



**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



11N40SISO\_Ant1\_2452\_1000~26500





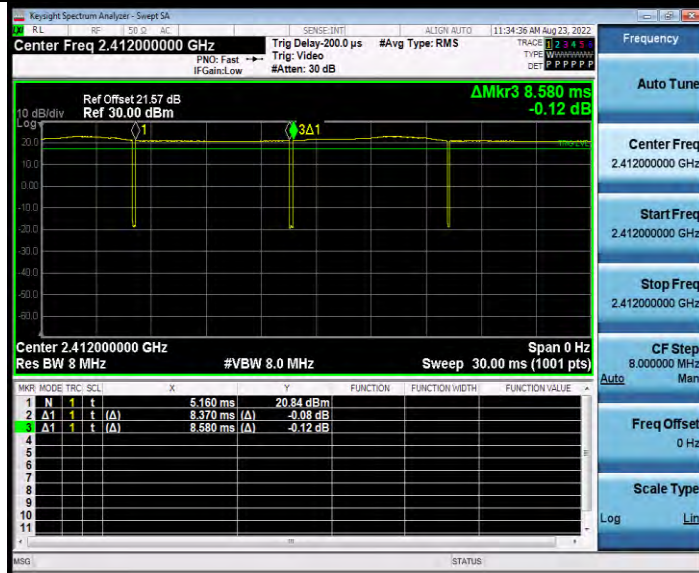
## DUTY CYCLE TEST RESULT

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	8.37	8.58	97.55
		2437	8.40	8.61	97.56
		2462	8.37	8.55	97.89
11G	Ant1	2412	1.40	1.59	88.05
		2437	1.39	1.56	89.10
		2462	1.39	1.57	88.54
11N20SISO	Ant1	2412	1.17	1.35	86.67
		2437	1.17	1.41	82.98
		2462	1.17	1.35	86.67
11N40SISO	Ant1	2422	0.59	0.83	71.08
		2437	0.58	0.78	74.36
		2452	0.59	0.83	71.08

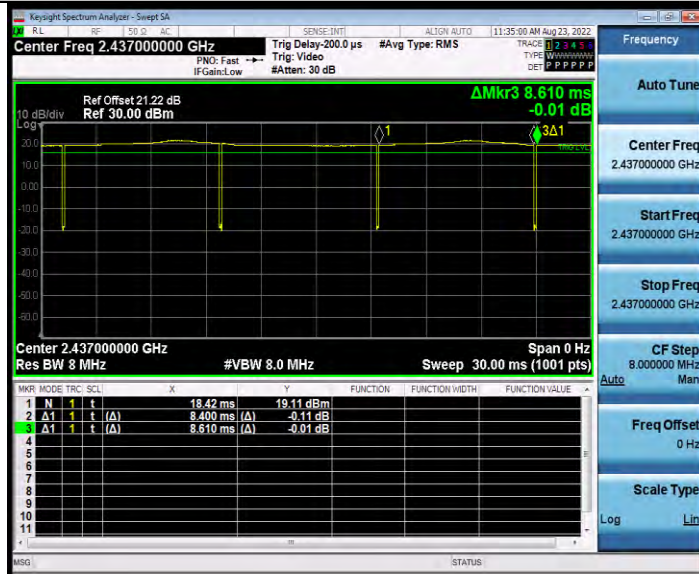


### TEST GRAPHS

11B\_Ant1\_2412



11B\_Ant1\_2437

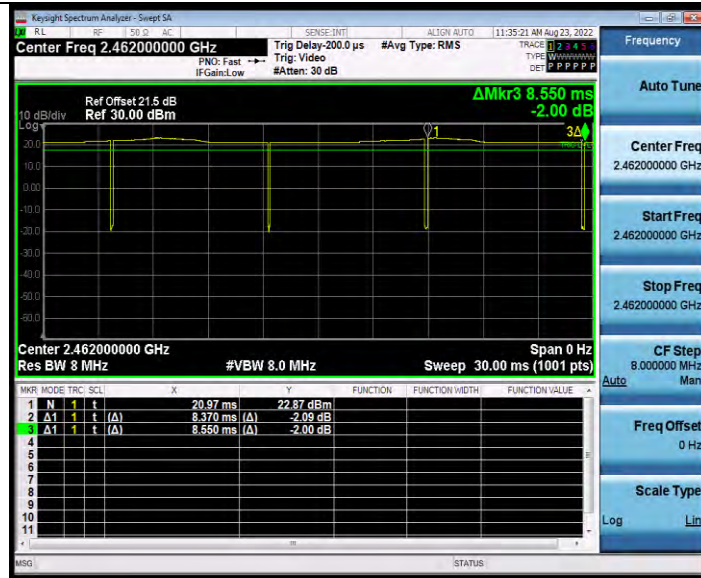


11B\_Ant1\_2462

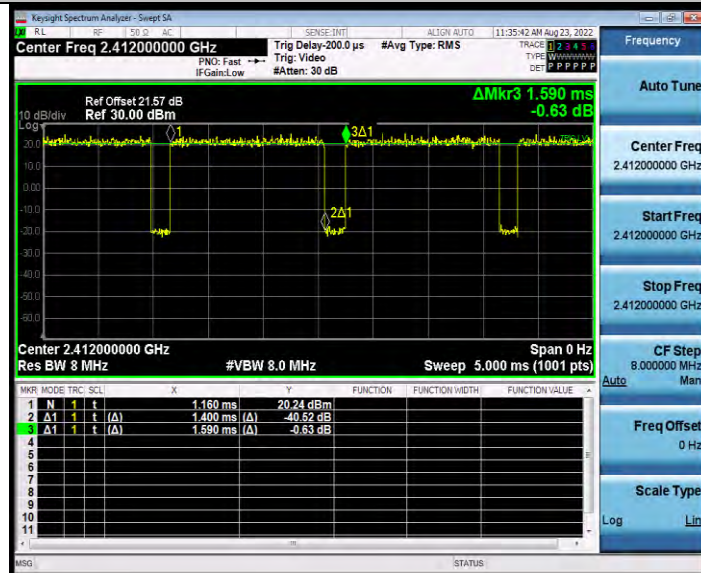


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**Test Report No.: W7L-P22070039RF02**



11G\_Ant1\_2412

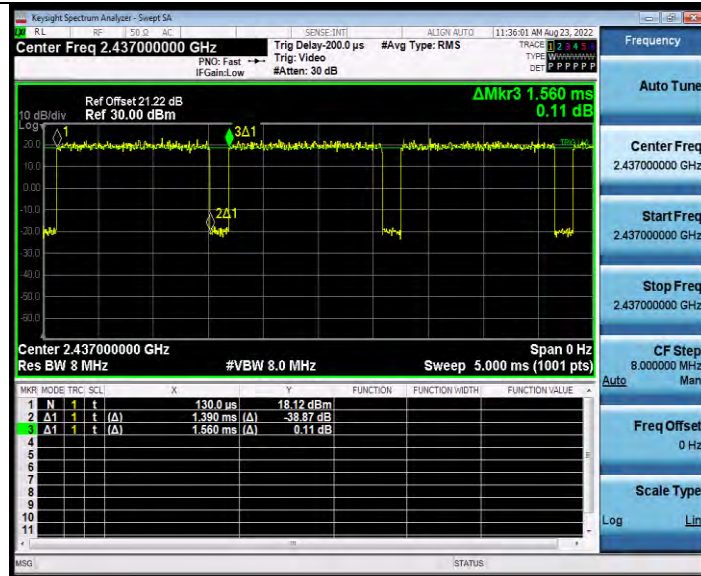


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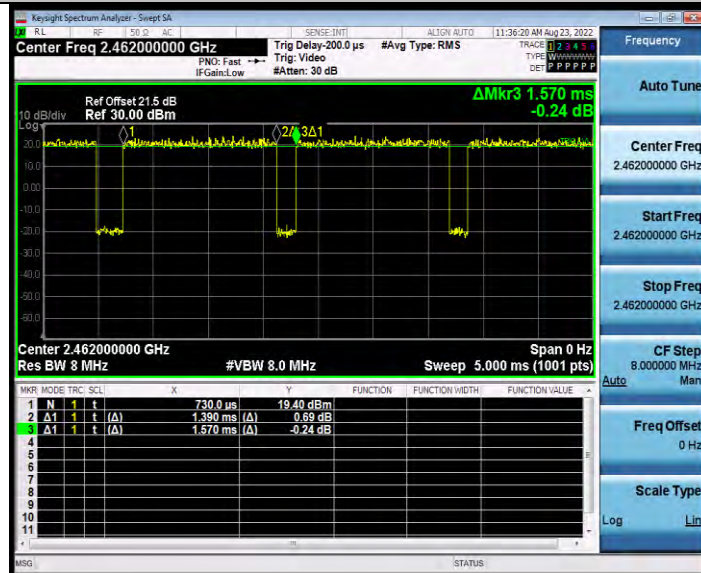


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**Test Report No.: W7L-P22070039RF02**



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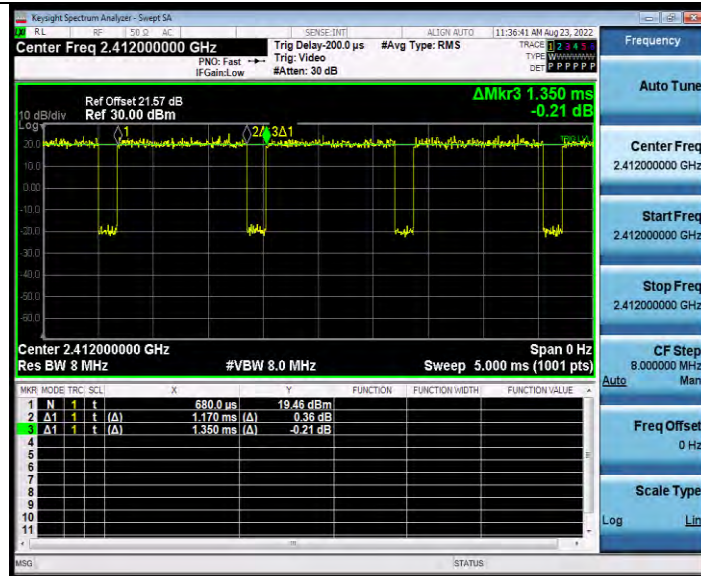


11N20SISO\_Ant1\_2412

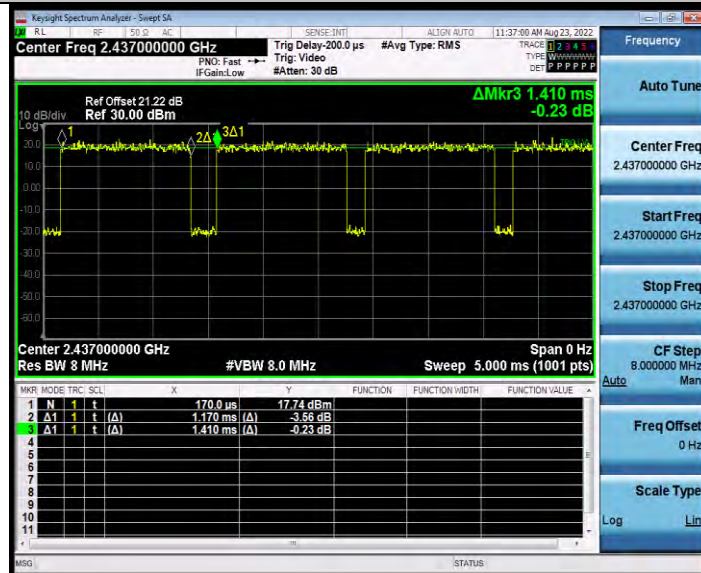


BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



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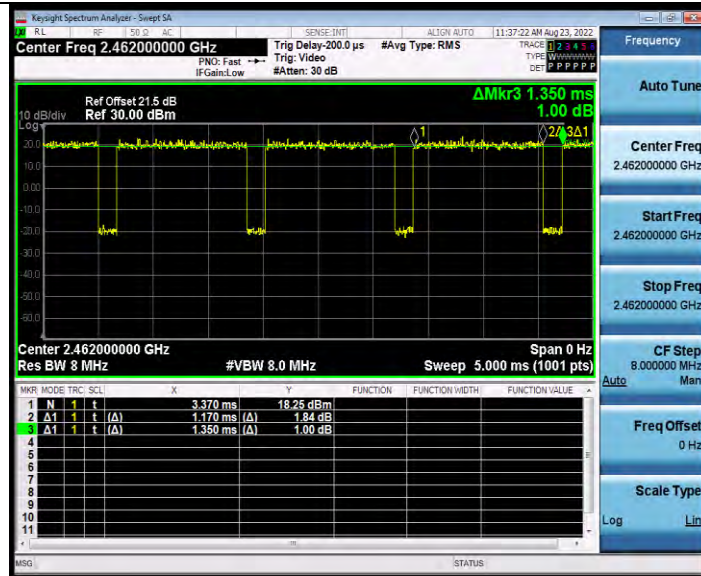


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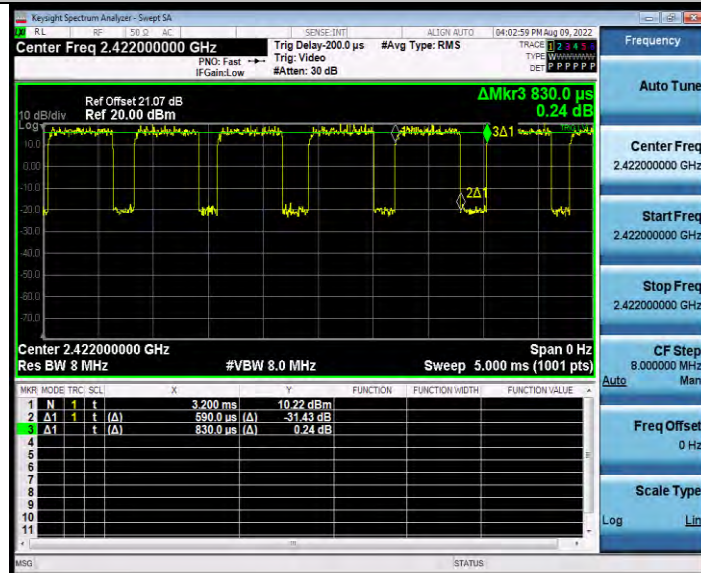


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**Test Report No.: W7L-P22070039RF02**



11N40SISO\_Ant1\_2422



11N40SISO\_Ant1\_2437

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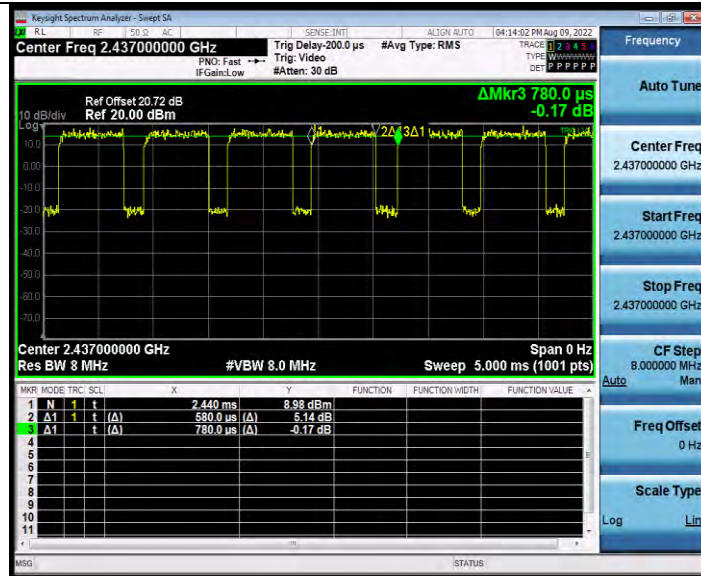
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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Fax: +86 755 8869 6577  
Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)

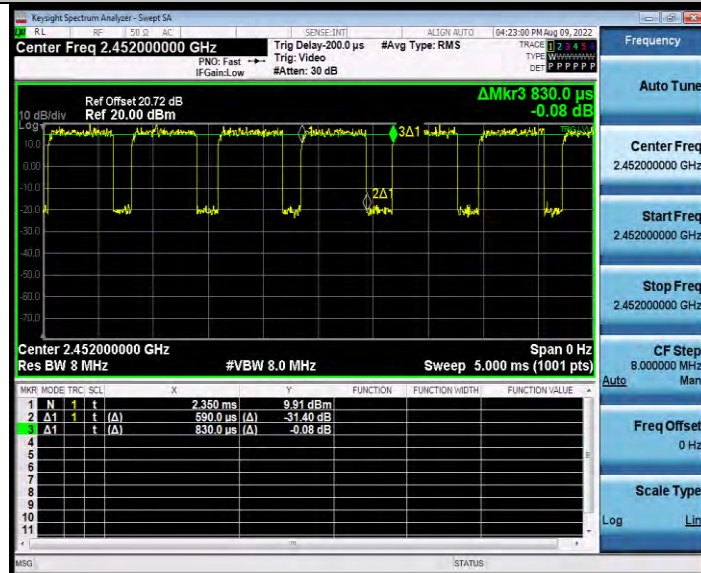


BUREAU VERITAS

# Test Report No.: W7L-P22070039RF02



11N40SISO\_Ant1\_2452



BV 7Layers Communications Technology (Shenzhen) Co., Ltd

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## 7 Appendix 2 BLE

### DTS BANDWIDTH

#### TEST RESULT

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_125K	Ant1	2402	0.676	2401.656	2402.332	0.5	PASS
		2440	0.620	2439.684	2440.304	0.5	PASS
		2480	0.676	2479.652	2480.328	0.5	PASS
BLE_1M	Ant1	2402	0.668	2401.656	2402.324	0.5	PASS
		2440	0.660	2439.660	2440.320	0.5	PASS
		2480	0.676	2479.652	2480.328	0.5	PASS
BLE_2M	Ant1	2402	1.160	2401.416	2402.576	0.5	PASS
		2440	1.144	2439.416	2440.560	0.5	PASS
		2480	1.124	2479.416	2480.540	0.5	PASS
BLE_500K	Ant1	2402	0.644	2401.668	2402.312	0.5	PASS
		2440	0.684	2439.660	2440.344	0.5	PASS
		2480	0.652	2479.672	2480.324	0.5	PASS



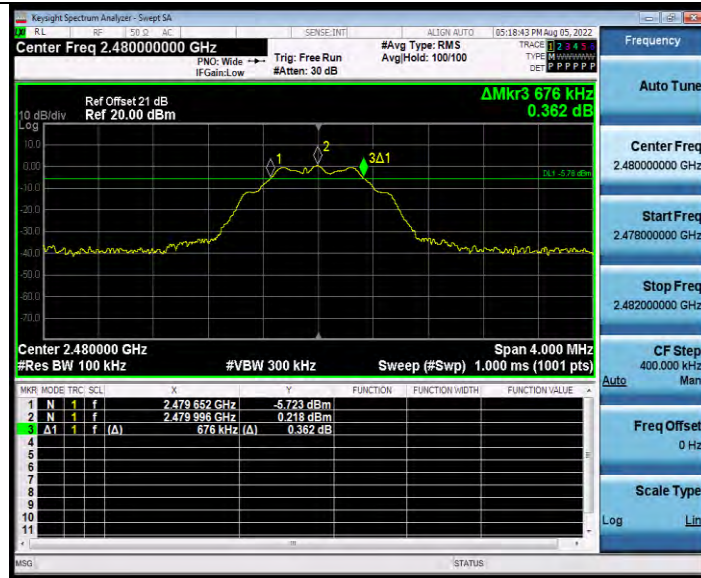
### TEST GRAPHS





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**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2402

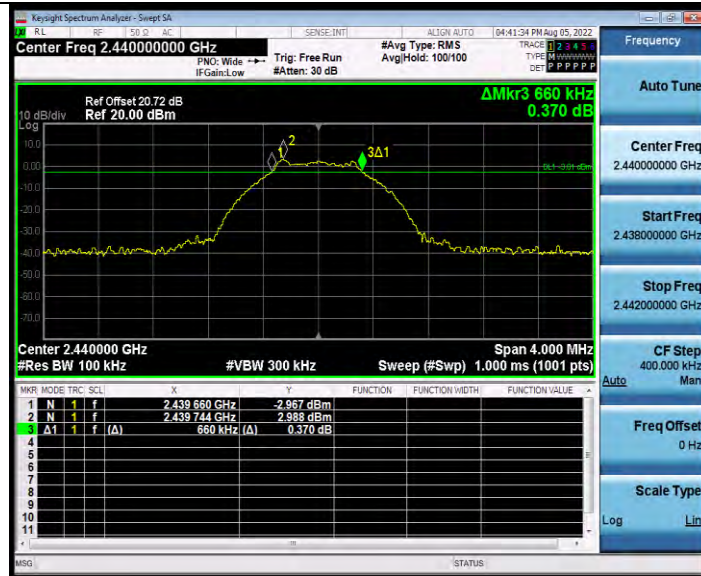


BLE\_1M\_Ant1\_2440



BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



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Test Report No.: W7L-P22070039RF02



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480



BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



BLE\_500K\_Ant1\_2402

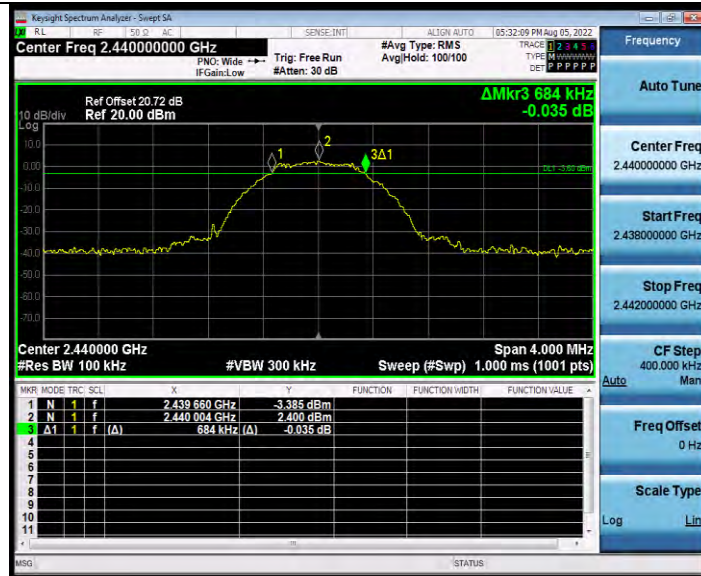


BLE\_500K\_Ant1\_2440



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**Test Report No.: W7L-P22070039RF02**



BLE\_500K\_Ant1\_2480





### **OCCUPIED CHANNEL BANDWIDTH TEST RESULT**

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_125K	Ant1	2402	1.0392	2401.472	2402.511	---	---
		2440	1.0404	2439.472	2440.512	---	---
		2480	1.0389	2479.471	2480.510	---	---
BLE_1M	Ant1	2402	1.0133	2401.495	2402.508	---	---
		2440	1.0175	2439.489	2440.506	---	---
		2480	1.0211	2479.487	2480.508	---	---
BLE_2M	Ant1	2402	2.0333	2400.993	2403.026	---	---
		2440	2.0385	2438.993	2441.032	---	---
		2480	2.0383	2478.990	2481.028	---	---
BLE_500K	Ant1	2402	1.0103	2401.486	2402.496	---	---
		2440	1.0034	2439.491	2440.495	---	---
		2480	1.0056	2479.488	2480.494	---	---





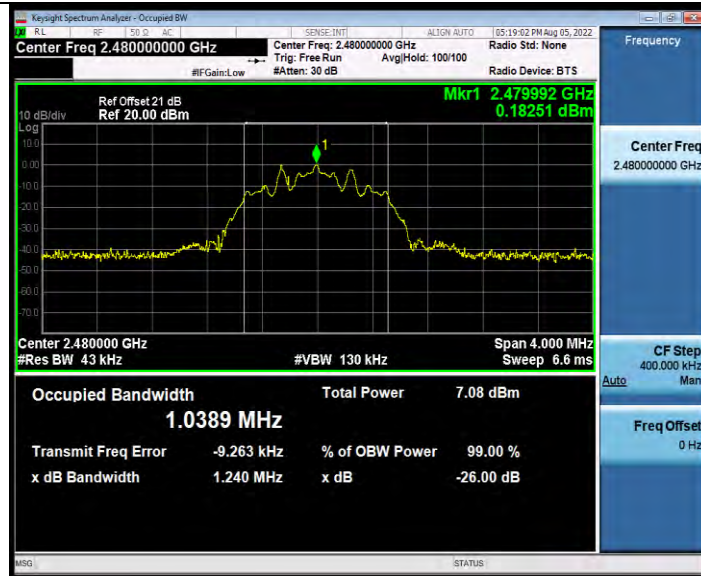
### TEST GRAPHS



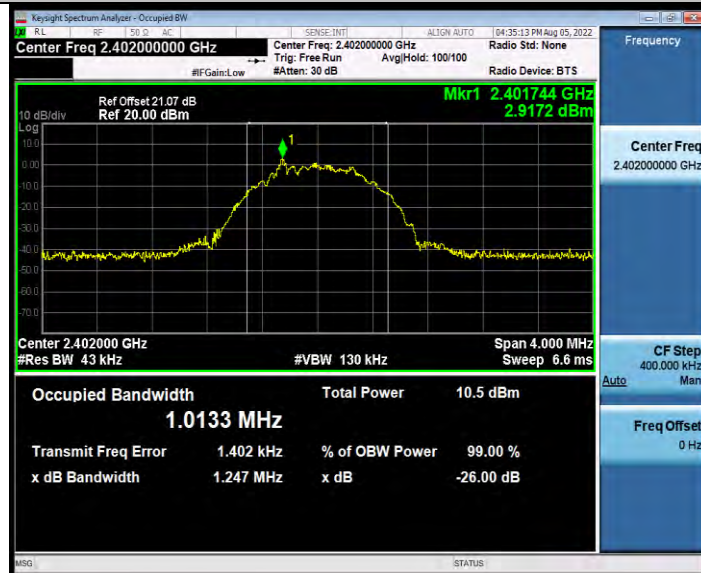


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### Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2402



BLE\_1M\_Ant1\_2440

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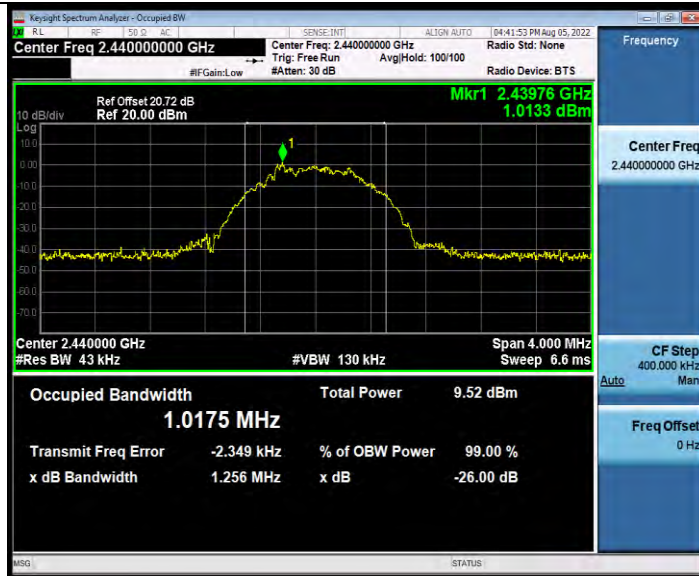
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

Tel: +86 755 8869 6566  
Fax: +86 755 8869 6577  
Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)

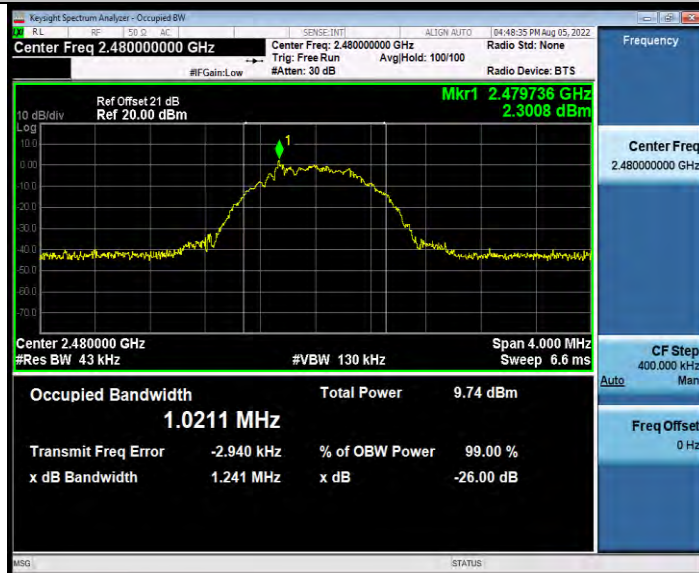


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**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



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**Test Report No.: W7L-P22070039RF02**



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480

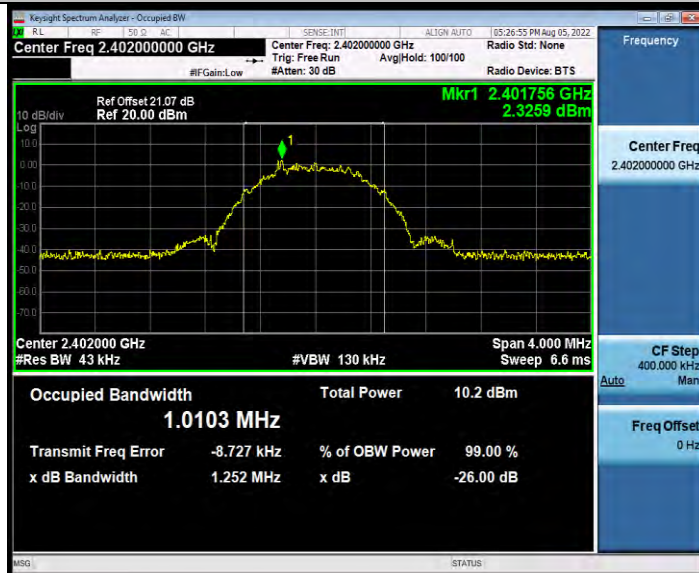


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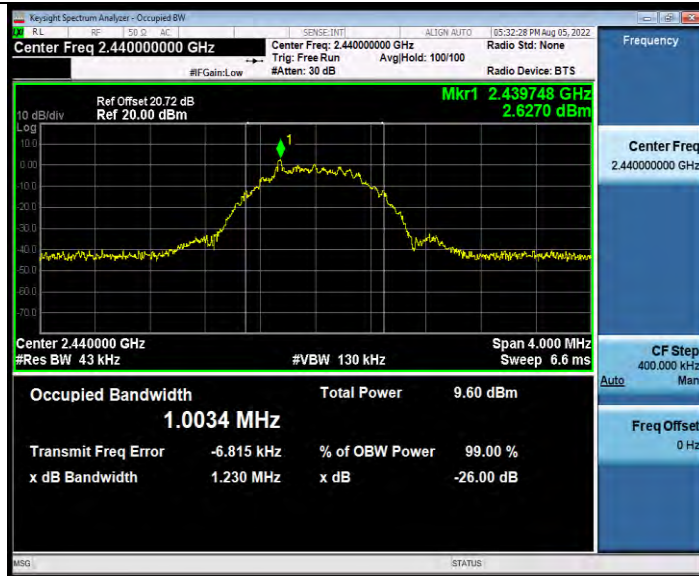
### Test Report No.: W7L-P22070039RF02



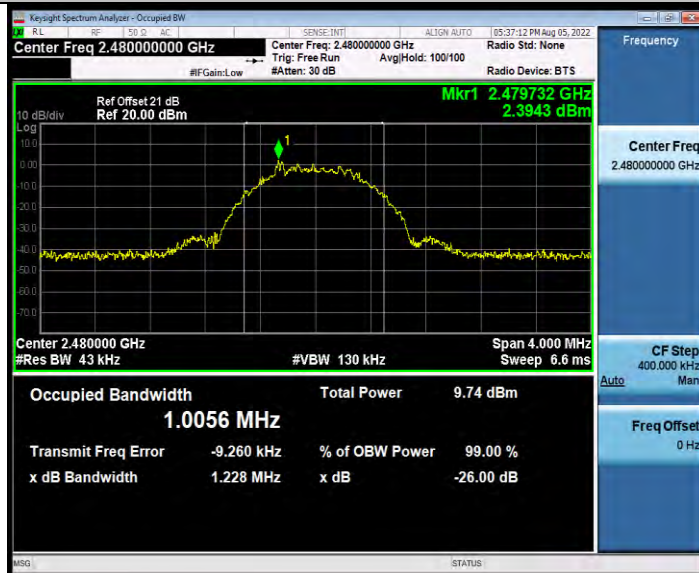
BLE\_500K\_Ant1\_2402



BLE\_500K\_Ant1\_2440



**BLE\_500K\_Ant1\_2480**



**MAXIMUM CONDUCTED OUTPUT POWER****TEST RESULT PEAK**

TestMode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Peak Power[mW]	Conducted Limit[dBm]	Verdict	Power setting
BLE_125K	Ant1	2402	3.58	2.28	≤30	PASS	Default
		2440	3.74	2.37	≤30	PASS	Default
		2480	3.50	2.24	≤30	PASS	Default
BLE_1M	Ant1	2402	4.44	2.78	≤30	PASS	Default
		2440	<b>4.50</b>	<b>2.82</b>	≤30	PASS	Default
		2480	4.24	2.65	≤30	PASS	Default
BLE_2M	Ant1	2402	3.90	2.45	≤30	PASS	Default
		2440	4.00	2.51	≤30	PASS	Default
		2480	3.75	2.37	≤30	PASS	Default
BLE_500K	Ant1	2402	3.85	2.43	≤30	PASS	Default
		2440	3.98	2.5	≤30	PASS	Default
		2480	3.70	2.34	≤30	PASS	Default

**TEST RESULT AVERAGE**

TestMode	Antenna	Frequency[MHz]	Average Power[dBm]	Average Power[mW]	Conducted Limit[dBm]	Power setting
BLE_125K	Ant1	2402	3.31	2.14	/	Default
		2440	3.40	2.19	/	Default
		2480	3.19	2.08	/	Default
BLE_1M	Ant1	2402	2.80	1.91	/	Default
		2440	2.98	1.99	/	Default
		2480	2.50	1.78	/	Default
BLE_2M	Ant1	2402	1.64	1.46	/	Default
		2440	1.66	1.47	/	Default
		2480	1.42	1.39	/	Default
BLE_500K	Ant1	2402	2.49	1.77	/	Default
		2440	2.59	1.82	/	Default
		2480	2.35	1.72	/	Default



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## MAXIMUM POWER SPECTRAL DENSITY

### TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_125K	Ant1	2402	-2.62	≤8.00	PASS
		2440	-3.38	≤8.00	PASS
		2480	-3.09	≤8.00	PASS
BLE_1M	Ant1	2402	-12.38	≤8.00	PASS
		2440	-13.11	≤8.00	PASS
		2480	-12.9	≤8.00	PASS
BLE_2M	Ant1	2402	-15.75	≤8.00	PASS
		2440	-16.42	≤8.00	PASS
		2480	-16.21	≤8.00	PASS
BLE_500K	Ant1	2402	-2.54	≤8.00	PASS
		2440	-3.3	≤8.00	PASS
		2480	-3.01	≤8.00	PASS



### TEST GRAPHS





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Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2402



BLE\_1M\_Ant1\_2440



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Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



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Test Report No.: W7L-P22070039RF02



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480



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BLE\_500K\_Ant1\_2402

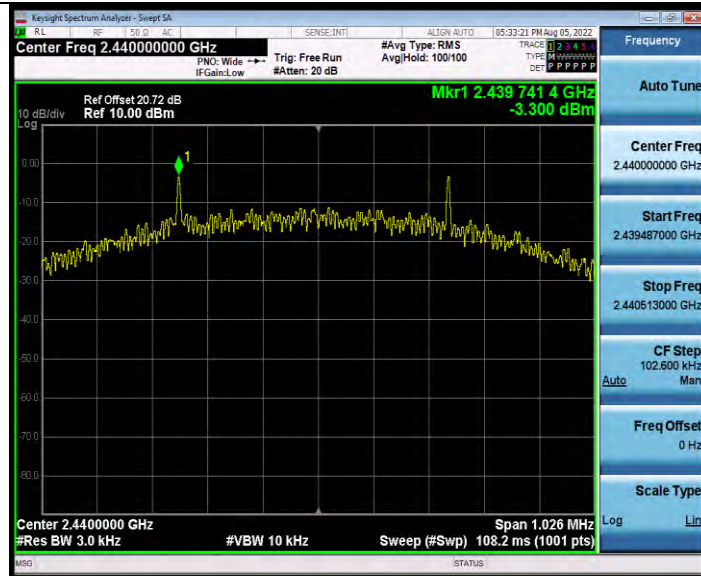


BLE\_500K\_Ant1\_2440



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Test Report No.: W7L-P22070039RF02



BLE\_500K\_Ant1\_2480





## REFERENCE LEVEL MEASUREMENT

### TEST RESULT

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
BLE_125K	Ant1	2402	2401.78	1.56
		2440	2439.76	2.32
		2480	2479.99	0.30
BLE_1M	Ant1	2402	2401.74	3.87
		2440	2439.74	3.01
		2480	2479.74	3.35
BLE_2M	Ant1	2402	2401.49	3.49
		2440	2439.50	2.65
		2480	2479.50	3.00
BLE_500K	Ant1	2402	2401.75	3.72
		2440	2439.74	3.05
		2480	2479.74	3.36





### TEST GRAPHS





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**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2402



BLE\_1M\_Ant1\_2440



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### Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



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Test Report No.: W7L-P22070039RF02



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480



BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



BLE\_500K\_Ant1\_2402



BLE\_500K\_Ant1\_2440



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**Test Report No.: W7L-P22070039RF02**



BLE\_500K\_Ant1\_2480





## BAND EDGE MEASUREMENTS

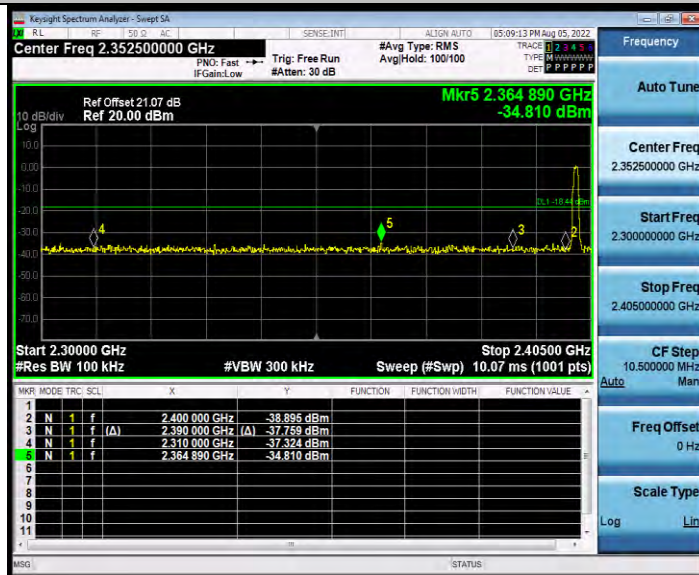
### TEST RESULT

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_125K	Ant1	Low	2402	1.56	-34.81	≤-18.44	PASS
		High	2480	0.30	-34.65	≤-19.7	PASS
BLE_1M	Ant1	Low	2402	3.87	-34.1	≤-16.13	PASS
		High	2480	3.35	-34.91	≤-16.65	PASS
BLE_2M	Ant1	Low	2402	3.49	-34.34	≤-16.51	PASS
		High	2480	3.00	-34.03	≤-17	PASS
BLE_500K	Ant1	Low	2402	3.72	-34.97	≤-16.28	PASS
		High	2480	3.36	-34.76	≤-16.64	PASS

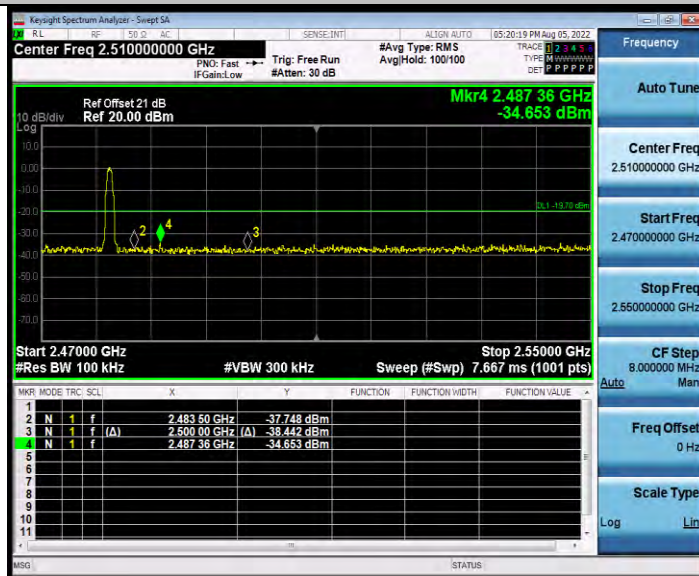


### TEST GRAPHS

BLE\_125K\_Ant1\_Low\_2402



BLE\_125K\_Ant1\_High\_2480



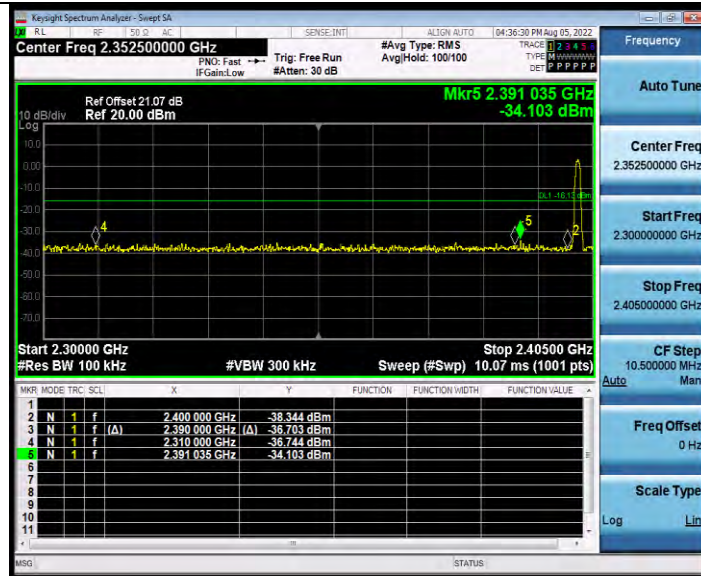
BLE\_1M\_Ant1\_Low\_2402



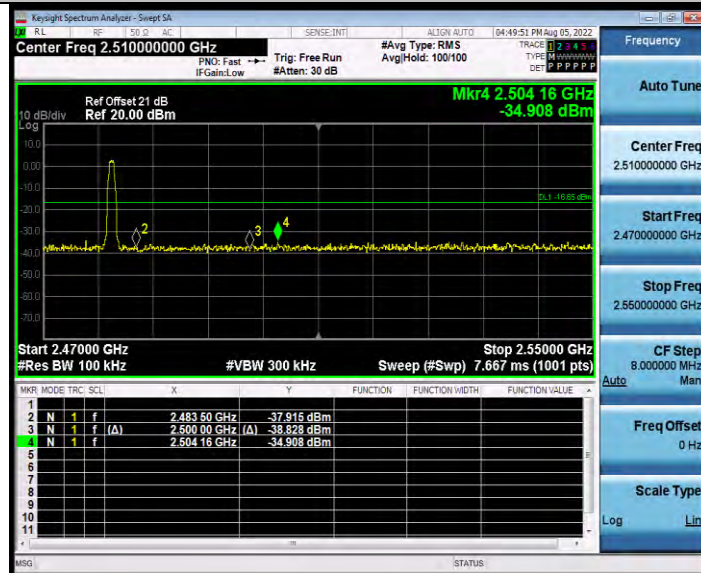


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### Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_High\_2480

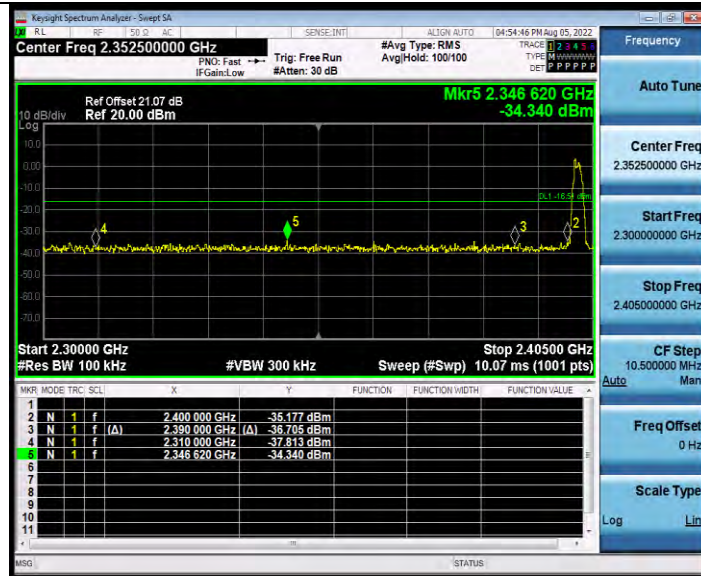


BLE\_2M\_Ant1\_Low\_2402

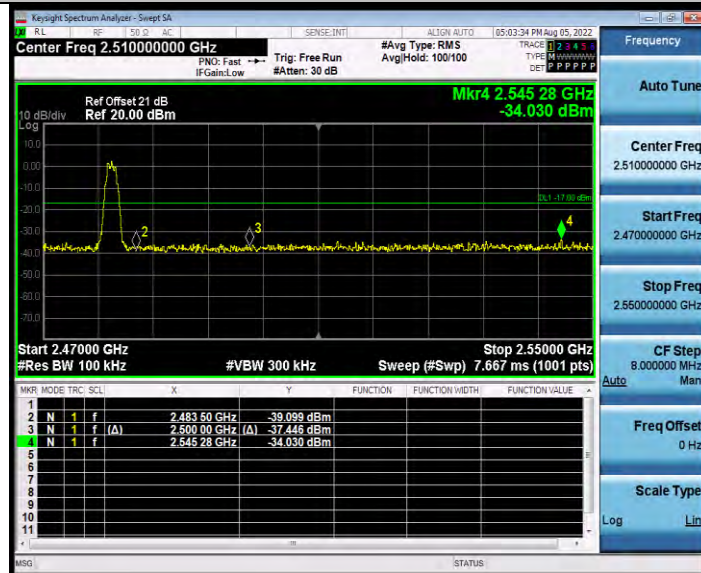


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**Test Report No.: W7L-P22070039RF02**



BLE\_2M\_Ant1\_High\_2480

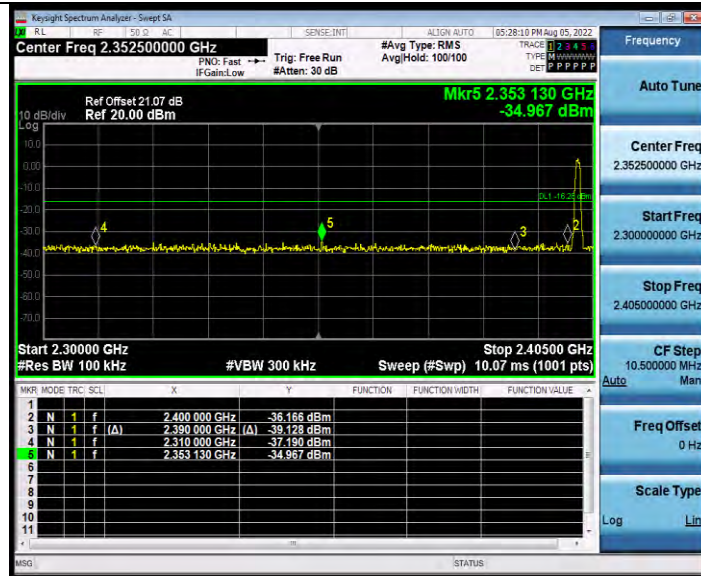


BLE\_500K\_Ant1\_Low\_2402

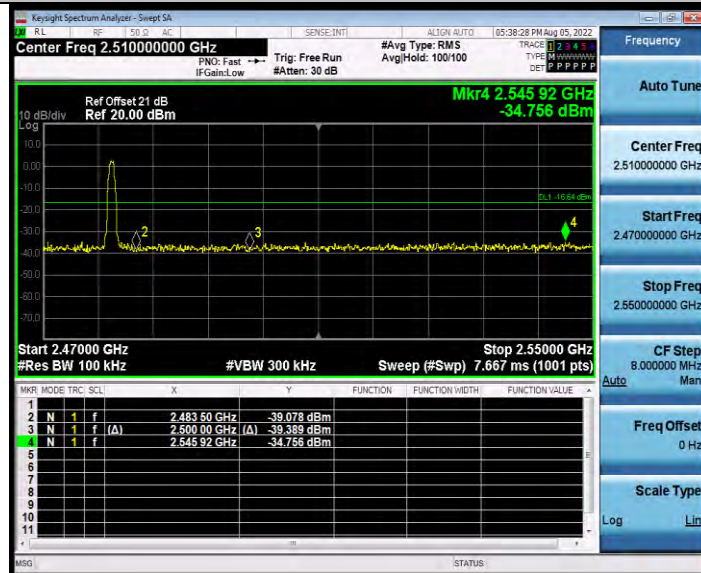


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### Test Report No.: W7L-P22070039RF02



BLE\_500K\_Ant1\_High\_2480



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Email: [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)



### CONDUCTED SPURIOUS EMISSION

### TEST RESULT

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_125K	Ant1	2402	30~1000	1.56	-42.83	≤-18.44	PASS
			1000~26500	1.56	-26.48	≤-18.44	PASS
		2440	30~1000	2.32	-44.25	≤-17.68	PASS
			1000~26500	2.32	-27.64	≤-17.68	PASS
		2480	30~1000	0.30	-43	≤-19.7	PASS
			1000~26500	0.30	-28.07	≤-19.7	PASS
BLE_1M	Ant1	2402	30~1000	3.87	-43.2	≤-16.13	PASS
			1000~26500	3.87	-28.03	≤-16.13	PASS
		2440	30~1000	3.01	-44.27	≤-16.99	PASS
			1000~26500	3.01	-28.27	≤-16.99	PASS
		2480	30~1000	3.35	-43.38	≤-16.65	PASS
			1000~26500	3.35	-28.04	≤-16.65	PASS
BLE_2M	Ant1	2402	30~1000	3.49	-44.23	≤-16.51	PASS
			1000~26500	3.49	-27.65	≤-16.51	PASS
		2440	30~1000	2.65	-44.54	≤-17.35	PASS
			1000~26500	2.65	-28.16	≤-17.35	PASS
		2480	30~1000	3.00	-43.77	≤-17	PASS
			1000~26500	3.00	-27.96	≤-17	PASS
BLE_500K	Ant1	2402	30~1000	3.72	-42.86	≤-16.28	PASS
			1000~26500	3.72	-27.64	≤-16.28	PASS
		2440	30~1000	3.05	-43.58	≤-16.95	PASS
			1000~26500	3.05	-28.22	≤-16.95	PASS
		2480	30~1000	3.36	-43.68	≤-16.64	PASS
			1000~26500	3.36	-28.44	≤-16.64	PASS

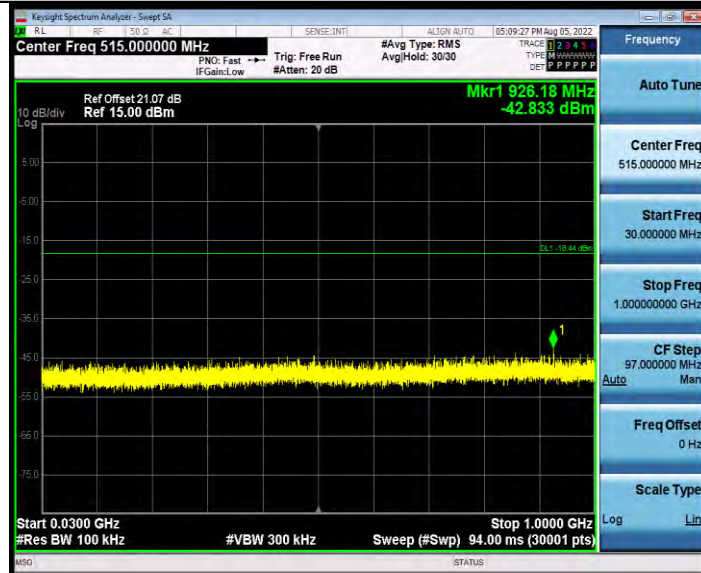


BUREAU VERITAS

Test Report No.: W7L-P22070039RF02

### TEST GRAPHS

BLE\_125K\_Ant1\_2402\_30~1000



BLE\_125K\_Ant1\_2402\_1000~26500

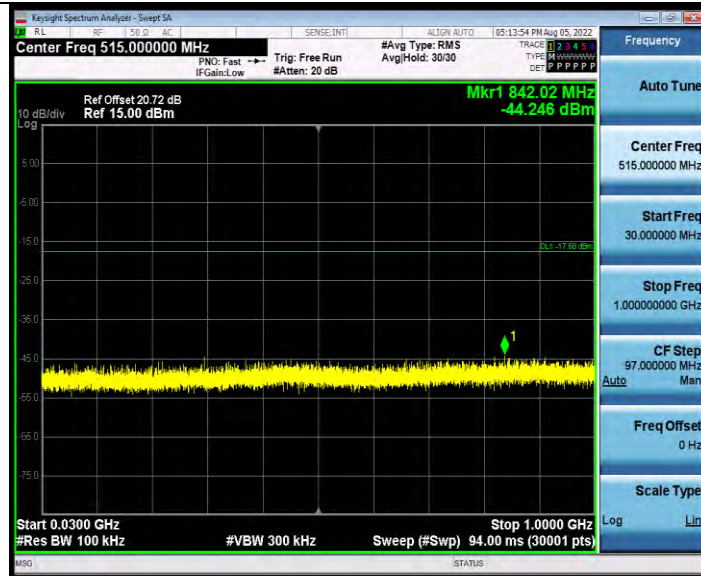


BLE\_125K\_Ant1\_2440\_30~1000



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VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_125K\_Ant1\_2440\_1000~26500



BLE\_125K\_Ant1\_2480\_30~1000

BV 7Layers Communications Technology  
(Shenzhen) Co., Ltd

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**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_125K\_Ant1\_2480\_1000~26500

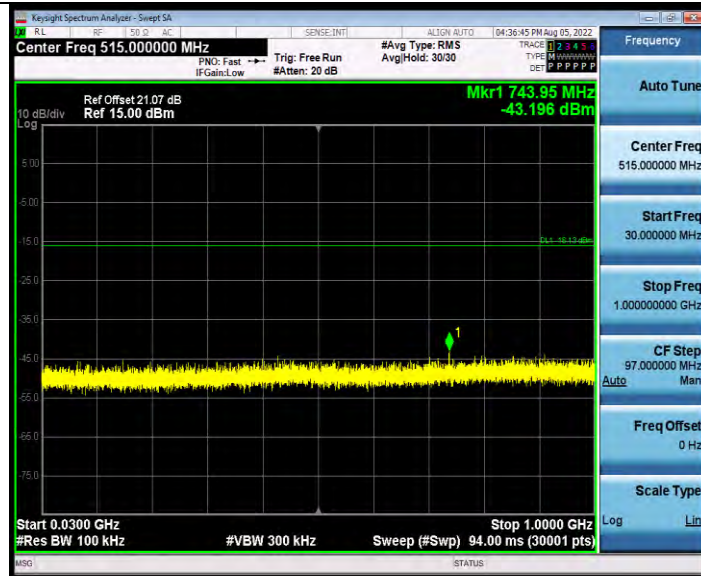


BLE\_1M\_Ant1\_2402\_30~1000



**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2402\_1000~26500



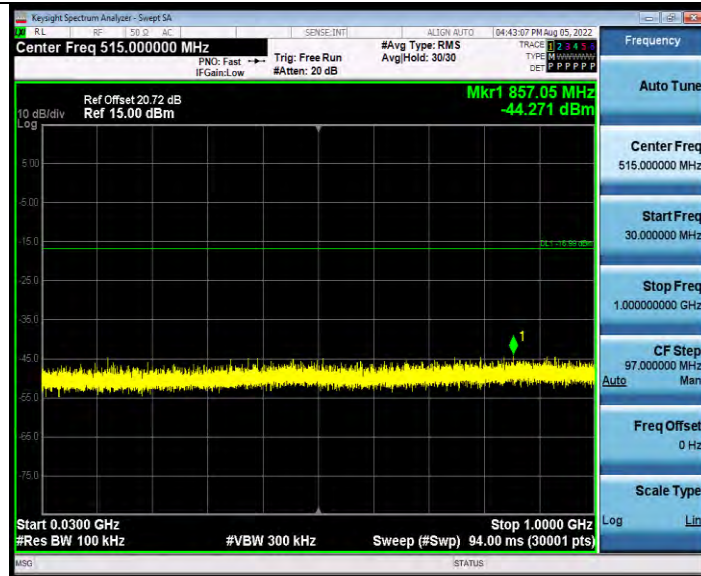
BLE\_1M\_Ant1\_2440\_30~1000





**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2440\_1000~26500

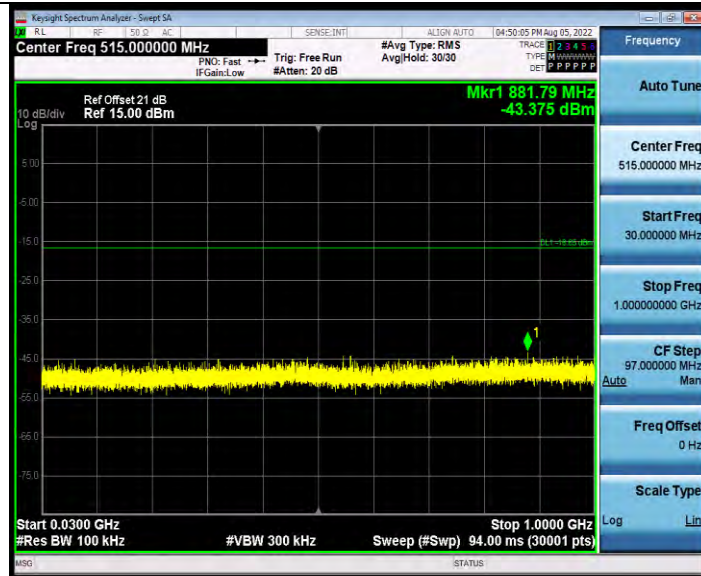


BLE\_1M\_Ant1\_2480\_30~1000



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VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_1M\_Ant1\_2480\_1000~26500

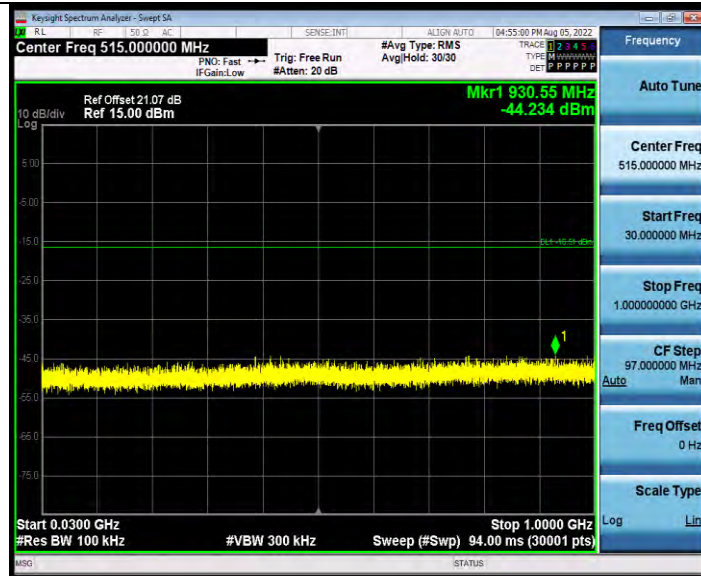


BLE\_2M\_Ant1\_2402\_30~1000



**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_2M\_Ant1\_2402\_1000~26500

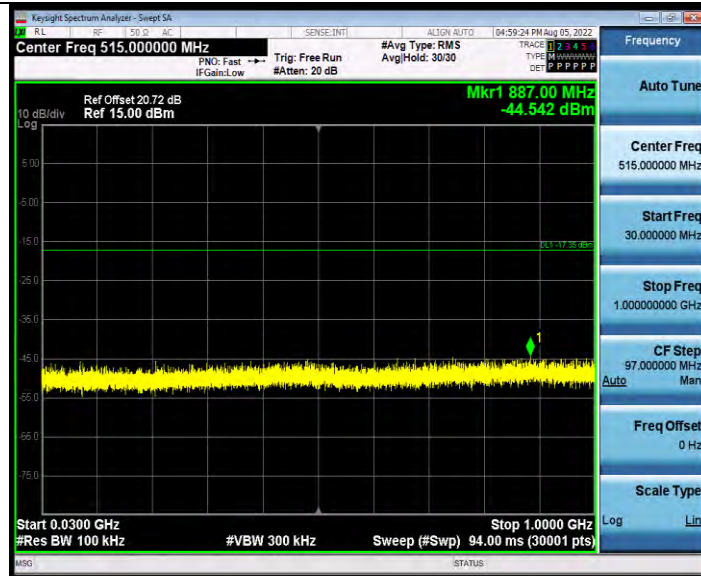


BLE\_2M\_Ant1\_2440\_30~1000



**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_2M\_Ant1\_2440\_1000~26500

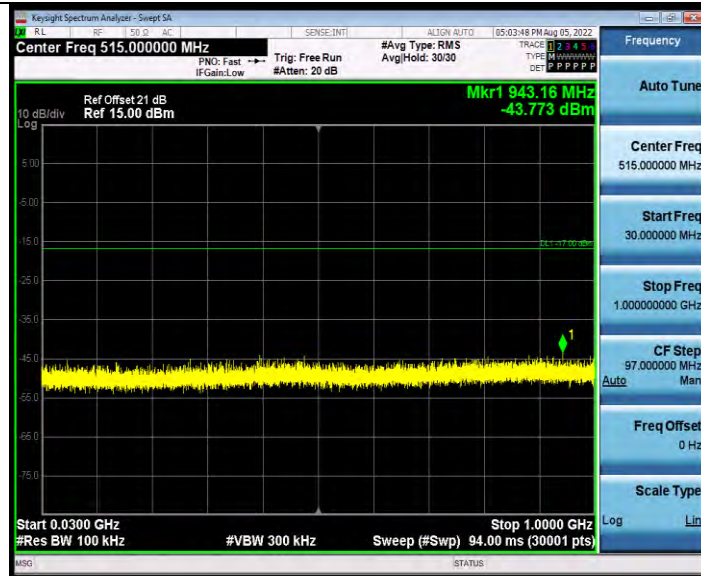


BLE\_2M\_Ant1\_2480\_30~1000



**BUREAU  
VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_2M\_Ant1\_2480\_1000~26500



BLE\_500K\_Ant1\_2402\_30~1000

BV 7Layers Communications Technology  
(Shenzhen) Co., Ltd

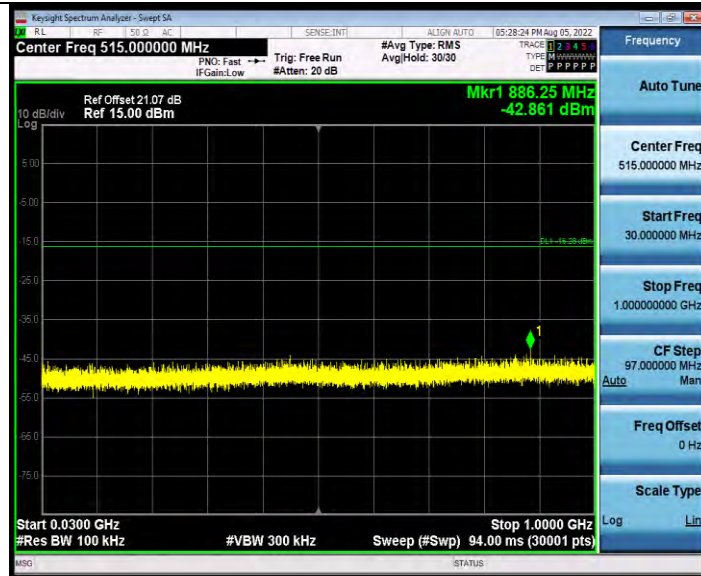
No.B102, Dazu Chuangxin Mansion, North of Beihuan  
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BLE\_500K\_Ant1\_2402\_1000~26500



BLE\_500K\_Ant1\_2440\_30~1000

BV 7Layers Communications Technology  
(Shenzhen) Co., Ltd

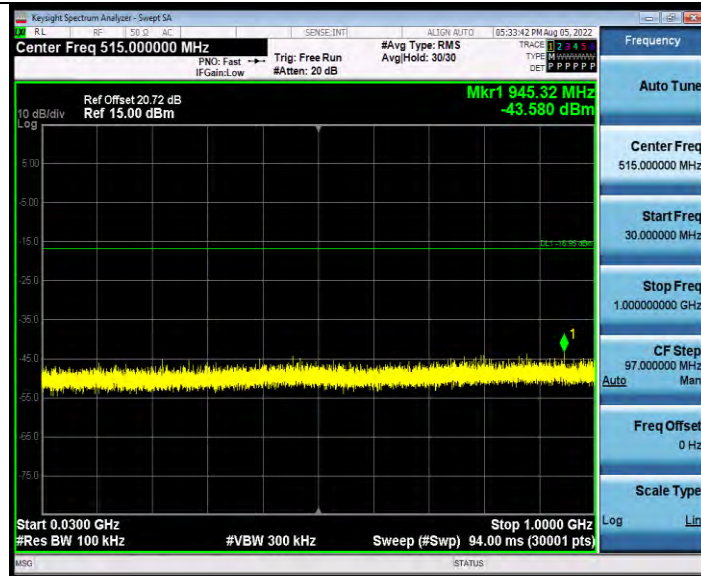
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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**Test Report No.: W7L-P22070039RF02**



BLE\_500K\_Ant1\_2440\_1000~26500



BLE\_500K\_Ant1\_2480\_30~1000

BV 7Layers Communications Technology  
(Shenzhen) Co., Ltd

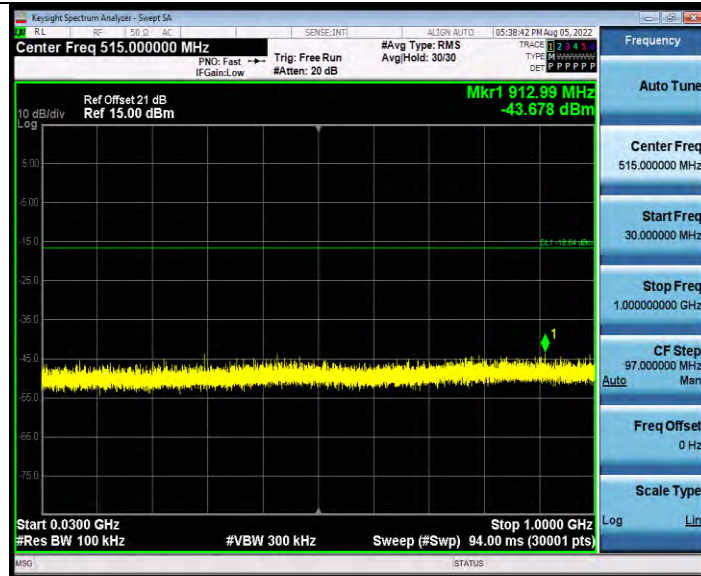
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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VERITAS**

**Test Report No.: W7L-P22070039RF02**



BLE\_500K\_Ant1\_2480\_1000~26500







## DUTY CYCLE TEST RESULT

TestMode	Antenna	Frequency[MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]
BLE_125K	Ant1	2402	13.05	13.75	94.91
		2440	13.05	13.75	94.91
		2480	13.05	13.75	94.91
BLE_1M	Ant1	2402	1.64	1.88	87.23
		2440	1.64	1.88	87.23
		2480	1.64	1.88	87.23
BLE_2M	Ant1	2402	0.82	1.25	65.60
		2440	0.82	1.25	65.60
		2480	0.82	1.25	65.60
BLE_500K	Ant1	2402	3.56	4.38	81.28
		2440	3.56	4.38	81.28
		2480	3.56	4.38	81.28

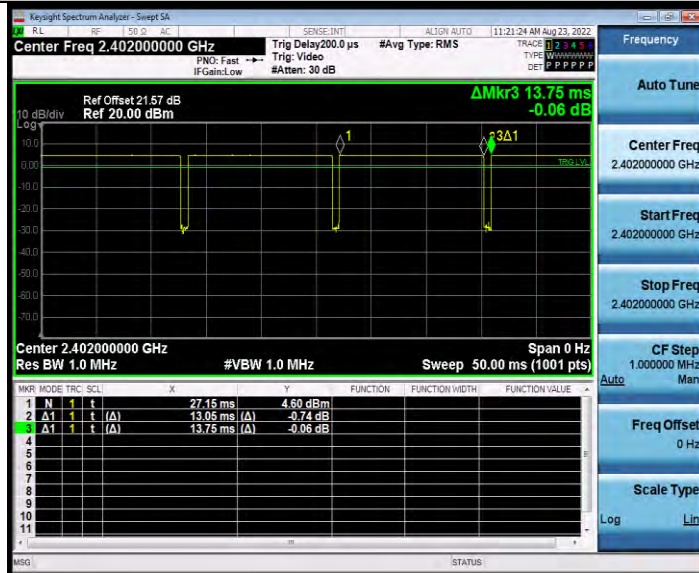


BUREAU VERITAS

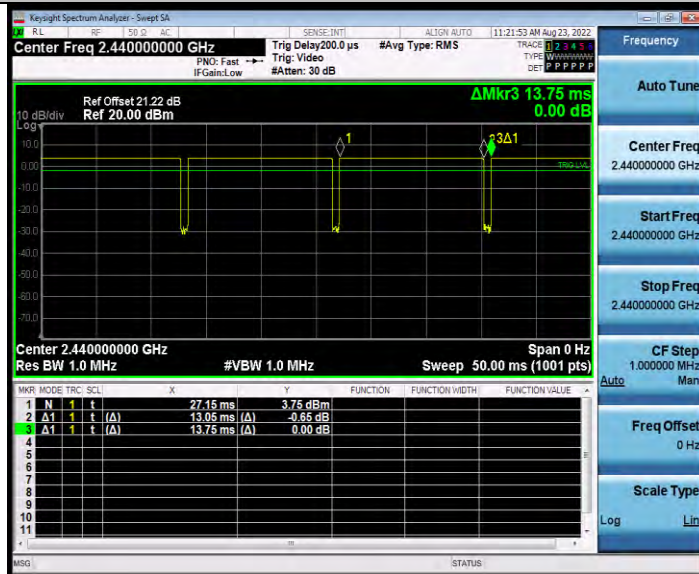
Test Report No.: W7L-P22070039RF02

### TEST GRAPHS

BLE\_125K\_Ant1\_2402



BLE\_125K\_Ant1\_2440

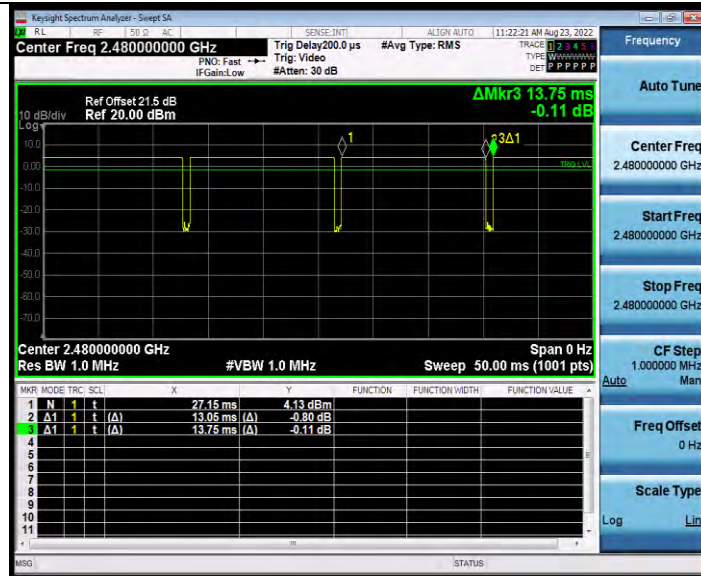


BLE\_125K\_Ant1\_2480



BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2402

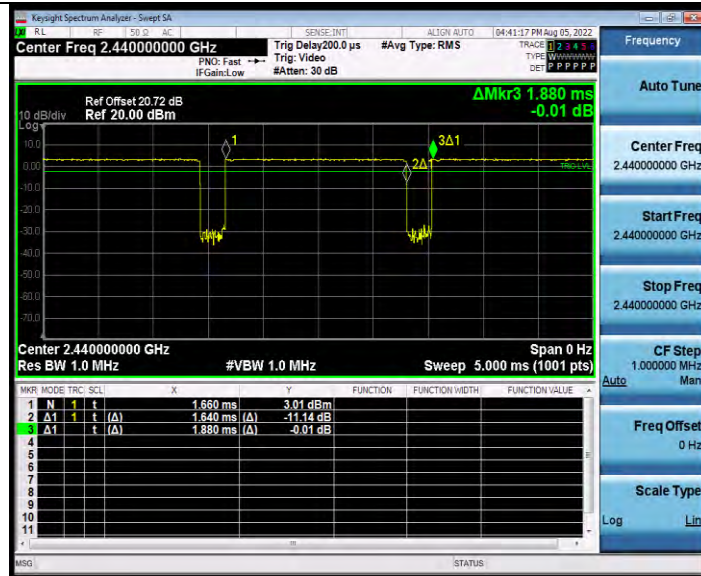


BLE\_1M\_Ant1\_2440



BUREAU VERITAS

# Test Report No.: W7L-P22070039RF02



BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402

BV 7Layers Communications Technology (Shenzhen) Co., Ltd

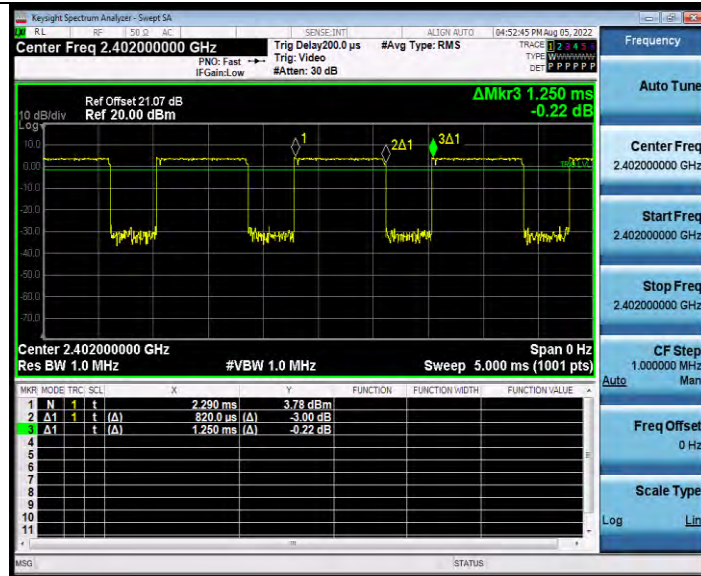
No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

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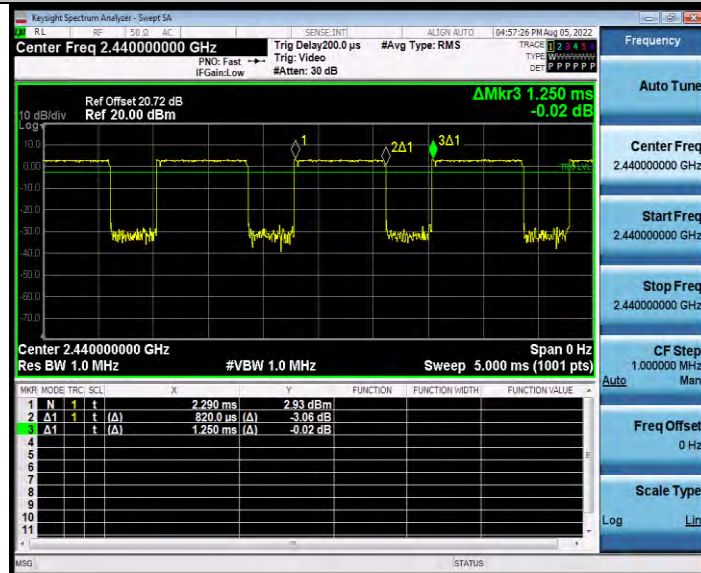


BUREAU VERITAS

Test Report No.: W7L-P22070039RF02



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480