



Plot 7-147. UWB Average Power Measurement - ANT 1 - CH.5 – SP3 – BPRF



Plot 7-148. UWB Peak Power Measurement - ANT 2 - CH.5 – SP3 – BPRF

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Plot 7-149. UWB Average Power Measurement - ANT 2 - CH.5 – SP3 - BPRF

Average Swept SA	P	EAK wept SA	10dB Swept	SA	+	Frequency	- 7 🛞
KEYSIGHT ↔	Input: RF Coupling: DC Align: Auto/No R	Input Z: 50 Corr CCorr Freq Ref: Ir NFE: Adapt	Ω #Atten: 10 dB nt (S) tive	#PNO: Fast Gate: Off IF Gain: Low Sig Track: Off	#Avg Type: Power (RMS <mark>1</mark> 23456 Avg Hold: 5/5 Trig: Free Run Р Р Р Р Р Р	Center Frequency 7.997000000 GHz	Settings
1 Spectrum	•				Mkr1 1.777 s	0.00000000 Hz	
Scale/Div 10 dl	3		Ref Level 0.0	00 dBm	-25.39 dBm	Swept Span Zero Span	
-10.0						Full Span	
-20.0					1	Start Freq 7.997000000 GHz	
-30.0						Stop Freq 7.997000000 GHz	
-50.0						AUTO TUNE	
-60.0						CF Step 50.000000 MHz	
-70.0						Auto Man	
-90.0						Freq Offset 0 Hz	
Center 7.99700 Res BW 50.0 M	0000 GHz Hz				Span 0 Hz Sweep 2.07 s (2001 pts)	X Axis Scale Log Lin	
		Nov 14, 2 11:25:27				Signal Track (Span Zoom)	

Plot 7-150. UWB Peak Power Measurement - ANT 1 - CH.9 - SP1 - BPRF

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Plot 7-151. UWB Average Power Measurement - ANT 1 - CH.9 – SP3 - BPRF



Plot 7-152. UWB Peak Power Measurement - ANT 2 - CH.9 - SP0 - BPRF

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Plot 7-153. UWB Average Power Measurement - ANT 2 - CH.9 - SP3 - BPRF

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RESULTS – HPRF

ANT	СН	MODE	Preamble	Meas. Ant.	FM [GHz]	Peak Power (dBm/50MHz)	Peak Limit (dBm/50MHz)	Margin [dB]
1	5	SP0	28	V	6.487	-4.86	0	-4.86
2	5	SP0	28	Н	6.487	-6.32	0	-6.32
1	9	SP0	26	Н	7.997	-5.56	0	-5.56
2	9	SP1	25	Н	7.997	-5.36	0	-5.36

Table 7-6. HPRF Highest Peak Power Results

ANT	СН	MODE	Preamble	Meas. Ant.	FM [GHz]	Average Power (dBm)	Average Limit (dBm)	Margin [dB]
1	5	SP3	29	V	6.525	-42.93	-41.3	-1.63
2	5	SP0	26	Н	6.345	-43.74	-41.3	-2.44
1	9	SP3	28	Н	7.987	-43.62	-41.3	-2.32
2	9	SP3	27	Н	7.813	-43.45	-41.3	-2.15

Table 7-7. HPRF Highest Average Power Results

Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meter

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) - 104.8



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Plot 7-155. UWB Average Power Measurement - ANT 1 - CH.5 – SP3 – HPRF

PEAK Swept SA	AV Sv	/ERAGE vept SA	10dB BW Swept SA		+	Frequency	- 7 課
KEYSIGHT	Input: RF Coupling: DC Align: Auto/No RF	Input Z: 50 Ω Corr CCorr Freq Ref: Int (S) NFE: Off	#Atten: 0 dB	PNO: Fast Gate: Off IF Gain: High Sig Track: Off	#Avg Type: Power (RMS 1 2 3 4 5 6 Avg Hold: 5/5 M WWWW Trig: Free Run P P P P P P	Center Frequency 6.487000000 GHz	Settings
1 Spectrum	•				Mkr1 1.946 s	0.00000000 Hz	
Scale/Div 10 c	B	F	Ref Level -20.00 o	dBm	-31.60 dBm	Swept Span Zero Span	
-30.0					↓ 1	Full Span	
-40.0						Start Freq 6.487000000 GHz	
-50.0						Stop Freq 6 487000000 GH7	
-70.0						AUTO TUNE	
-80.0						CF Step 50.000000 MHz	
-90.0						Auto Man	
-110						Freq Offset 0 Hz	
Center 6.4870 Res BW 50.0 M	00000 GHz MHz				Span 0 Hz Sweep 2.01 s (2001 pts)	X Axis Scale Log Lin	
		Nov 16, 2020 10:00:54 AM				Signal Track (Span Zoom)	

Plot 7-156. UWB Peak Power Measurement - ANT 2 - CH.5 – SP3 – HPRF

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Plot 7-157. UWB Average Power Measurement - ANT 2 - CH.5 – SP3 - HPRF



Plot 7-158. UWB Peak Power Measurement - ANT 1 - CH.9 – SP1 – HPRF

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Plot 7-159. UWB Average Power Measurement - ANT 1 - CH.9 – SP3 - HPRF



Plot 7-160. UWB Peak Power Measurement - ANT 2 - CH.9 - SP0 – HPRF

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Plot 7-161. UWB Average Power Measurement - ANT 2 - CH.9 - SP3 - HPRF

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7.5 Radiated Measurement Data above 960MHz §15.519 (c), §15.519(d), §15.209(a)

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

§15.519(c)

Frequency in MHz	EIRP in dBm
960-1610	-75.3
1610-1990	-63.3
1990-3100	-61.3
3100-10600	-41.3
Above 10600	-61.3

Table 7-8. Above 960MHz Average Limits

§15.519(d)

Frequency in MHz	EIRP in dBm
1164-1240	-85.3
1559-1610	-85.3

Table 7-9. Above 960MHz Average Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Average EIRP Measurements

- 1. Analyzer frequency set to the frequency of the radiated spurious emission of interest
- 2. RBW = 1MHz (3kHz for emissions in the GPS bands)
- 3. VBW = 3MHz (30kHz for the emissions in the GPS bands)
- 4. Detector = RMS
- 5. Sweep time = auto couple
- 6. Trace mode = trace averaging
- 7. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown test setup photos provided.

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Test Notes

- 1. All modes of operation and settings (Preamble, Packet Type, etc) were investigated and the worst-case emissions are reported.
- 2. The RBW for measurements in the GPS Bands were reduced to 3kHz in order to show compliance.
- 3. Pre-scan plots that are included are not corrected for antenna factors, cable losses, or pre-amplifier gains. The plots are only for the purpose of spurious emission identification.
- 4. All readings are calibrated by a signal generator with accuracy traceable to the National Institute of Standards and Technology (NIST).
- 5. AFCL (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)

Sample Calculation

The raw radiated spurious level is converted to field strength in dBuV/m. Then, the EIRP RSE level is calculated by applying the additional factors shown below for a test distance of 3 meter

RSE EIRP (dBm) = Analyzer Level (dBm) + 107 + AFCL (dB/m) + 20Log(Dm) - 104.8

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Channel 5 ANTENNA 1:











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