

Appendix B

RF Test Data for BT V4.0 (Conducted Measurement)

Product Name: HyTabPlus

Trade Mark: HYUNDAI

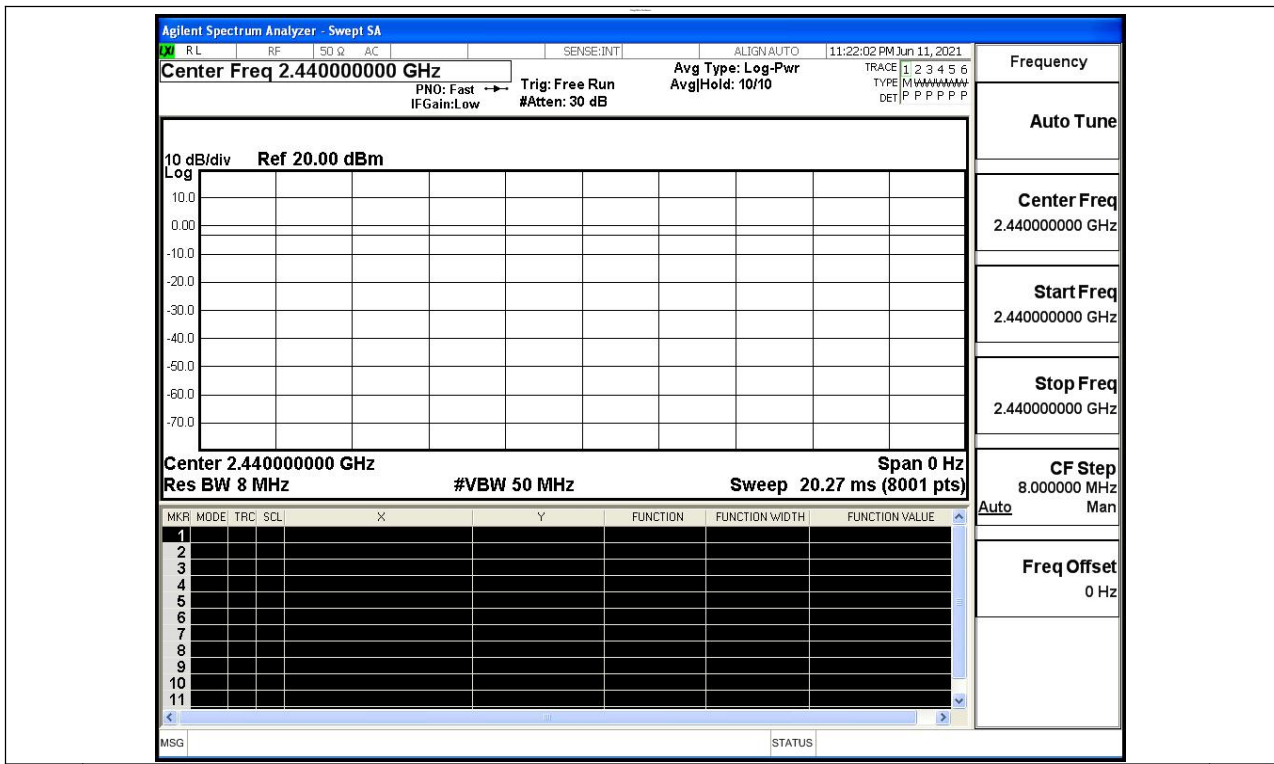
Test Model: HT10LB3MBKLTM

Environmental Conditions

Temperature:	21.6° C
Relative Humidity:	52.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

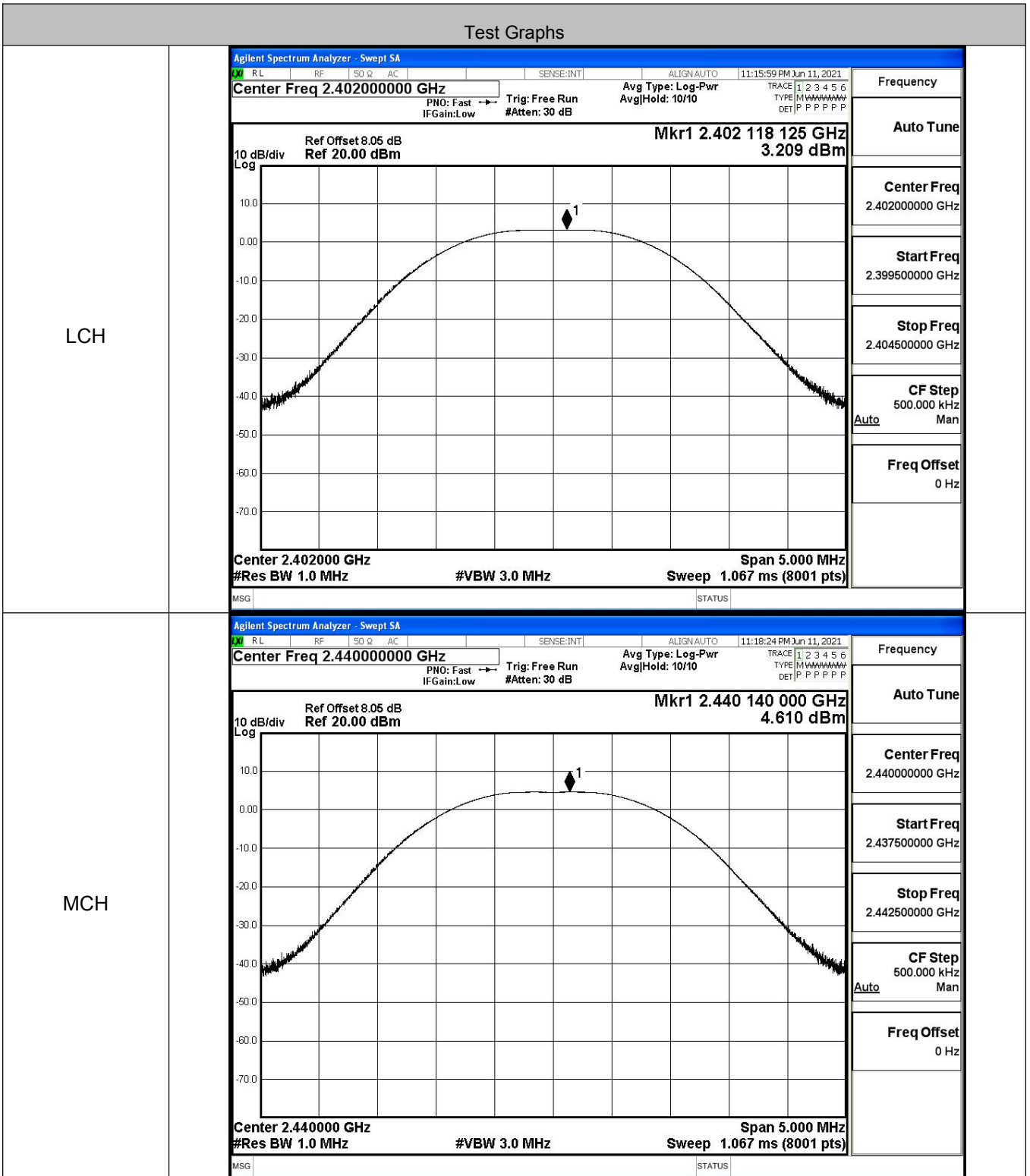
B.1 Duty Cycle

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

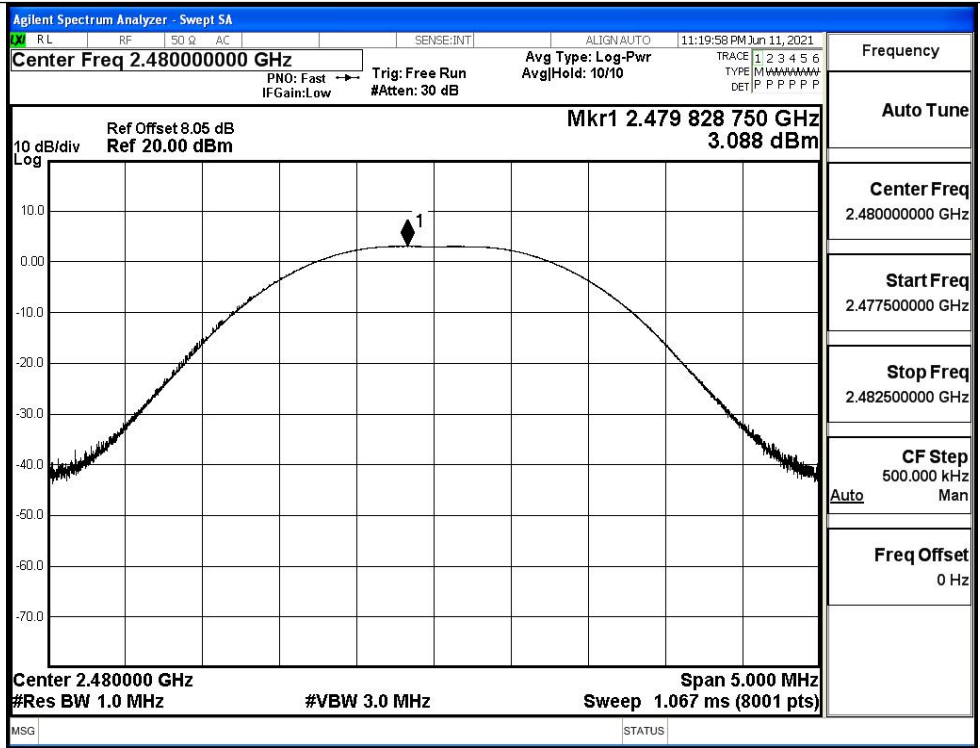


B.2 Maximum Conducted Peak Output Power

Mode	Channel	Conduct Peak Power[dBm]	Limit [dBm]	Verdict
BT LE	LCH	3.209	30	PASS
BT LE	MCH	4.610	30	PASS
BT LE	HCH	3.088	30	PASS



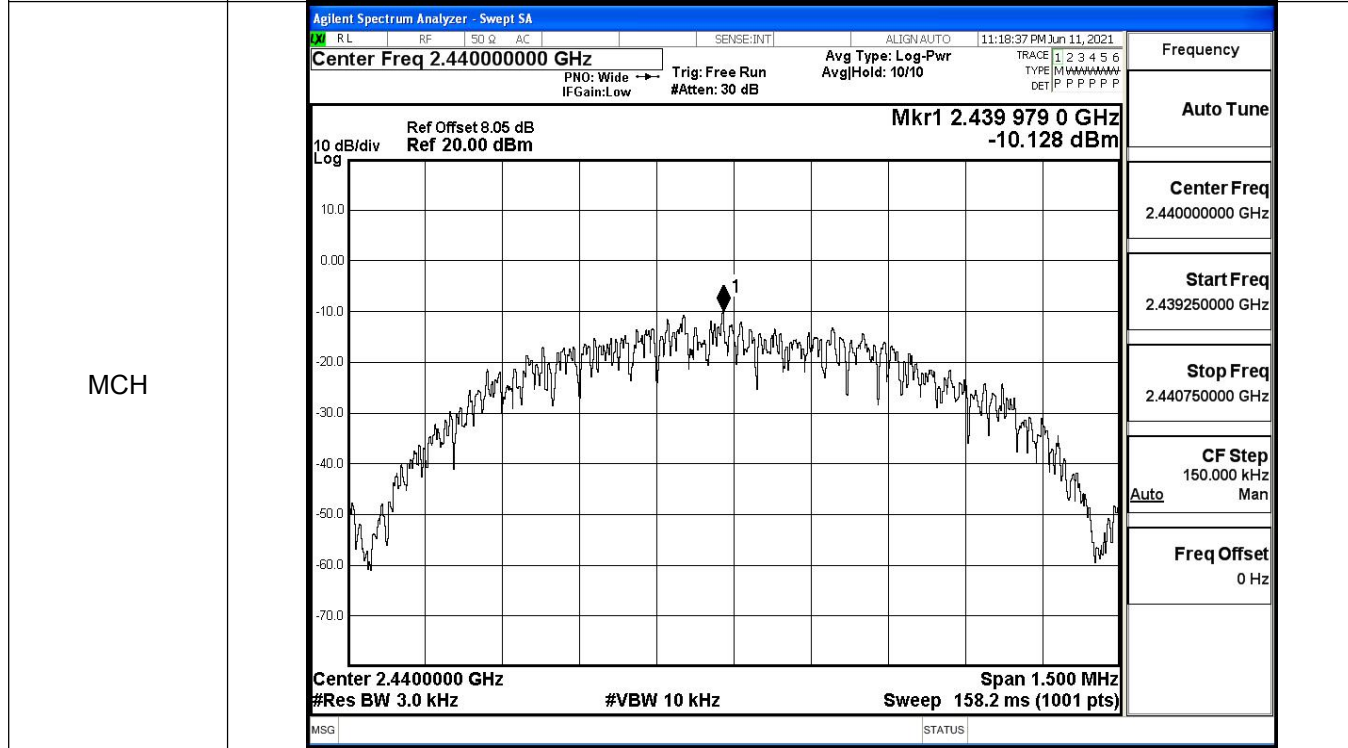
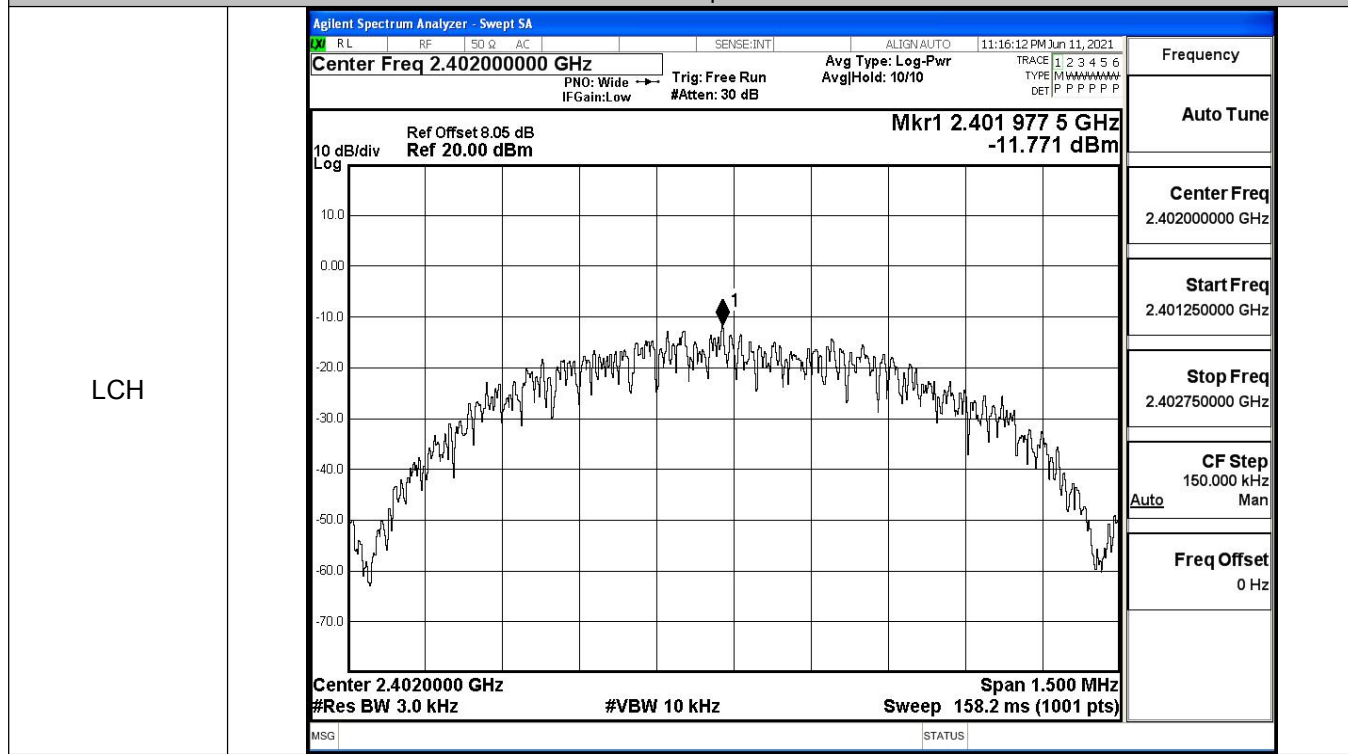
HCH



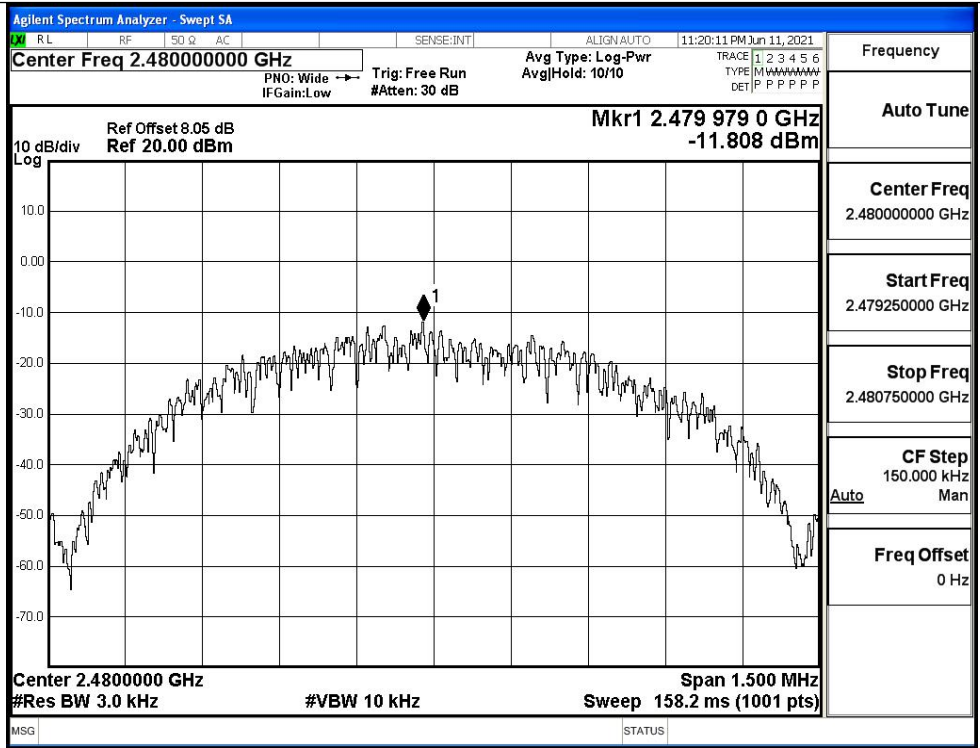
B.3 Maximum Power Spectral Density

Mode	Channel	PSD [dBm/3KHz]	Limit [dBm/3KHz]	Verdict
BT LE	LCH	-11.771	8	PASS
BT LE	MCH	-10.128	8	PASS
BT LE	HCH	-11.808	8	PASS

Test Graphs

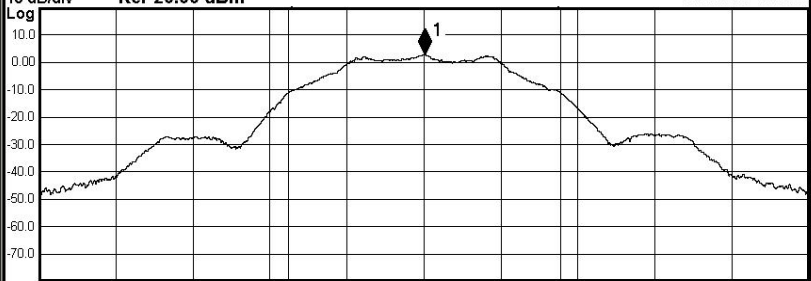
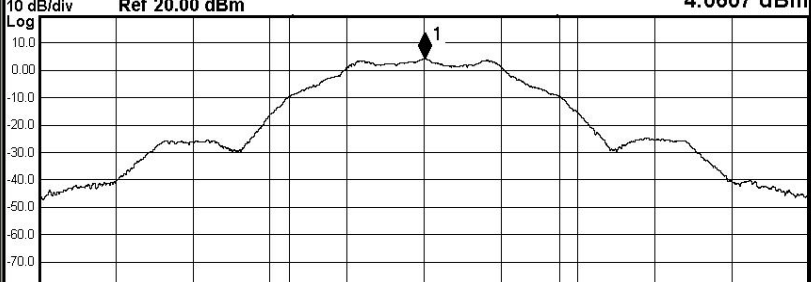


HCH

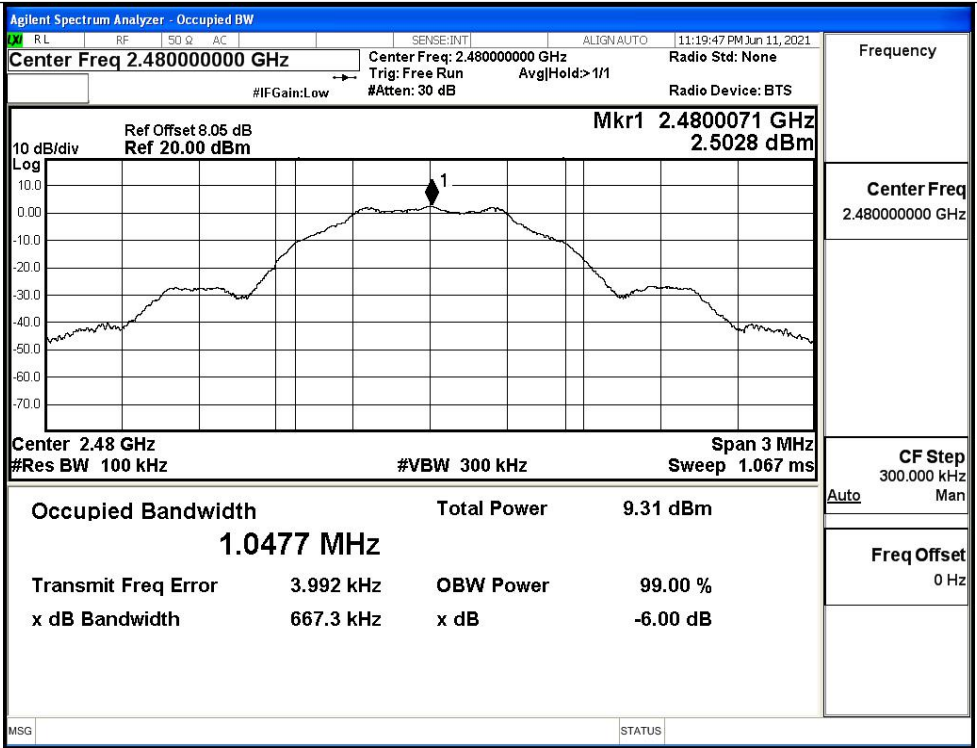


B.4 6dB Bandwidth

Mode	Channel	6dB Bandwidth [MHz]	Limit [MHz]	Verdict
BT LE	LCH	0.6741	≥0.5	PASS
BT LE	MCH	0.6626	≥0.5	PASS
BT LE	HCH	0.6673	≥0.5	PASS

Test Graphs													
LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 11:15:48 PM Jun 11, 2021</p> <p style="font-size: small; margin: 0;">Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p style="font-size: x-small; margin: 0;">Trig: Free Run AvgHold>1/1</p> <p style="font-size: x-small; margin: 0;">#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.05 dB Mkr1 2.4020026 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 2.6611 dBm</p>  </div> <p style="font-size: x-small; margin: 0;">Center 2.402 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>9.40 dBm</td> </tr> <tr> <td style="text-align: center;">1.0503 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>4.938 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>674.1 kHz</td> <td>x dB -6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	9.40 dBm	1.0503 MHz			Transmit Freq Error	4.938 kHz	OBW Power 99.00 %	x dB Bandwidth	674.1 kHz	x dB -6.00 dB
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MCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: x-small; margin: 0;">RL RF 50 Ω AC SENSE:INT ALIGN:AUTO 11:18:13 PM Jun 11, 2021</p> <p style="font-size: small; margin: 0;">Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Radio Std: None</p> <p style="font-size: x-small; margin: 0;">Trig: Free Run AvgHold>1/1</p> <p style="font-size: x-small; margin: 0;">#IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p style="font-size: x-small; margin: 0;">10 dB/div Ref Offset 8.05 dB Mkr1 2.4400034 GHz</p> <p style="font-size: x-small; margin: 0;">Log Ref 20.00 dBm 4.0607 dBm</p>  </div> <p style="font-size: x-small; margin: 0;">Center 2.44 GHz Span 3 MHz</p> <p style="font-size: x-small; margin: 0;">#Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms</p> <table style="width: 100%; font-size: x-small; border-collapse: collapse;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>10.9 dBm</td> </tr> <tr> <td style="text-align: center;">1.0458 MHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>3.535 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>662.6 kHz</td> <td>x dB -6.00 dB</td> </tr> </table> <p style="font-size: x-small; margin: 0;">MSG STATUS</p> </div>	Occupied Bandwidth	Total Power	10.9 dBm	1.0458 MHz			Transmit Freq Error	3.535 kHz	OBW Power 99.00 %	x dB Bandwidth	662.6 kHz	x dB -6.00 dB
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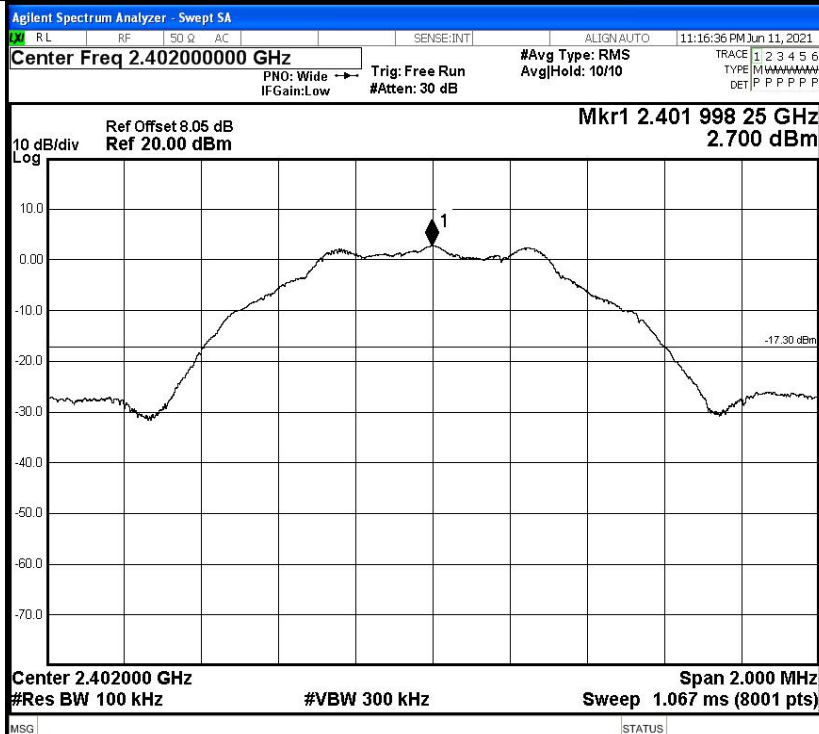
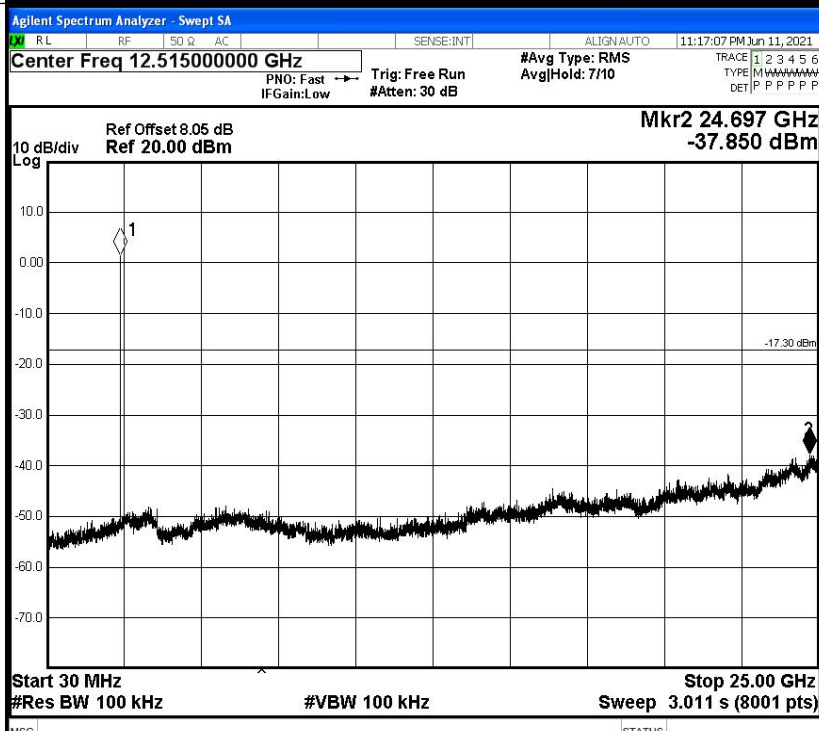
HCH



B.5 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	2.700	-37.850	-17.300	PASS
BT LE	MCH	4.111	-36.780	-15.889	PASS
BT LE	HCH	2.572	-37.722	-17.428	PASS

BT LE_LCH_Graphs

Pref/BT LE/LCH		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.402000000 GHz</td></tr> <tr><td>Start Freq 2.401000000 GHz</td></tr> <tr><td>Stop Freq 2.403000000 GHz</td></tr> <tr><td>CF Step 200.000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.402000000 GHz	Start Freq 2.401000000 GHz	Stop Freq 2.403000000 GHz	CF Step 200.000 kHz Auto Man	Freq Offset 0 Hz
Frequency									
Auto Tune									
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Freq Offset 0 Hz									
Puw/BT LE/LCH		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 12.515000000 GHz</td></tr> <tr><td>Start Freq 30.0000000 MHz</td></tr> <tr><td>Stop Freq 25.000000000 GHz</td></tr> <tr><td>CF Step 2.497000000 GHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 12.515000000 GHz	Start Freq 30.0000000 MHz	Stop Freq 25.000000000 GHz	CF Step 2.497000000 GHz Auto Man	Freq Offset 0 Hz
Frequency									
Auto Tune									
Center Freq 12.515000000 GHz									
Start Freq 30.0000000 MHz									
Stop Freq 25.000000000 GHz									
CF Step 2.497000000 GHz Auto Man									
Freq Offset 0 Hz									

BT LE MCH Graphs

<p>Pref/BT LE/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.44000000 GHz</p> <p>Mkr1 2.440 001 75 GHz 4.111 dBm</p> <p>Center 2.440000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.440000000 GHz</p> <p>Start Freq 2.439000000 GHz</p> <p>Stop Freq 2.441000000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/BT LE/MCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 12.51500000 GHz</p> <p>Mkr2 24.853 GHz -36.780 dBm</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 100 kHz Sweep 3.011 s (8001 pts)</p>

BT LE HCH Graphs

<p>Pref/BT LE/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.48000000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr1 2.480 002 00 GHz 2.572 dBm</p> <p>10 dB/div Log</p> <p>Center 2.480000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.067 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.480000000 GHz</p> <p>Start Freq 2.479000000 GHz</p> <p>Stop Freq 2.481000000 GHz</p> <p>CF Step 200.000 kHz Auto Man</p> <p>Freq Offset 0 Hz</p>
	<p>Puw/BT LE/HCH</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 12.51500000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p>Mkr2 24.959 GHz -37.722 dBm</p> <p>10 dB/div Log</p> <p>Start 30 MHz #Res BW 100 kHz #VBW 100 kHz Sweep 3.011 s (8001 pts)</p>

B.6 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
BT LE	LCH	2.526	-49.020	-17.47	PASS
BT LE	HCH	2.477	-49.513	-17.52	PASS

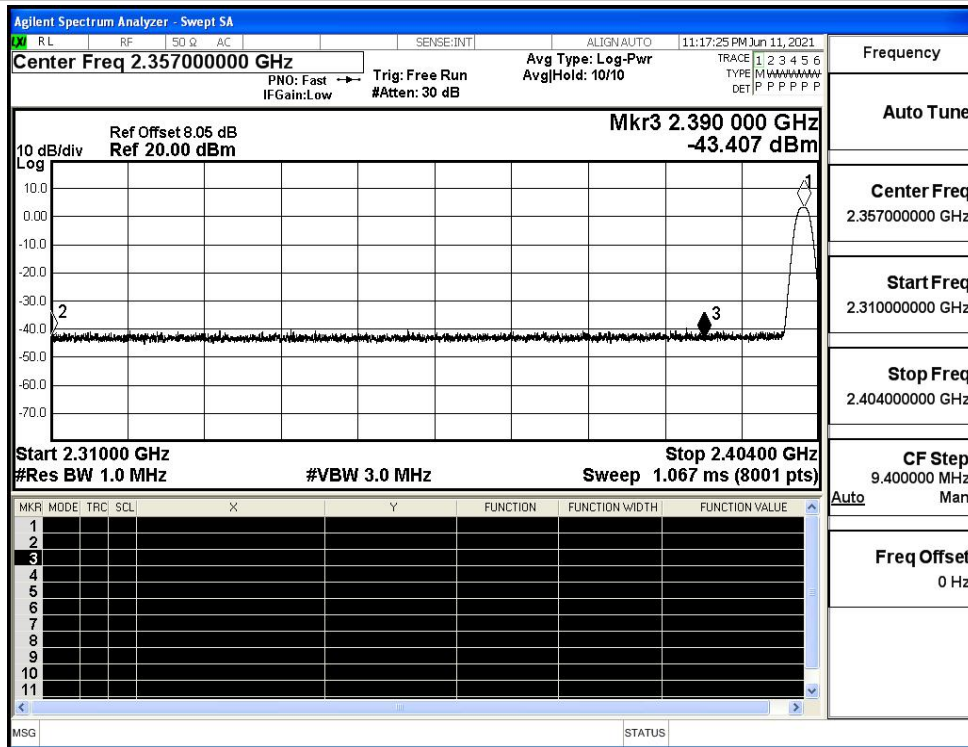
Test Graphs

LCH		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.35700000 GHz</p> <p>Mkr4 2.317 215 GHz -49.020 dBm</p> <p>Start 2.31000 GHz Stop 2.40400 GHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (8001 pts)</p>	<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.35700000 GHz</p> <p>Start Freq 2.31000000 GHz</p> <p>Stop Freq 2.40400000 GHz</p> <p>CF Step 9.400000 MHz</p> <p>Freq Offset 0 Hz</p>
	HCH		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.48900000 GHz</p> <p>Mkr4 2.489 621 50 GHz -49.513 dBm</p> <p>Start 2.47800 GHz Stop 2.50000 GHz</p> <p>#Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (8001 pts)</p>

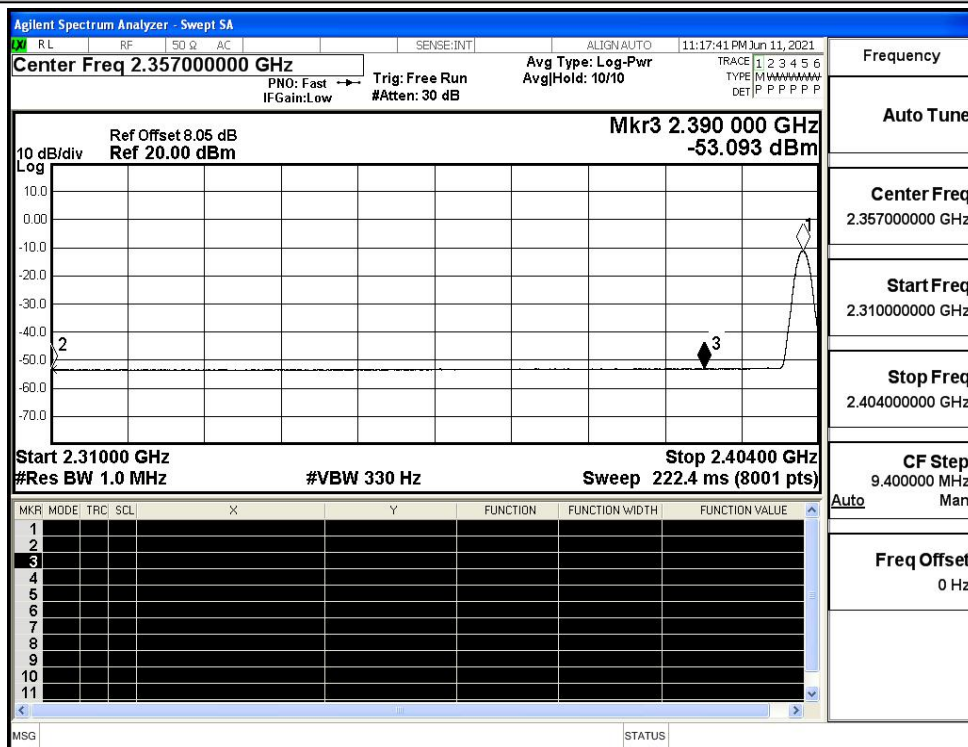
B.7 Restrict-band band-edge measurements

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	-42.75	2.0	0	54.48	PEAK	74	PASS
		Ant1	2310.0	-53.47	2.0	0	43.76	AV	54	PASS
		Ant1	2390.0	-43.41	2.0	0	53.82	PEAK	74	PASS
		Ant1	2390.0	-53.09	2.0	0	44.14	AV	54	PASS
	2480	Ant1	2483.5	-41.31	2.0	0	55.92	PEAK	74	PASS
		Ant1	2483.5	-52.56	2.0	0	44.67	AV	54	PASS
		Ant1	2500.0	-42.22	2.0	0	55.01	PEAK	74	PASS
		Ant1	2500.0	-52.51	2.0	0	44.72	AV	54	PASS

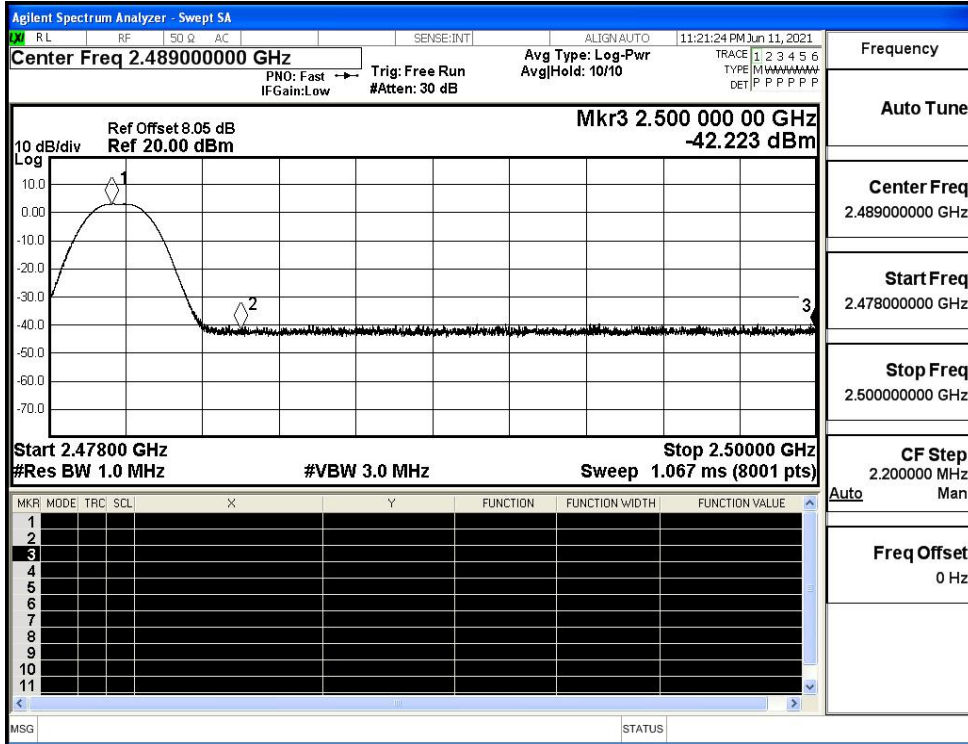
Restrict-band band-edge measurements_BT LE_2402_Ant1_PEAK



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

