

Appendix A

RF Test Data for BT V4.1 (BT LE) (Conducted Measurement)

Product Name: Car Dash Camera

Trade Mark: VIOFO

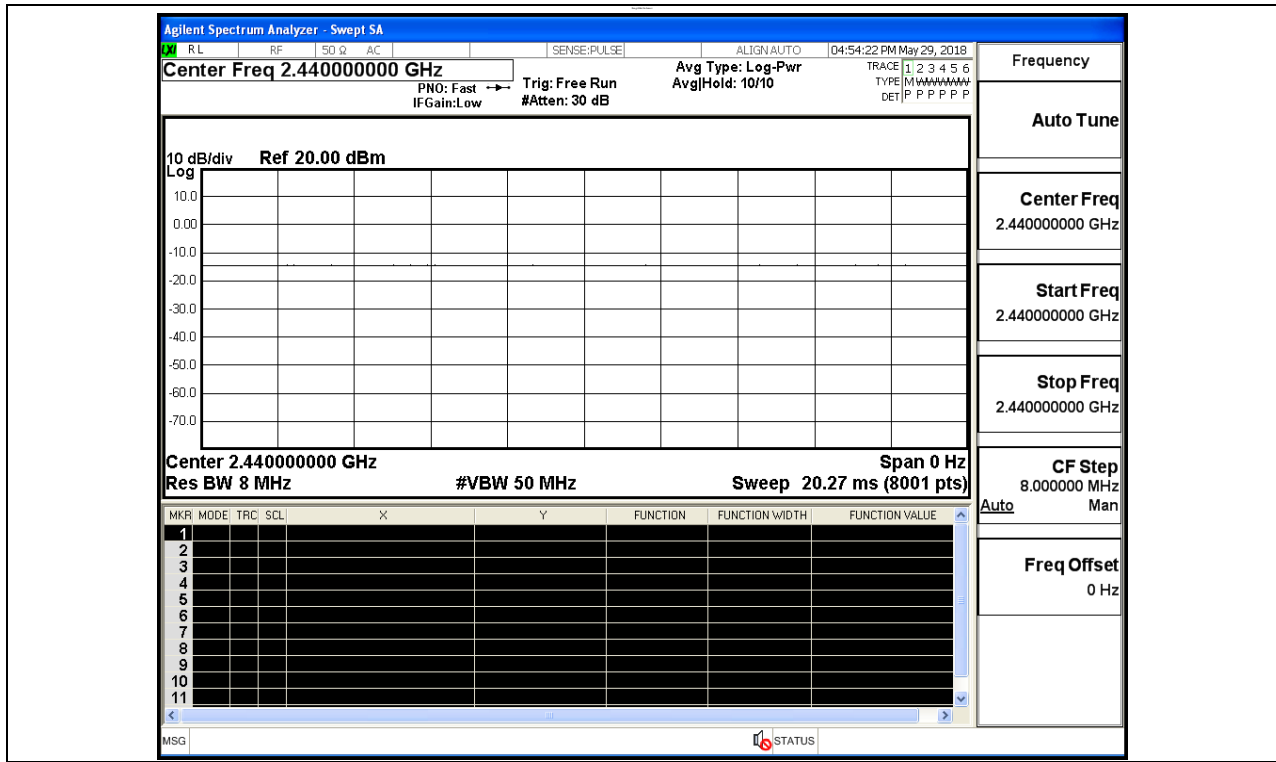
Test Model: A129

Environmental Conditions

Temperature:	22.2 °C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Ryan.Hu
Supervised by:	Jayden.Zhuo

A.1 Duty Cycle

Test Mode	Test Channel	Ant	Duty Cycle[%]	Verdict
BT LE	2440	Ant1	100	PASS



A.2 Maximum Conducted Peak Output Power

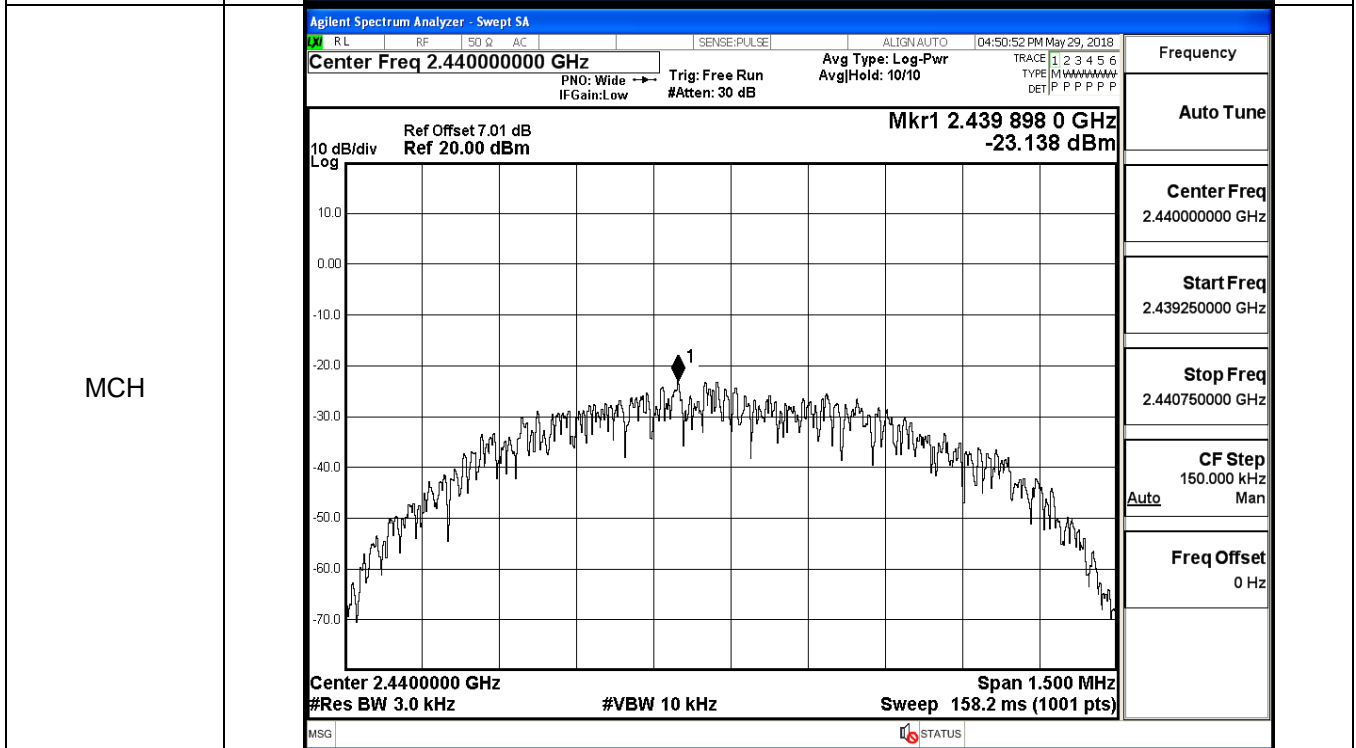
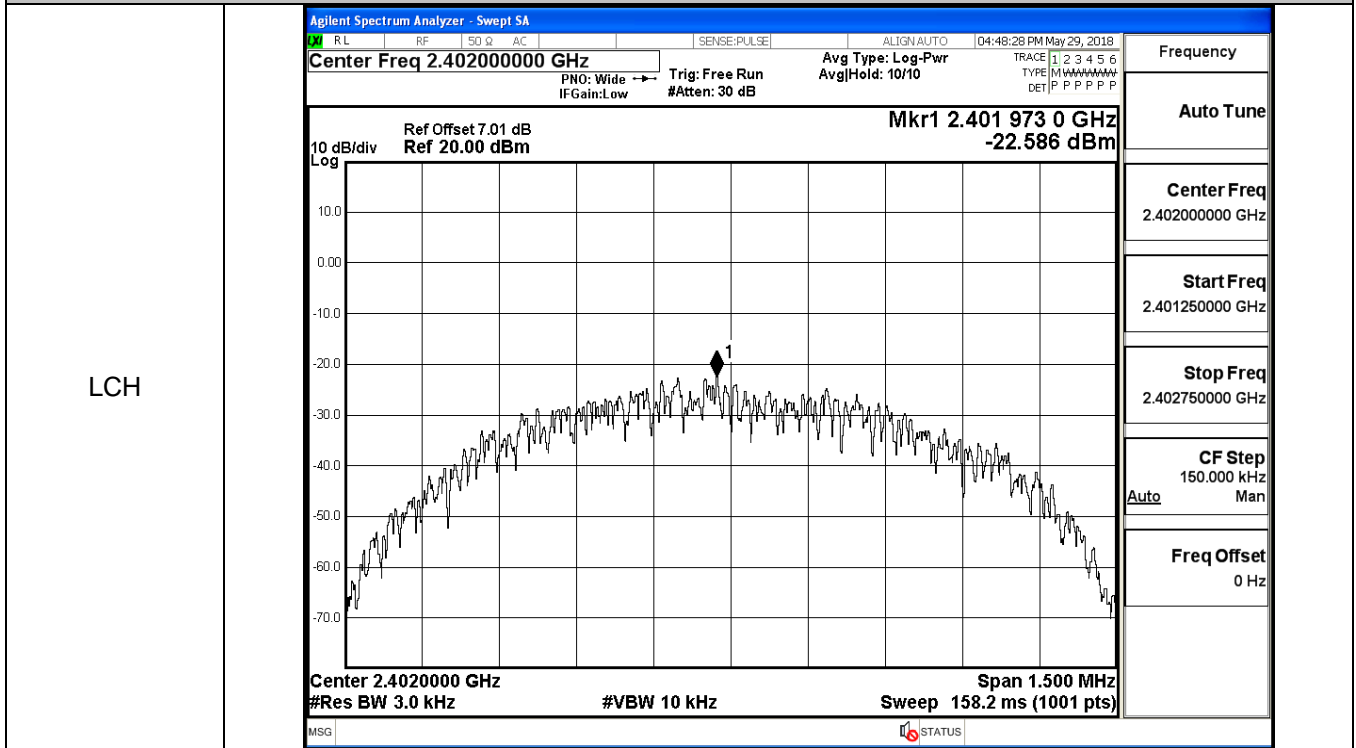
Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	-7.066	30	PASS
BT LE	MCH	-7.553	30	PASS
BT LE	HCH	-7.896	30	PASS

Test Graphs	
LCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.40200000 GHz Mkr1 2.401719875 GHz -7.066 dBm Ref Offset 7.01 dB, Ref 20.00 dBm 10 dB/div, Log Center 2.402000 GHz, #Res BW 1.0 MHz, #VBW 3.0 MHz, Sweep 1.067 ms (8001 pts)</p>
MCH	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.44000000 GHz Mkr1 2.439761500 GHz -7.553 dBm Ref Offset 7.01 dB, Ref 20.00 dBm 10 dB/div, Log Center 2.440000 GHz, #Res BW 1.0 MHz, #VBW 3.0 MHz, Sweep 1.067 ms (8001 pts)</p>

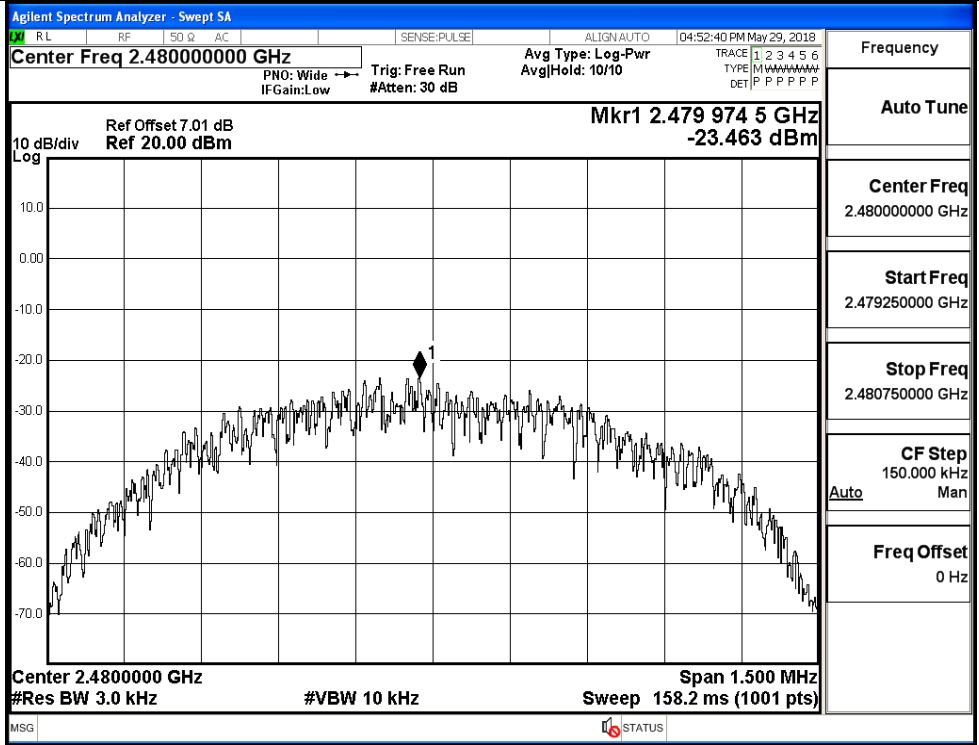
A.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-22.586	8	PASS
BT LE	MCH	-23.138	8	PASS
BT LE	HCH	-23.463	8	PASS

Test Graphs



HCH



A.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.7039	≥0.5	PASS
BT LE	MCH	0.7061	≥0.5	PASS
BT LE	HCH	0.7107	≥0.5	PASS

Test Graphs																	
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 04:48:04 PM May 29, 2018</p> <p style="margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None Trig: Free Run AvgHold: 1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">10 dB/div Log</div> <div style="text-align: right;">Mkr1 2.4022408 GHz -7.9860 dBm</div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.402 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">-0.82 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;">1.0611 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-1.063 kHz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>703.9 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	-0.82 dBm		1.0611 MHz				Transmit Freq Error	-1.063 kHz	OBW Power	99.00 %	x dB Bandwidth	703.9 kHz	x dB	-6.00 dB
Occupied Bandwidth	Total Power	-0.82 dBm															
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MCH	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: small; margin: 0;">RL RF 50 Ω AC SENSE:PULSE ALIGN:AUTO 04:50:29 PM May 29, 2018</p> <p style="margin: 0;">Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None Trig: Free Run AvgHold: >1/1 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="display: flex; justify-content: space-between;"> <div style="font-size: x-small;">10 dB/div Log</div> <div style="text-align: right;">Mkr1 2.4402411 GHz -8.4723 dBm</div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small;"> <div>Center 2.44 GHz #Res BW 100 kHz</div> <div>#VBW 300 kHz</div> <div>Span 3 MHz Sweep 1.067 ms</div> </div> <table style="width: 100%; font-size: x-small; margin-top: 5px;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td colspan="2">-1.34 dBm</td> </tr> <tr> <td colspan="4" style="text-align: center;">1.0624 MHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>-792 Hz</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>706.1 kHz</td> <td>x dB</td> <td>-6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin-top: 5px;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	-1.34 dBm		1.0624 MHz				Transmit Freq Error	-792 Hz	OBW Power	99.00 %	x dB Bandwidth	706.1 kHz	x dB	-6.00 dB
Occupied Bandwidth	Total Power	-1.34 dBm															
1.0624 MHz																	
Transmit Freq Error	-792 Hz	OBW Power	99.00 %														
x dB Bandwidth	706.1 kHz	x dB	-6.00 dB														

HCH

Agilent Spectrum Analyzer - Occupied BW

RL	RF	50 Ω	AC	SENSE:PULSE	ALIGN:AUTO	04:52:16 PM May 29, 2018
Center Freq 2.480000000 GHz			Center Freq: 2.480000000 GHz		Radio Std: None	
			Trig: Free Run		AvgHold: 1/1	
#IFGain:Low			#Atten: 30 dB		Radio Device: BTS	

Mkr1 2.4802415 GHz
-8.8344 dBm

Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Span 3 MHz
Sweep 1.067 ms

Occupied Bandwidth	Total Power	-1.67 dBm
1.0611 MHz		
Transmit Freq Error	-868 Hz	OBW Power
x dB Bandwidth	710.7 kHz	x dB
		99.00 %
		-6.00 dB

Frequency

Center Freq
2.480000000 GHz

CF Step
300.000 kHz
Auto Man

Freq Offset
0 Hz

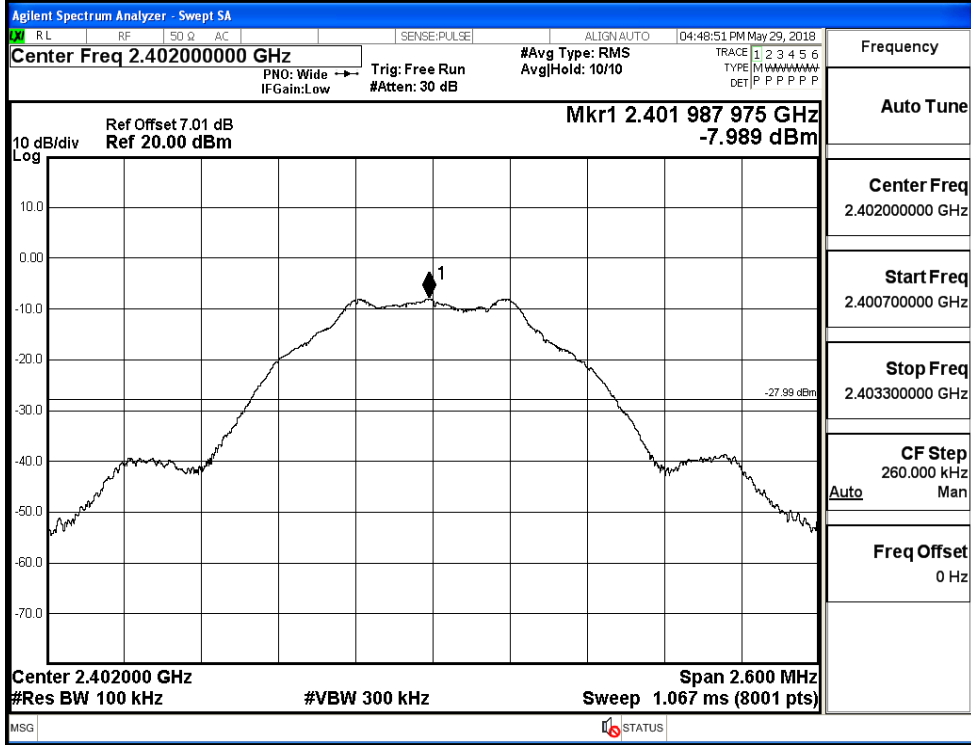
MSG
STATUS

A.5 RF Conducted Spurious Emissions

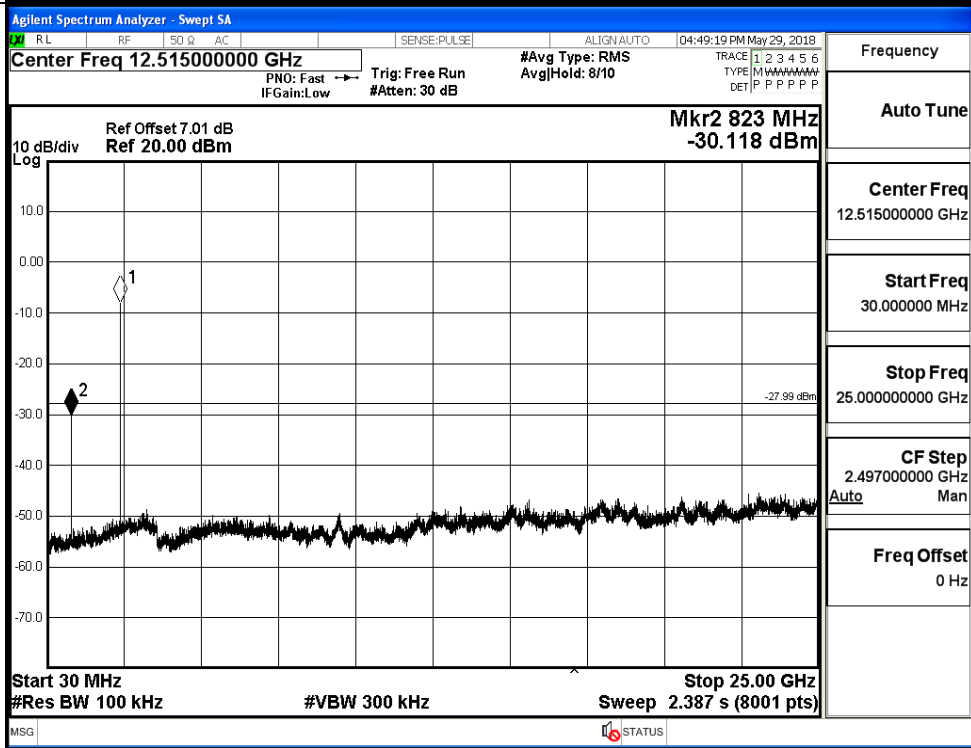
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-7.989	-30.118	-27.989	PASS
BT LE	MCH	-8.461	-33.051	-28.461	PASS
BT LE	HCH	-8.851	-29.964	-28.851	PASS

BT LE_LCH_Graphs

Pref/BT LE/LCH

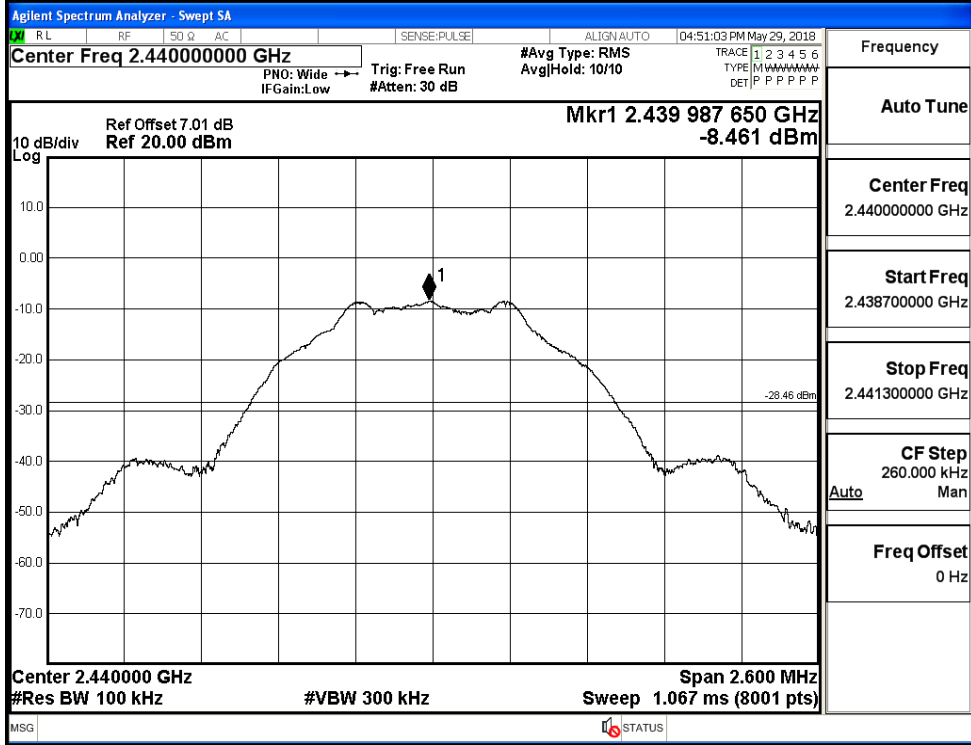


Puw/BT LE/LCH

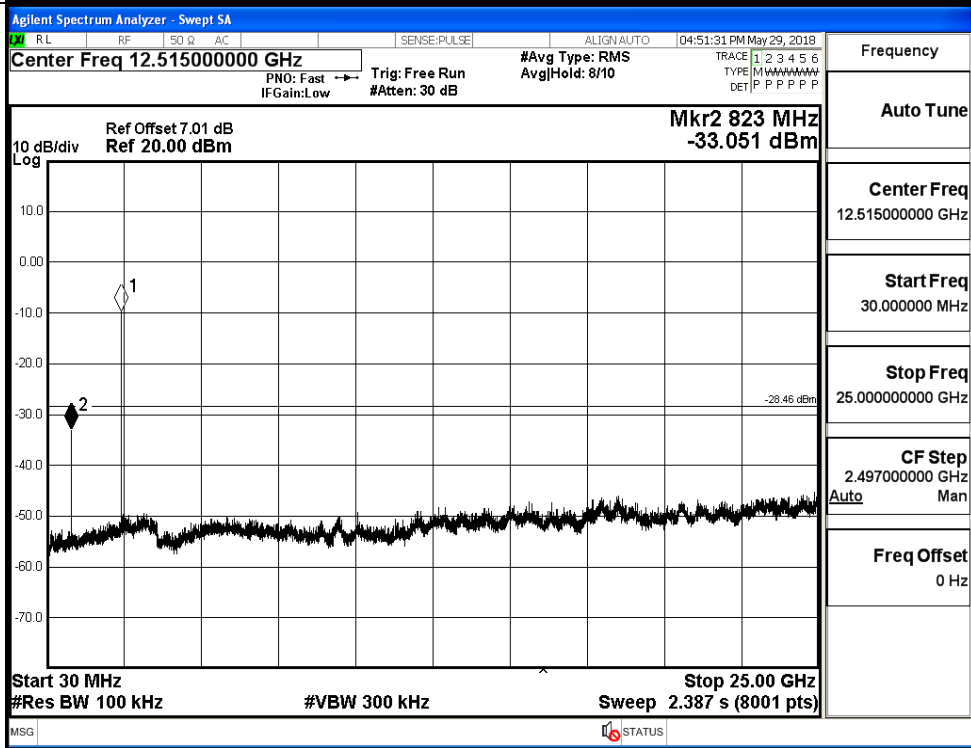


BT LE_MCH_Graphs

Pref/BT LE/MCH

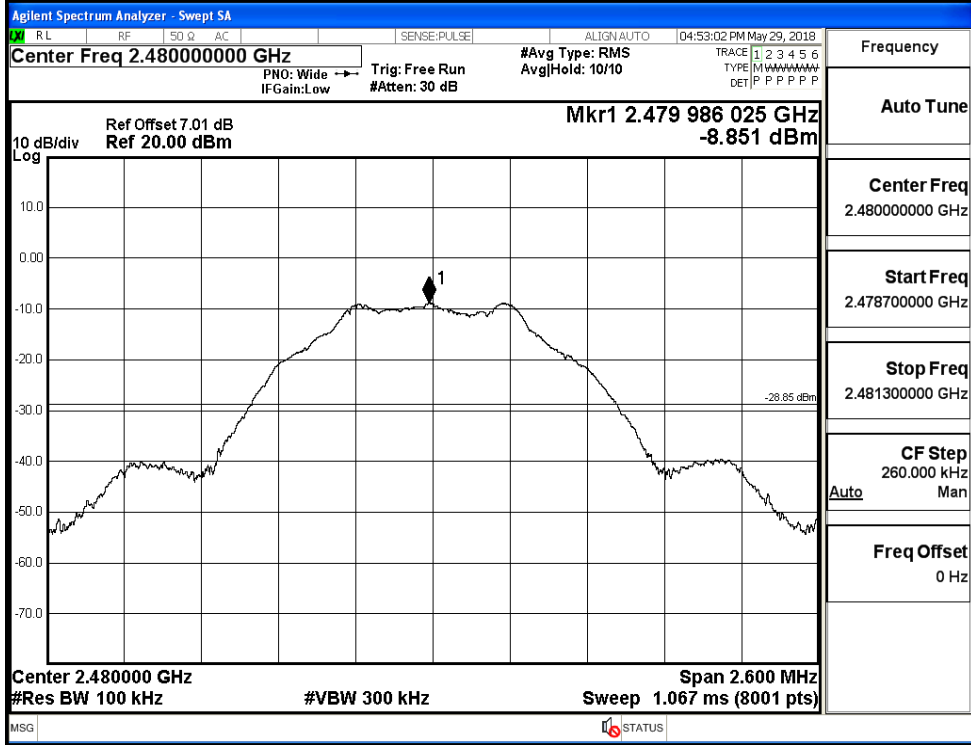


Puw/BT LE/MCH

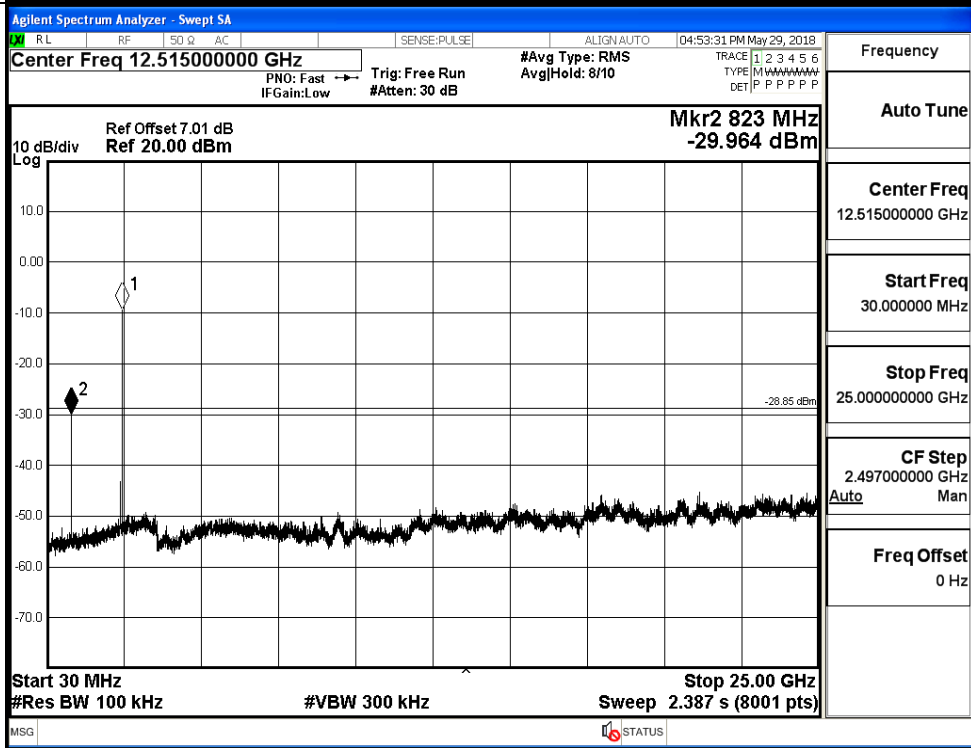


BT LE_HCH_Graphs

Pref/BT LE/HCH



Puw/BT LE/HCH



A.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	-7.788	-51.468	-27.79	PASS
BT LE	HCH	-8.650	-49.768	-28.65	PASS

Test Graphs

LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.35700000 GHz
 Ref Offset 7.01 dB, Ref 20.00 dBm
 Mkr4 2.323 548 GHz, -51.468 dBm
 Start 2.31000 GHz, Stop 2.40400 GHz
 #Res BW 100 kHz, #VBW 300 kHz, Sweep 9.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.402 249 GHz	-7.788 dBm			
2	N	f		2.400 000 GHz	-54.714 dBm			
3	N	f		2.390 000 GHz	-53.492 dBm			
4	N	f		2.323 548 GHz	-51.468 dBm			

Frequency

Auto Tune

Center Freq
2.35700000 GHz

Start Freq
2.31000000 GHz

Stop Freq
2.40400000 GHz

CF Step
9.400000 MHz

Freq Offset
0 Hz

HCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.48900000 GHz
 Ref Offset 7.01 dB, Ref 20.00 dBm
 Mkr4 2.495 545 00 GHz, -49.768 dBm
 Start 2.47800 GHz, Stop 2.50000 GHz
 #Res BW 100 kHz, #VBW 300 kHz, Sweep 2.133 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	f		2.479 760 00 GHz	-8.650 dBm			
2	N	f		2.483 500 00 GHz	-55.572 dBm			
3	N	f		2.500 000 00 GHz	-54.556 dBm			
4	N	f		2.495 545 00 GHz	-49.768 dBm			

Frequency

Auto Tune

Center Freq
2.48900000 GHz

Start Freq
2.47800000 GHz

Stop Freq
2.50000000 GHz

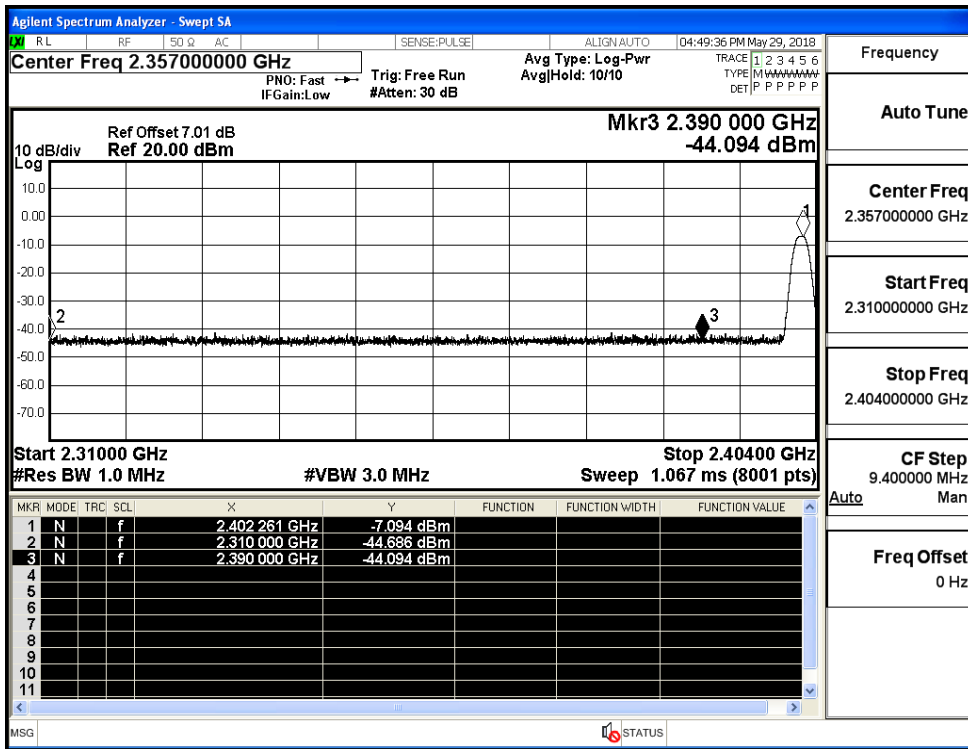
CF Step
2.200000 MHz

Freq Offset
0 Hz

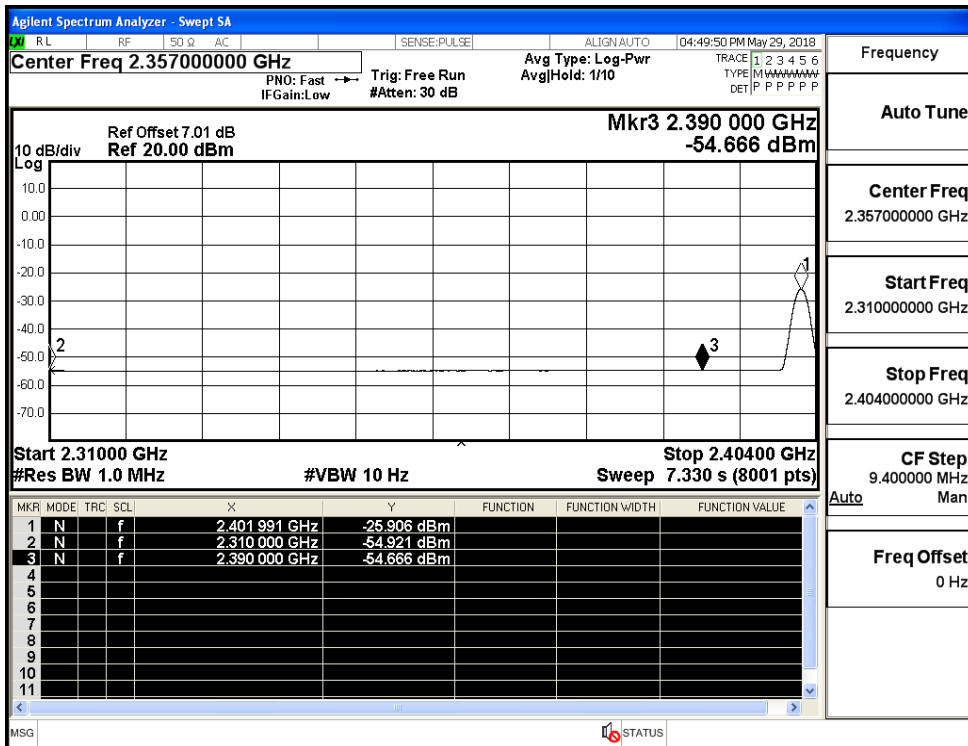
A.7 Restrict-band band-edge measurements

Test Mode	Test Channel	Ant	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdi
BT LE	2402	Ant1	2310.0	-44.69	5.0	0	55.54	PEAK	74	PASS
		Ant1	2310.0	-54.92	5.0	0	45.31	AV	54	PASS
		Ant1	2390.0	-44.09	5.0	0	56.14	PEAK	74	PASS
		Ant1	2390.0	-54.67	5.0	0	45.56	AV	54	PASS
	2480	Ant1	2483.5	-42.15	5.0	0	58.08	PEAK	74	PASS
		Ant1	2483.5	-54.45	5.0	0	45.78	AV	54	PASS
		Ant1	2500.0	-43.34	5.0	0	56.89	PEAK	74	PASS
		Ant1	2500.0	-54.28	5.0	0	45.95	AV	54	PASS

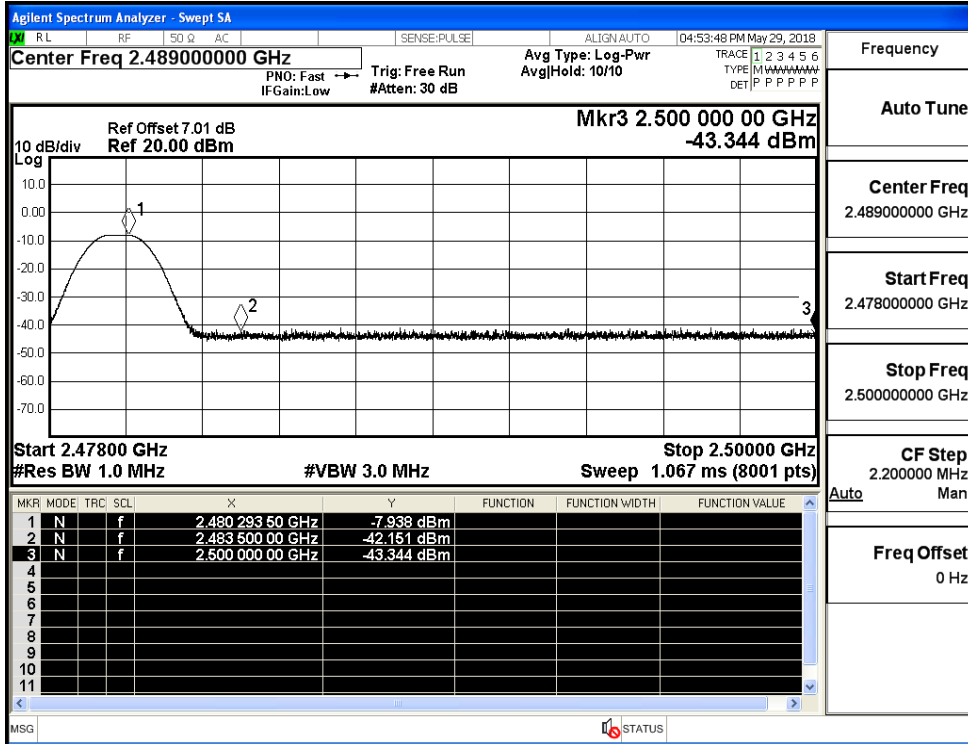
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



Restrict-band band-edge measurements_BT LE_2402_Ant1_AV



Restrict-band band-edge measurements_BT LE_2480_Ant1_PEAK



Restrict-band band-edge measurements_BT LE_2480_Ant1_AV

