001523		
		0	1,880,006,512	4,201	0.0002235		
100 %	4.28	+ 10	1,880,005,376	3,065	0.0001630		
		+ 20 (Ref)	1,880,002,311	0	0.0000000		
		+ 30	1,879,999,550	-2,761	-0.0001469		
		+ 40	1,879,998,606	-3,705	-0.0001971		
		+ 50	1,879,998,215	- <mark>4,</mark> 096	-0.0002179		
Battery Endpoint	3.69	+ 20	1,880,001,544	-767	-0.0000408		

Table 7-26. GSM/GPRS PCS Frequency Stability Data



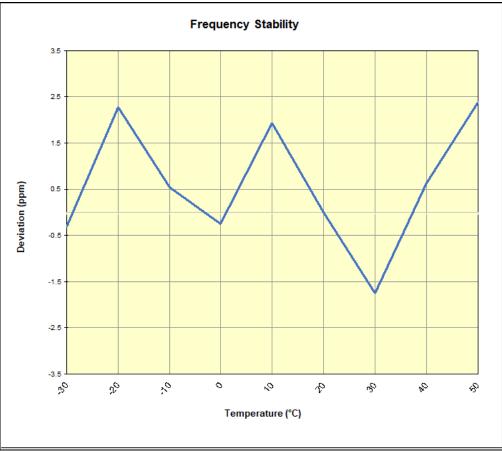
## Plot 7-158. GSM/GPRS PCS Frequency Stability Chart

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WCDMA PCS							
	Operating F	requency (Hz):	1,880,0	00,000			
	Ref.	Voltage (VDC):	4.2	28			
					-		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	1,879,996,390	-570	-0.0000303		
		- 20	1,880,001,246	4,286	0.0002280		
		- 10	1,879,997,967	1,007	0.0000536		
		0	1,879,996,486	-474	-0.0000252		
100 %	4.28	+ 10	1,880,000,612	3,652	0.0001943		
		+ 20 (Ref)	1,879,996,960	0	0.0000000		
		+ 30	1,879,993,680	-3,280	-0.0001745		
		+ 40	1,879,998,158	1,198	0.0000637		
		+ 50	1,880,001,456	4,496	0.0002391		
Battery Endpoint	3.69	+ 20	1,880,000,751	3,791	0.0002016		

Table 7-27. WCDMA PCS Frequency Stability Data



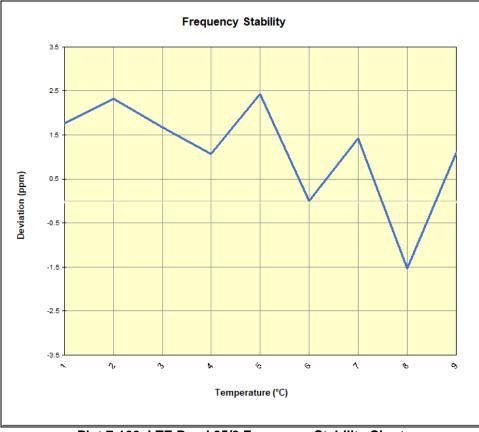


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LTE Band 25/2							
	Operating F	requency (Hz):	1,882,5	00,000			
	Ref.	Voltage (VDC):	4.:	28			
					-		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	1,882,588,401	3,328	0.0001768		
		- 20	1,882,589,454	4,381	0.0002327		
		- 10	1,882,588,217	3,144	0.0001670		
		0	1,882,587,084	2,011	0.0001068		
100 %	4.28	+ 10	1,882,589,659	4,586	0.0002436		
		+ 20 (Ref)	1,882,585,073	0	0.0000000		
		+ 30	1,882,587,741	2,668	0.0001417		
		+ 40	1,882,582,193	-2,880	-0.0001530		
		+ 50	1,882,587,135	2,062	0.0001095		
Battery Endpoint	3.69	+ 20	1,882,585,945	872	0.0000463		

Table 7-28. LTE Band 25/2 Frequency Stability Data



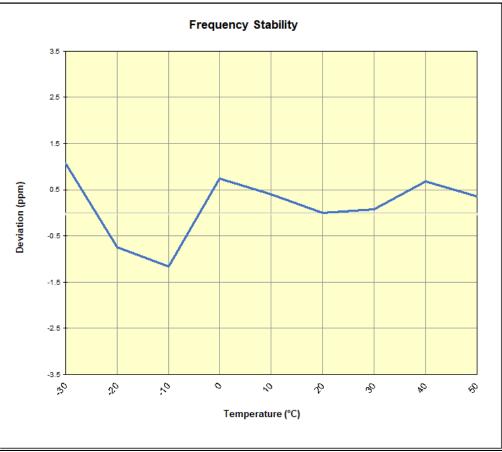
Plot 7-160. LTE Band 25/2 Frequency Stability Chart

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NR Band n2							
	Operating F	requency (Hz):	1,880,0	00,000	]		
	Ref.	Voltage (VDC):	4.2	28			
					-		
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)		
		- 30	1,880,082,845	2,018	0.0001073		
		- 20	1,880,079,419	-1,408	-0.0000749		
		- 10	1,880,078,634	-2,193	-0.0001166		
		0	1,880,082,218	1,391	0.0000740		
100 %	4.28	+ 10	1,880,081,573	746	0.0000397		
		+ 20 (Ref)	1,880,080,827	0	0.0000000		
		+ 30	1,880,080,977	150	0.0000080		
		+ 40	1,880,082,116	1,289	0.0000686		
		+ 50	1,880,081,486	659	0.0000351		
Battery Endpoint	3.69	+ 20	1,880,082,147	1,320	0.0000702		

Table 7-29. NR Band n2 Frequency Stability Data



Plot 7-161. NR Band n2 Frequency Stability Chart

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# 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Sony Portable Handset FCC ID: PY7-76056F** complies with all the requirements of Part 24 of the FCC rules.

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