

# TEST REPORT

**Report Number. :** 14093504-E8V4

**Applicant :** SONOS INC.  
614 CHAPALA ST.  
SANTA BARBARA, CA, 93101, U.S.A.

**Model :** S39

**Brand :** SONOS

**FCC ID :** SBVRM039

**IC :** 5373A-RM039

**EUT Description :** 802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART E  
ISED RSS-248 ISSUE 1  
ISED RSS-GEN ISSUE 5 + A1 +A2

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**Prepared by:**

UL Verification Services Inc.  
47173 Benicia Street  
Fremont, CA 94538 U.S.A.  
TEL: (510) 319-4000  
FAX: (510) 661-0888



## REPORT REVISION HISTORY

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## TABLE OF CONTENTS

<b>REPORT REVISION HISTORY .....</b>	<b>2</b>
<b>TABLE OF CONTENTS .....</b>	<b>3</b>
<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>12</b>
<b>2. TEST RESULT SUMMARY .....</b>	<b>14</b>
<b>3. TEST METHODOLOGY .....</b>	<b>15</b>
<b>4. FACILITIES AND ACCREDITATION .....</b>	<b>16</b>
<b>5. DECISION RULES AND MEASUREMENT UNCERTAINTY .....</b>	<b>17</b>
5.1. <i>METROLOGICAL TRACEABILITY .....</i>	<i>17</i>
5.2. <i>DECISION RULES.....</i>	<i>17</i>
5.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>17</i>
<b>6. EQUIPMENT UNDER TEST .....</b>	<b>18</b>
6.1. <i>EUT DESCRIPTION .....</i>	<i>18</i>
6.2. <i>EUT DEVICE CLASS.....</i>	<i>18</i>
6.3. <i>MAXIMUM OUTPUT POWER.....</i>	<i>18</i>
UNII-5 BAND 802.11 ax MODE 2TX.....	18
UNII-6 BAND 802.11 ax MODE 2TX.....	19
UNII-7 BAND 802.11 ax MODE 2TX.....	19
UNII-8 BAND 802.11 ax MODE 2TX.....	20
6.4. <i>DESCRIPTION OF AVAILABLE ANTENNAS .....</i>	<i>21</i>
6.5. <i>SOFTWARE AND FIRMWARE.....</i>	<i>21</i>
6.6. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>22</i>
6.7. <i>DESCRIPTION OF TEST SETUP.....</i>	<i>23</i>
TEST SETUP.....	23
SETUP DIAGRAM .....	24
<b>7. MEASUREMENT METHOD.....</b>	<b>25</b>
<b>8. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>26</b>
<b>9. ANTENNA PORT TEST RESULTS .....</b>	<b>27</b>
9.1. <i>ON TIME AND DUTY CYCLE.....</i>	<i>27</i>
9.2. <i>26 dB BANDWIDTH.....</i>	<i>30</i>
9.2.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND .....	31
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 .....	31

9.2.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND .....33  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 33

9.2.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND .....35  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 35

9.2.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND .....37  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 37

9.2.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND .....39  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 39

9.2.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND .....41  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 41

9.2.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND .....42  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 42

9.2.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND .....44  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 44

9.2.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND .....46  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 46

9.2.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND .....48  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 48

9.2.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND .....50  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 50

9.2.12. 802.11ax HE80 MODE 2TX IN THE UNII-8 BAND .....52  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 52

9.3. 99% BANDWIDTH.....53

9.3.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND .....54  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 54

9.3.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND .....56  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 56

9.3.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND .....58  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 58

9.3.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND .....60  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 60

9.3.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND .....62  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 62

9.3.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND .....64  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 64

9.3.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND .....65  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 65

9.3.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND .....67  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 67

9.3.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND .....69

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 69

9.3.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND ..... 71  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 71

9.3.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND ..... 73  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 73

9.3.12. 802.11ax HE80 MODE 2TX IN THE UNII-8 BAND ..... 75  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 75

9.4. OUTPUT POWER AND PSD ..... 76

9.4.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND ..... 77  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 77  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 78  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 79  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 80  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 82

9.4.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND ..... 83  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 83  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 84  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 85  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 86  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 88

9.4.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND ..... 89  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 89  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 90  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 91  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 92  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 94

9.4.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND ..... 95  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 95  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 96  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 97  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 98  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 100

9.4.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND ..... 101  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 101  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 102  
2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 103

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 105

9.4.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND ..... 106

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 106

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 107

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 108

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 109

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 110

9.4.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND ..... 111

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 111

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 112

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 113

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 114

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 116

9.4.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND ..... 117

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 117

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 118

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 119

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 120

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 122

9.4.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND ..... 123

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 123

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 124

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 125

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 126

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 128

9.4.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND ..... 129

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 129

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 130

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 131

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 132

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 134

9.4.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND ..... 135

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 135

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 136

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 137

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 138

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 140

9.4.12. 802.11ax HE80 MODE 2TX IN THE UNII-8 BAND ..... 141

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 141

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 142

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 143

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 144

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: SU, Single User ..... 145

9.5. *SPURIOUS EMISSIONS IN-BAND – EMISSION MASK*..... 146

9.5.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND ..... 147

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 147

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 147

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 148

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 148

9.5.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND ..... 150

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 150

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 150

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 151

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 151

9.5.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND ..... 153

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 153

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 153

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 154

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 154

9.5.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND ..... 156

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 156

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 156

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 157

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 157

9.5.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND ..... 159

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 159

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 159

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 160

9.5.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND ..... 162

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 162

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 162

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 163

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 164

9.5.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND ..... 165

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 165

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 165

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 166

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 167

9.5.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND ..... 169

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 169

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 169

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 170

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 171

9.5.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND ..... 173

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 173

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 173

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 174

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 175

9.5.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND ..... 177

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 177

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 4 ..... 177

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 178

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61 ..... 178

9.5.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND ..... 180

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 180

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 8 ..... 180

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 17 ..... 181

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65 ..... 181

9.5.12. 802.11ax HE80 MODE 2TX IN THE UNII-8 BAND ..... 183

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 0 ..... 183

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 18 ..... 183

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 26-Tones, RU Index 36 ..... 184

2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67 ..... 185

**10. RADIATED TEST RESULTS..... 186**



10.1. TRANSMITTER OUTSIDE 5.925-7.125 GHz , 1- 18GHz ..... 188

10.1.1. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE UNII-5 BAND ..... 188

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 188

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 4 ..... 192

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 ..... 194

2TX Antenna 1 + Antenna 4 OFDMA MODE: 242-Tones, RU Index 61 ..... 196

10.1.2. TX ABOVE 1 GHz 802.11ax HE40 MODE IN THE UNII-5 BAND .....204

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 204

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 ..... 208

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 17 ..... 210

2TX Antenna 1 + Antenna 4 OFDMA MODE: 484-Tones, RU Index 65 ..... 212

10.1.3. TX ABOVE 1 GHz 802.11ax HE80 MODE IN THE UNII-5 BAND .....220

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 220

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 18 ..... 224

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 36 ..... 226

2TX Antenna 1 + Antenna 4 OFDMA MODE: 996-Tones, RU Index 67 ..... 228

10.1.4. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE UNII-6 BAND .....236

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 236

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 4 ..... 238

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 ..... 240

2TX Antenna 1 + Antenna 4 OFDMA MODE: 242-Tones, RU Index 61 ..... 242

10.1.5. TX ABOVE 1 GHz 802.11ax HE40 MODE IN THE UNII-6 BAND .....248

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 248

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 17 ..... 250

2TX Antenna 1 + Antenna 4 OFDMA MODE: 484-Tones, RU Index 65 ..... 254

10.1.6. TX ABOVE 1 GHz 802.11ax HE80 MODE IN THE UNII-6 BAND .....260

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 260

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 18 ..... 262

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 36 ..... 264

2TX Antenna 1 + Antenna 4 OFDMA MODE: 996-Tones, RU Index 67 ..... 266

10.1.7. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE UNII-7 BAND .....270

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 ..... 270

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 4 ..... 272

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 ..... 274

2TX Antenna 1 + Antenna 4 OFDMA MODE: 242-Tones, RU Index 61 ..... 278

10.1.8. TX ABOVE 1 GHz 802.11ax HE40 MODE IN THE UNII-7 BAND .....286

2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 .....	286
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 .....	288
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 17 .....	290
2TX Antenna 1 + Antenna 4 OFDMA MODE: 484-Tones, RU Index 65 .....	294
<b>10.1.9. TX ABOVE 1 GHz 802.11ax HE80 MODE IN THE UNII-7 BAND .....</b>	<b>302</b>
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 .....	302
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 18 .....	304
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 36 .....	306
2TX Antenna 1 + Antenna 4 OFDMA MODE: 996-Tones, RU Index 67 .....	310
<b>10.1.10. TX ABOVE 1 GHz 802.11ax HE20 MODE IN THE UNII-8 BAND .....</b>	<b>318</b>
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 .....	318
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 4 .....	320
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 .....	322
2TX Antenna 1 + Antenna 4 OFDMA MODE: 242-Tones, RU Index 61 .....	326
<b>10.1.11. TX ABOVE 1 GHz 802.11ax HE40 MODE IN THE UNII-8 BAND .....</b>	<b>334</b>
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 .....	334
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 8 .....	336
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 17 .....	338
2TX Antenna 1 + Antenna 4 OFDMA MODE: 484-Tones, RU Index 65 .....	342
<b>10.1.12. TX ABOVE 1 GHz 802.11ax HE80 MODE IN THE UNII-8 BAND .....</b>	<b>350</b>
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 0 .....	350
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 18 .....	352
2TX Antenna 1 + Antenna 4 OFDMA MODE: 26-Tones, RU Index 36 .....	354
2TX Antenna 1 + Antenna 4 OFDMA MODE: 996-Tones, RU Index 67 .....	358
<b>10.2. WORST CASE BELOW 30MHz .....</b>	<b>364</b>
<b>10.3. WORST CASE BELOW 1 GHz .....</b>	<b>365</b>
<b>10.4. WORST CASE 18-26 GHz .....</b>	<b>367</b>
<b>10.5. WORST CASE 26-40 GHz .....</b>	<b>369</b>
<b>11. AC POWER LINE CONDUCTED EMISSIONS .....</b>	<b>371</b>
LIMITS.....	371
TEST PROCEDURE.....	371
RESULTS.....	371
<b>12. SETUP PHOTOS.....</b>	<b>374</b>
<b>ANTENNA PORT AND AC LINE CONDUCTED SETUP .....</b>	<b>374</b>

**RADIATED RF MEASUREMENT SETUP..... 375**

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SONOS INC.  
614 Chapala St.  
Santa Barbara, CA, 93101, U.S.A.

**EUT DESCRIPTION:** 802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE

**MODEL:** S39

**BRAND:** SONOS

**SERIAL NUMBER:** Radiated Sample: A100 2207CP F0-F6-C1-A0-0D-80:1 and  
A100 2207CP F0-F6-C1-A0-0D-CC:9  
Conducted Sample: 7885B

**DATE TESTED:** 2022-08-03 to 2022-09-08

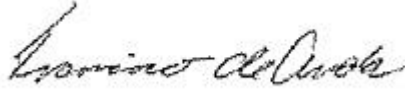
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart E	Complies
ISED RSS-248 Issue 1	Complies
ISED RSS-GEN Issue 5 + A1 + A2	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For  
UL Verification Services Inc. By:



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Francisco de Anda  
Staff Engineer  
Consumer Technology Division  
UL Verification Services Inc.

Prepared By:



---

Glenn Escano  
Senior Test Engineer  
Consumer Technology Division  
UL Verification Services Inc.

1<sup>st</sup> Reviewed By:



---

Vien Tran  
Senior Laboratory Engineer  
Consumer Technology Division  
UL Verification Services Inc.

2<sup>nd</sup> Reviewed By:



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Kiya Kedida  
Senior Project Engineer  
Consumer Technology Division  
UL Verification Services Inc.

## 2. TEST RESULT SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for the validity of results after the integration of the data provided by the customer.

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 12.2 ...
See Comment	RSS-GEN 6.7	99% BW	Reporting purposes only	ANSI C63.10 Section 6.9.3
§15.407 (a) (10)	---	26dB BW	Compliant	None.
§15.407 (a) (8)	RSS-248 4.6.3	Output Power e.i.r.p.	Compliant	Indoor Client.
§15.407 (a) (8)	RSS-248 4.6.3	PSD e.i.r.p	Compliant	Indoor Client.
§15.407 (b) (6)	RSS-248 4.7.2(a)	Emissions outside 5.925-7.125 GHz band	Compliant	None
§15.407 (b) (7)	RSS-248 4.7.2(b)	Emissions within 5.925-7.125 GHz Band(Emissions Mask)	Compliant	None
§15.205	RSS-GEN 8.10	Unwanted emissions in restricted bands	Compliant	None
§15.209	RSS-GEN 8.9	Radiated Spurious Emissions	Compliant	None
§15.207	RSS-GEN 8.8	AC Mains Conducted Emissions	Compliant	None

### 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- FCC CFR 47 Part 2
- FCC CFR 47 Part 15
- FCC KDB 662911 D01 v02r01
- FCC KDB 789033 D01 v01r03
- FCC KDB 789033 D02 v02r01
- FCC KDB 987594 D01 General Requirements v01r03
- FCC KDB 987594 D02 EMC Measurement v01r01
- ANSI C63.10-2013
- RSS-GEN Issue 5 + A1 + A2
- RSS-248 Issue 1

## 4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, Certificate Number #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input checked="" type="checkbox"/>	Building 1: 47173 Benicia Street Fremont, CA 94538, U.S.A	US0104	2324A	550739
<input type="checkbox"/>	Building 2: 47266 Benicia Street Fremont, CA 94538, U.S.A	US0104	22541	550739
<input checked="" type="checkbox"/>	Building 4: 47658 Kato Rd Fremont, CA 94538, U.S.A	US0104	2324B	550739



## 5. DECISION RULES AND MEASUREMENT UNCERTAINTY

### 5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

### 5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

### 5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U <sub>Lab</sub>
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB

Uncertainty figures are valid to a confidence level of 95%.

#### **RADIATED EMISSIONS**

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

#### **MAINS CONDUCTED EMISSIONS**

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

## 6. EQUIPMENT UNDER TEST

### 6.1. EUT DESCRIPTION

The EUT is an 802.11 a/b/g/n/ac/ax 2x2 Client Device with BT and BLE.

This report covers ax 6E Wifi radio.

### 6.2. EUT DEVICE CLASS

	U-NII Bands of Operation			
	5	6	7	8
Indoor Client (6XD)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### 6.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum average e.i.r.p. output power as follows:

#### UNII-5 BAND 802.11 ax MODE 2TX

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
<b>2TX CDD -UNII-5 band</b>			
5955-6415	802.11ax HE20 SU	9.65	9.23
	802.11ax HE20 OFDMA, 242-Tones	11.41	13.84
	802.11ax HE20 OFDMA, 26-Tones	1.92	1.56
5965-6405	802.11ax HE40 SU	11.33	13.58
	802.11ax HE40 OFDMA, 484-Tones	12.63	18.32
	802.11ax HE40 OFDMA, 26-Tones	4.23	2.65
5985-6385	802.11ax HE80 SU	15.63	36.56
	802.11ax HE80 OFDMA, 996-Tones	16.01	39.90
	802.11ax HE80 OFDMA, 26-Tones	2.43	1.75

**UNII-6 BAND 802.11 ax MODE 2TX**

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
<b>2TX CDD -UNII-6 band</b>			
6435-6515	802.11ax HE20 SU	7.35	5.43
	802.11ax HE20 OFDMA, 242-Tones	9.07	8.07
	802.11ax HE20 OFDMA, 26-Tones	1.56	1.43
6445-6485	802.11ax HE40 SU	8.72	7.45
	802.11ax HE40 OFDMA, 484-Tones	10.66	11.64
	802.11ax HE40 OFDMA, 26-Tones	1.28	1.34
6525 (Straddle)	802.11ax HE40 SU	8.59	7.23
	802.11ax HE40 OFDMA, 484-Tones	10.75	11.89
	802.11ax HE40 OFDMA, 26-Tones	2.20	1.66
6465	802.11ax HE80 SU	13.47	22.23
	802.11ax HE80 OFDMA, 996-Tones	13.78	23.88
	802.11ax HE80 OFDMA, 26-Tones	2.07	1.61
6545 (Straddle)	802.11ax HE80 SU	14.08	25.59
	802.11ax HE80 OFDMA, 996-Tones	14.74	29.79
	802.11ax HE80 OFDMA, 26-Tones	1.28	1.34

**UNII-7 BAND 802.11 ax MODE 2TX**

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
<b>2TX CDD -UNII-7 Band</b>			
6535-6855	802.11ax HE20 SU	6.13	4.10
	802.11ax HE20 OFDMA, 242-Tones	8.00	6.31
	802.11ax HE20 OFDMA, 26-Tones	2.13	1.63
6875 (Straddle)	802.11ax HE20 SU	6.95	4.95
	802.11ax HE20 OFDMA, 242-Tones	8.83	7.64
	802.11ax HE20 OFDMA, 26-Tones	0.96	1.25
6525-6845	802.11ax HE40 SU	10.14	10.33
	802.11ax HE40 OFDMA, 484-Tones	11.56	14.32
	802.11ax HE40 OFDMA, 26-Tones	2.46	1.76
6885 (Straddle)	802.11ax HE40 SU	10.53	11.30
	802.11ax HE40 OFDMA, 484-Tones	12.70	18.62
	802.11ax HE40 OFDMA, 26-Tones	2.13	1.63
6545-6785	802.11ax HE80 SU	14.80	30.20
	802.11ax HE80 OFDMA, 996-Tones	15.67	36.90
	802.11ax HE80 OFDMA, 26-Tones	2.65	1.84
6865 (Straddle)	802.11ax HE80 SU	14.69	29.44
	802.11ax HE80 OFDMA, 996-Tones	15.44	34.99
	802.11ax HE80 OFDMA, 26-Tones	3.53	2.25

**UNII-8 BAND 802.11 ax MODE 2TX**

Frequency Range (MHz)	Mode	e.i.r.p. Power (dBm)	Output Power (mW)
<b>2TX CDD -UNII-8 Band</b>			
6895-7115	802.11ax HE20 SU	7.77	5.98
	802.11ax HE20 OFDMA, 242-Tones	10.08	10.19
	802.11ax HE20 OFDMA, 26-Tones	2.94	1.97
6925-7085	802.11ax HE40 SU	12.30	16.98
	802.11ax HE40 OFDMA, 484-Tones	13.08	20.32
	802.11ax HE40 OFDMA, 26-Tones	2.24	1.67
6945-7025	802.11ax HE80 SU	14.09	25.64
	802.11ax HE80 OFDMA, 996-Tones	14.50	28.18
	802.11ax HE80 OFDMA, 26-Tones	2.09	1.62

## 6.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PCB (onboard) antennas, with a maximum gain as follows.

Frequency Range (MHz)	Peak Antenna Gain (dBi)			
	CHAIN 0		CHAIN 1	
	ANT1 (LOB) (dBi)	ANT2 (LRM) (dBi)	ANT3 (RRM) (dBi)	ANT4 (ROB) (dBi)
5925 – 6425	4.9	4.4	4.7	5.5
6425 – 6525	4.5	2.7	3.3	5.2
6525 – 6875	4.4	3	3.5	4.6
6875 – 7125	4.1	3.9	3.5	3.7

## 6.5. SOFTWARE AND FIRMWARE

The EUT software used during testing was 70.1-29190-diag.

The test utility software used during testing was GUI\_V8.

## 6.6. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The EUT can only be set up in desktop orientation; therefore, all radiated testing was performed with the EUT in desktop orientation.

The fundamental of the EUT was investigated in the antenna combinations, it was determined that ANT1 and ANT4 was the worst case on all bands.

Therefore, all final testing was performed with ANT1 and ANT4 as stated above.

Worst-case data rates as provided by the manufacturer were:

802.11ax HE20mode: MCS0

802.11ax HE40mode: MCS0

802.11ax HE80mode: MCS0

Preliminary Investigation performed for 802.11ax modes were determined by the following:

- Testing was performed on 802.11ax HE20 26T (Lowest Tones) and 242T (Full Tone) to cover HE20 52T,106T.
- Testing was performed on 802.11ax HE40 26T (Lowest Tones) and 484T (Full Tone) to cover HE40 52T,106T and 242T.
- Testing was performed on 802.11ax HE80 26T (Lowest Tones) and 996T (Full Tone) to cover HE80 52T, 106T, 242T and 484T.

According to Preliminary Investigation, conducted power was performed to compare Full RU Tone modes and SU (Single User) Tone modes. It was determined that Full RU Tone modes were worst case over Single User modes in every instance. Therefore, only full tone modes were tested, and they represent SU modes as the worst-case scenario

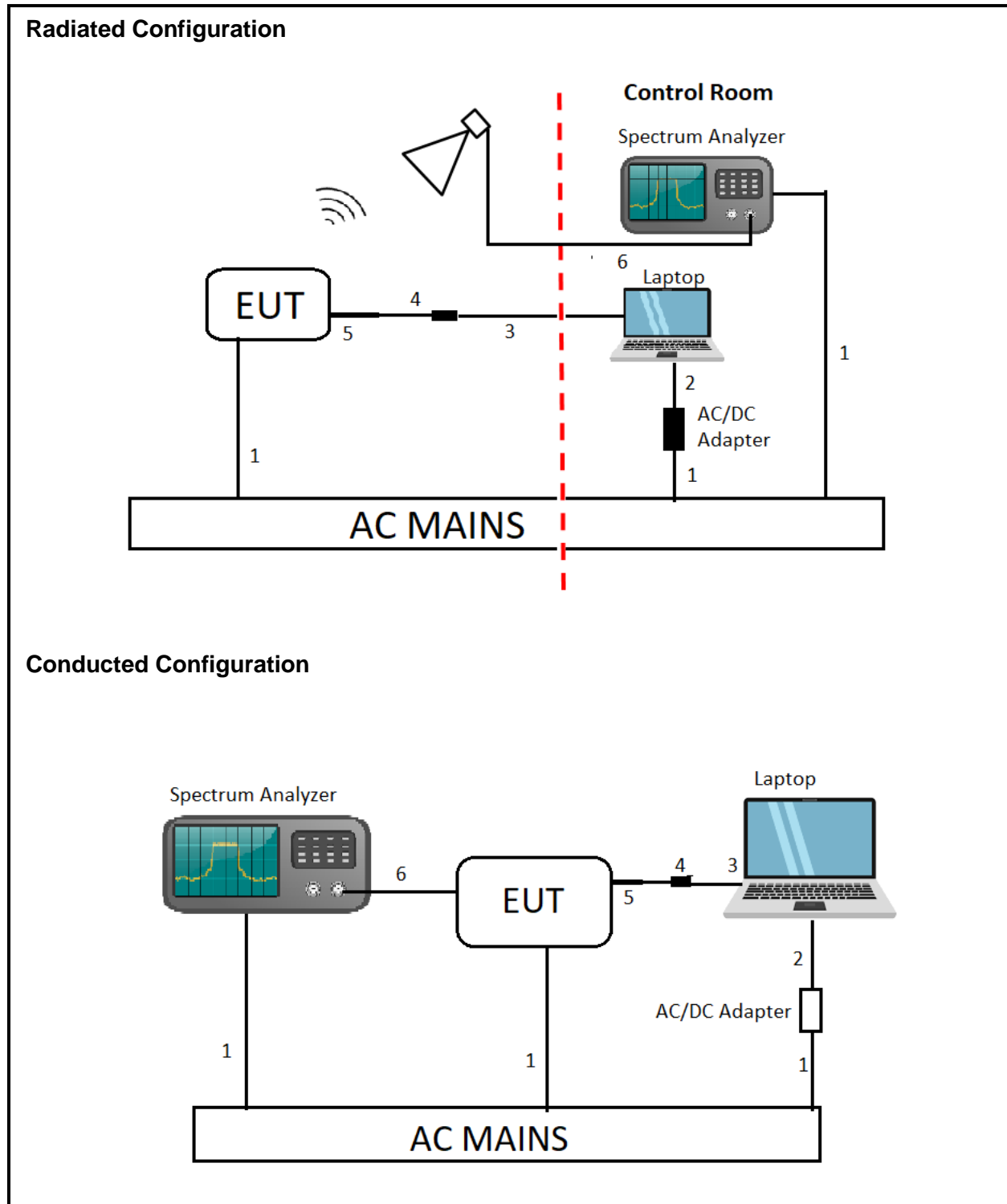
## 6.7. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
Laptop	Lenovo	T460s	PC0JMBF8	Doc		
Laptop AC/DC Adapter	Lenovo	ADLX90NLC2A	11S45N0247Z1ZSHH448JEY	Doc		
USB-A to Ethernet Adapter	Plugable	USB2-E100	8CAE4CE46AFA	Doc		
USB-C to USB-A Female Adapter	Amazon Basics	L6LUC160-CS-R	N/A	Doc		
I/O CABLES (CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	AC	Un-shielded	1.25	AC Mains to EUT/Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Un-shielded	1	AC/DC Adapter to Laptop
3	Ethernet	1	RJ45	Un-shielded	1.5	Laptop to USB Ethernet Adapter
4	USB-A	1	USB-A	Shielded	0.05	USB EthernetAdapter to USB
5	USB-C	1	USB-C	Shielded	0.05	EUT to USB-C/USB-A Female Adapter
6	SMA Cable	1	SMA	Un-Shielded	0.1	EUT to Spectrum Analyzer
I/O CABLES (RADIATED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	AC	Un-shielded	1.25	AC Mains to EUT/Spectrum Analyzer/AC/DC Adapter
2	DC	1	DC	Un-shielded	1	AC/DC Adapter to Laptop
3	Ethernet	1	RJ45	Un-shielded	10	Laptop to USB Ethernet Adapter
4	USB-A	1	USB-A	Shielded	0.05	USB EthernetAdapter to USB
5	USB-C	1	USB-C	Shielded	0.05	EUT to USB-C/USB-A Female Adapter
6	SMA Cable	1	SMA	Un-Shielded	10	EUT to Horn Antenna

### TEST SETUP

The EUT is a stand-alone unit and the radio is exercised by Sonos Compliance GUI test utility software via ethernet.

**SETUP DIAGRAM**





## 7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02 v02r01, Section B.

26 dB Emission BW: KDB 789033 D02 v02r01, Section C.1

Conducted Output Power: KDB 789033 D02 v02r01, Section II E.2.d (Method SA-2).

Conducted Output Power: KDB 789033 D02 v02r01, Section II E.2.d (Method SA-2).  
(Output Power (e.i.r.p): Radiated EIRP + DCCF = EIRP)  
Radiated method made in lieu of conducted measurements

Power Spectral Density(PSD): KDB 789033 D02 v02r01, Section F  
Radiated method made in lieu of conducted measurements

Spurious emissions within 5.925-7.125 GHz Band(Emissions Mask): KDB 987594 D02 EMC  
Measurement Section II-J

Unwanted emissions in restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v02r01, Sections G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2013 Section 6.4

## 8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	Manufacturer	Model	ID Num	Cal Due	Last Cal
Antenna, Broadband Hybrid, 30MHz to 2GHz	Sunol Sciences Corp.	JB1	82258	2022-10-01	2021-10-01
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	175953	2023-02-08	2022-02-08
Amplifier, 10KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310N	29654	2023-04-24	2022-04-24
Antenna, Horn 1-18GHz	ETS-Lindgren (Cedar Park, Texas)	3117	80402	2023-07-05	2022-07-05
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	SAC 8 port rf box 1	197920	2023-04-19	2022-04-19
EMI TEST RECEIVER, with B8 option	Rohde & Schwarz	ESW44	169937	2023-02-20	2022-02-20
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169927	2023-02-16	2022-02-16
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	81138	2022-10-13	2021-10-13
Amplifier 18-26.5GHz, +5Vdc, 60dB min	AMPLICAL	AMP18G26.5-60	215705	2023-02-26	2022-02-26
Antenna, Horn 26 to 40GHz	ARA	MWH-2640/B	81104	2022-10-14	2021-10-14
Amplifier 26-40GHz +5Vdc, -62dBm P1dB	AMPLICAL	AMP26G40-65	172345	2023-06-22	2022-06-22
Antenna, Passive Loop 30Hz - 1MHz	ELECTRO METRICS	EM-6871	219909	2023-05-10	2022-05-10
Antenna, Passive Loop 100KHz - 30MHz	ELECTRO METRICS	EM-6872	219911	2023-05-10	2022-05-10
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent Technologies	N9030A	80396	2023-01-02	2022-01-02
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	T1268	2023-02-03	2022-02-03
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	90419	2023-03-02	2022-03-02
AC Line Conducted					
LISN	Fischer Custom Communications, Inc	FCC-LISN-50/250-25-2-01-480V	175765	2023-01-26	2022-01-26
EMI TEST RECEIVER	Rohde & Schwarz	ESR	93091	2023-02-21	2022-02-21
Transient Limiter	Com-Power	LIT-930	127455	2023-02-02	2022-02-02
UL TEST SOFTWARE LIST					
Radiated Software	UL	UL EMC	Ver 2014-07-15, 2014-07-15, 2020-11-14, 2022-03-30, 2022-04-28, 2022-05-18, 2022-07-06 and 2022-08-22		
Antenna Port Software	UL	UL RF	Ver 2022-05-31		
AC Line Conducted Software	UL	UL EMC	Rev 9.5, 2022-02-17		

## 9. ANTENNA PORT TEST RESULTS

### 9.1. ON TIME AND DUTY CYCLE

#### LIMITS

None; for reporting purposes only.

#### TEST PROCEDURE

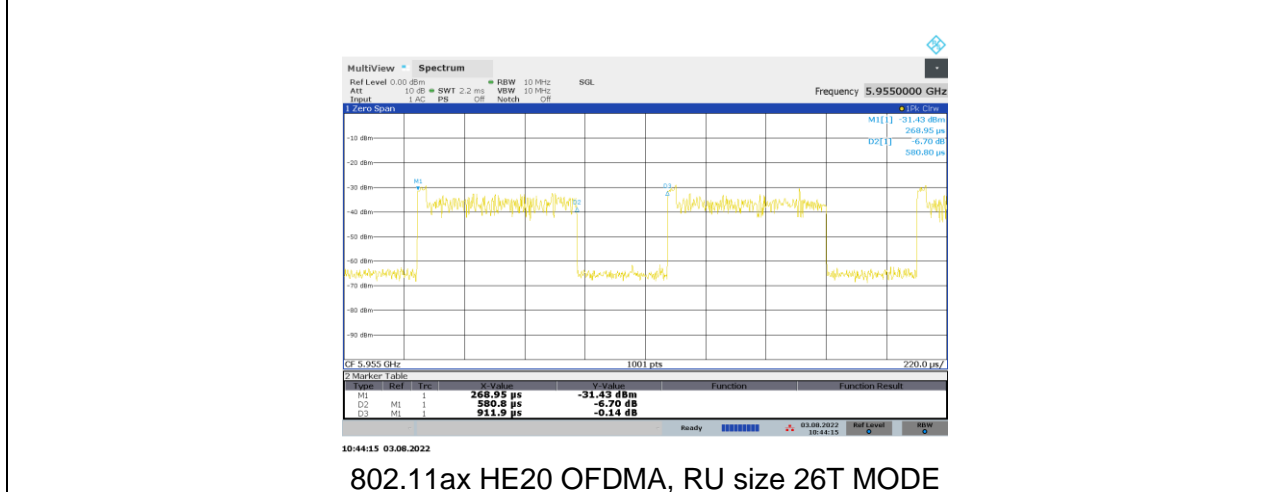
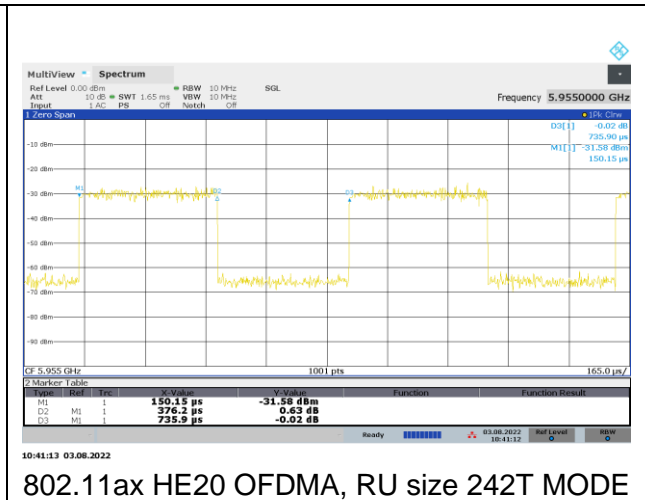
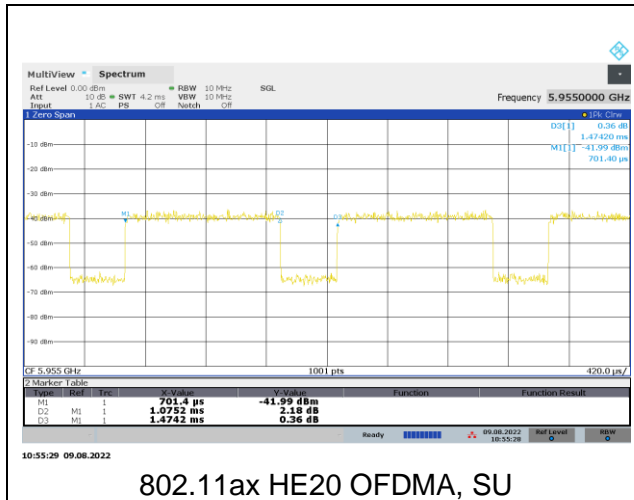
KDB 789033 Zero-Span Spectrum Analyzer Method.

<b>Test Engineer:</b>	CW 20756
<b>Test Date:</b>	8/3/2022 to 8/9/2022

#### RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11ax HE20 OFDMA, SU	1.075	1.474	0.729	72.93%	1.37	0.930
802.11ax HE20 OFDMA, RU size 242T	0.376	0.736	0.511	51.12%	2.91	2.658
802.11ax HE20 OFDMA, RU size 26T	0.581	0.912	0.637	63.69%	1.96	1.722
802.11ax HE40 OFDMA, SU	0.567	0.945	0.600	60.00%	2.22	1.764
802.11ax HE40 OFDMA, RU size 484T	0.367	0.727	0.505	50.53%	2.96	2.722
802.11ax HE40 OFDMA, RU size 26T	0.581	0.912	0.637	63.69%	1.96	1.722
802.11ax HE80 OFDMA, SU	0.305	0.672	0.453	45.30%	3.44	3.283
802.11ax HE80 OFDMA, RU size 996T	0.345	0.729	0.474	47.36%	3.25	2.895
802.11ax HE80 OFDMA, RU size 26T	0.581	0.912	0.637	63.69%	1.96	1.722

### DUTY CYCLE PLOTS





802.11ax HE40 OFDMA, SU



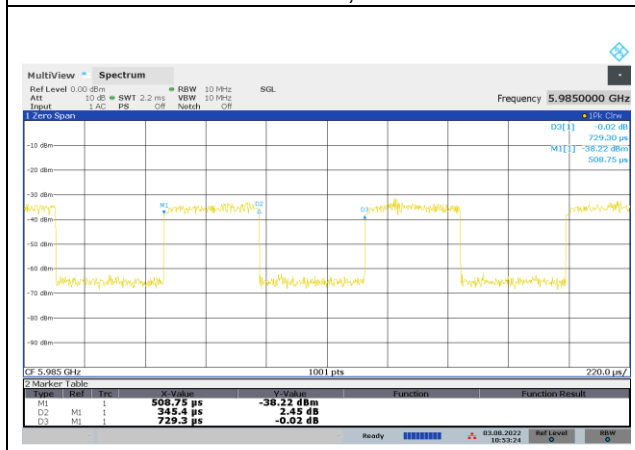
802.11ax HE40 OFDMA, RU size 484T MODE



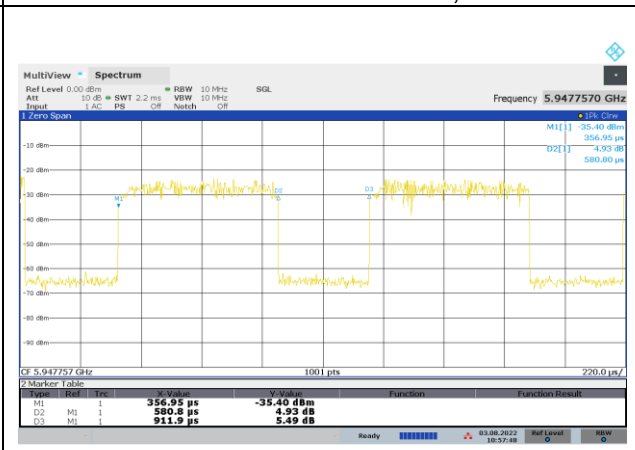
802.11ax HE40 OFDMA, RU size 26T MODE



802.11ax HE80 OFDMA, SU



802.11ax HE80 OFDMA, RU size 996T MODE



802.11ax HE80 OFDMA, RU size 26T MODE

## 9.2. 26 dB BANDWIDTH

### **LIMITS**

§15.407 (a) (10)

The maximum transmitter channel bandwidth for U-NII devices in the 5.925-7.125 GHz band is 320 megahertz.

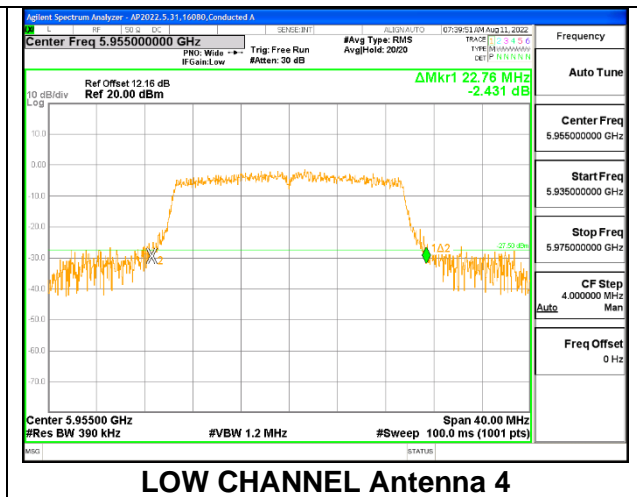
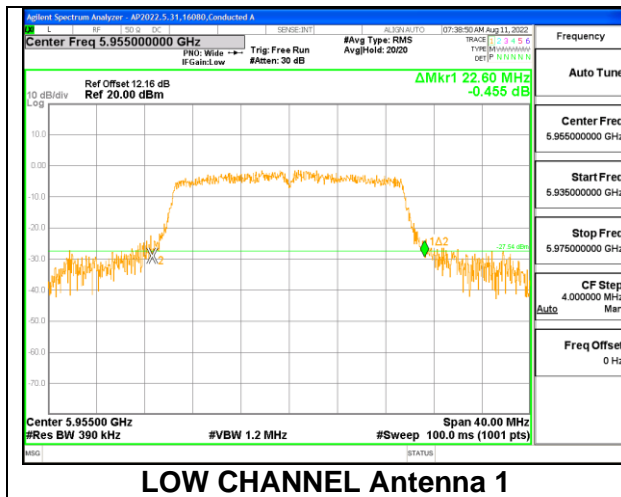
### **RESULTS**

### 9.2.1. 802.11ax HE20 MODE 2TX IN THE UNII-5 BAND

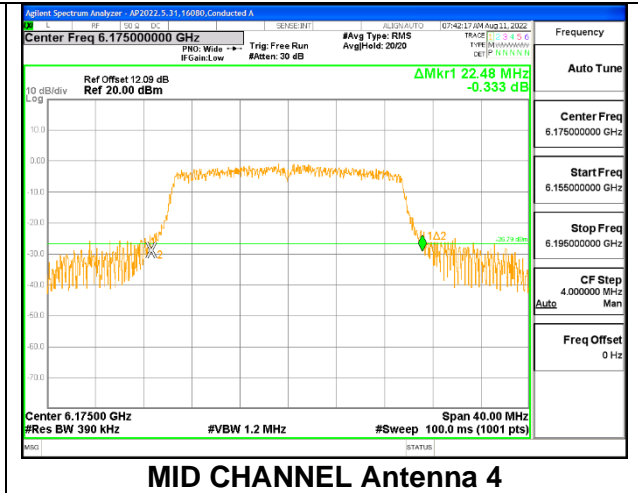
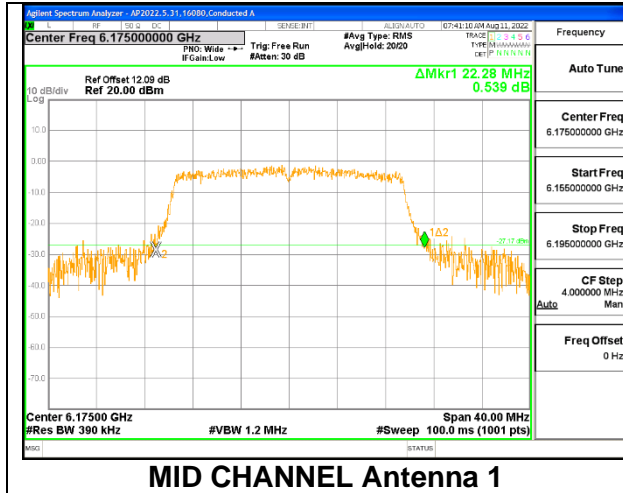
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5955	22.60	22.76
Mid	6175	22.28	22.48
High	6415	22.04	22.52

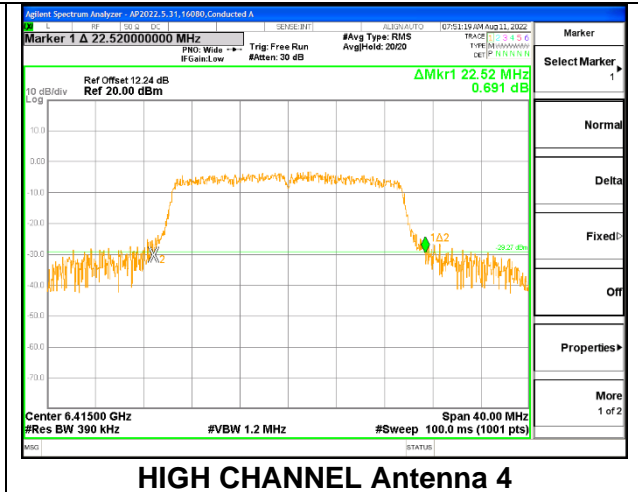
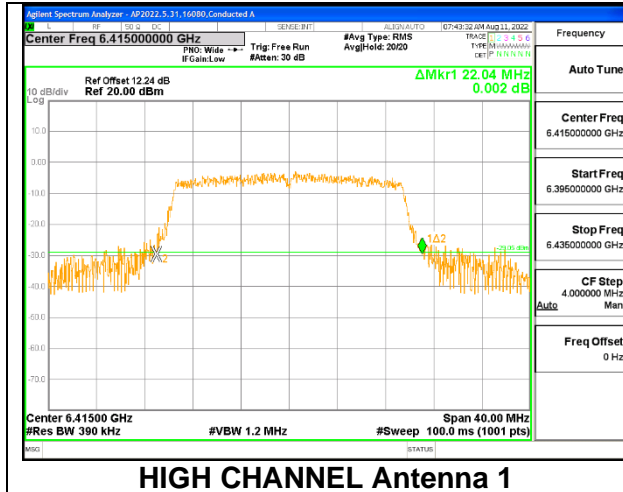
#### LOW CHANNEL



### MID CHANNEL



### HIGH CHANNEL



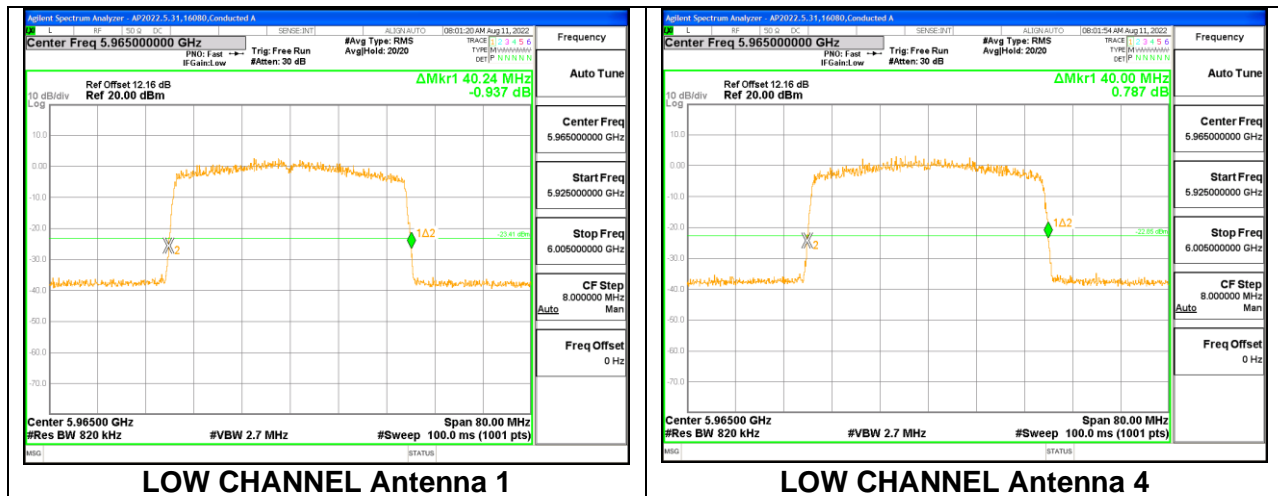


### 9.2.2. 802.11ax HE40 MODE 2TX IN THE UNII-5 BAND

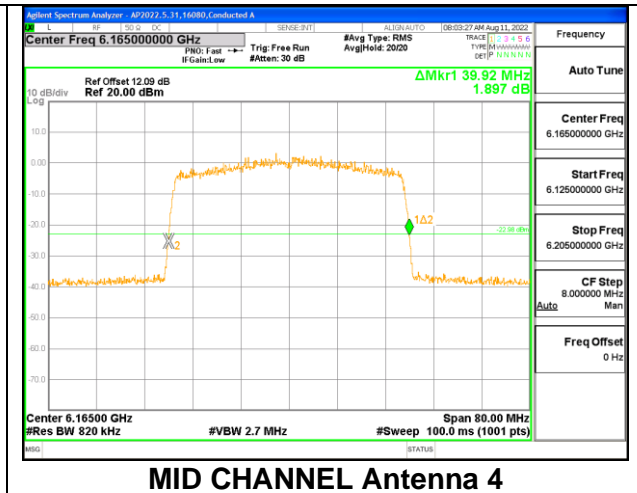
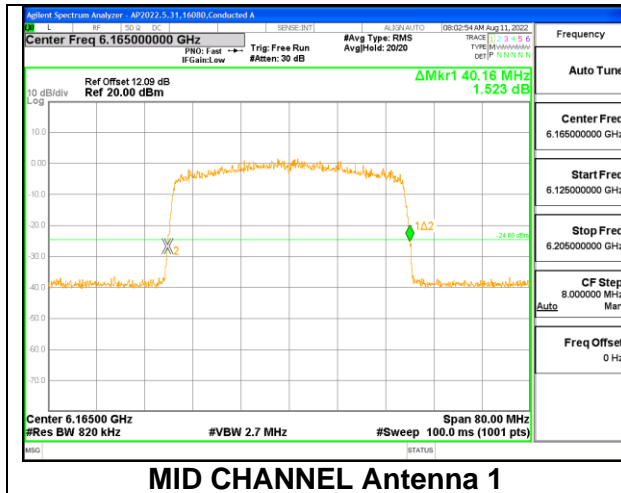
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5965	40.24	40.00
Mid	6165	40.16	39.92
High	6405	40.16	40.16

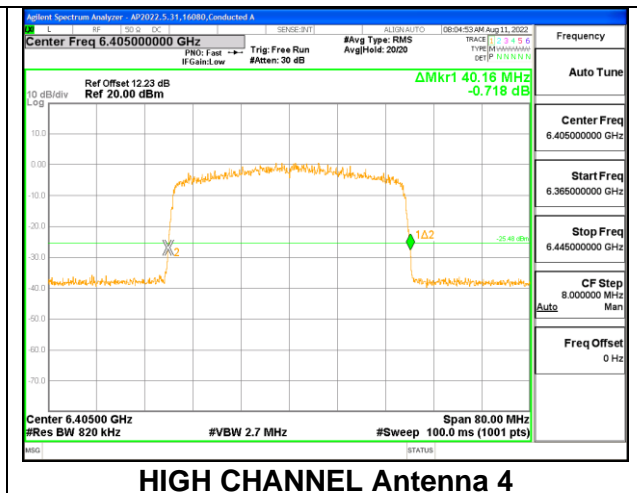
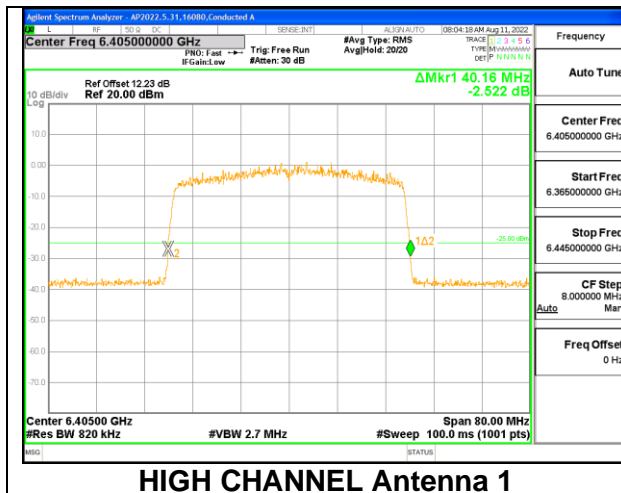
#### LOW CHANNEL



### MID CHANNEL



### HIGH CHANNEL

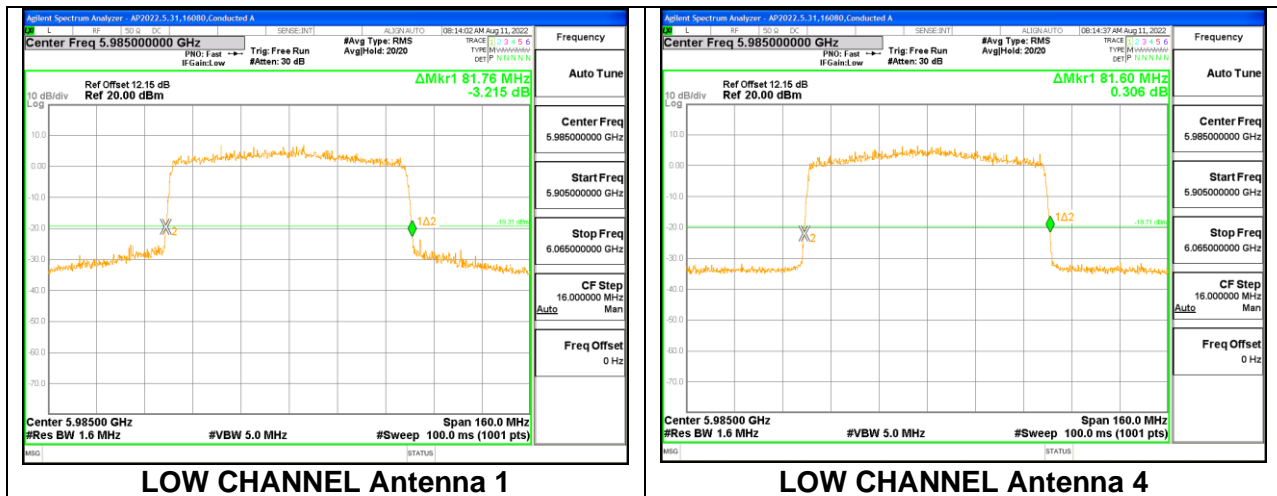


### 9.2.3. 802.11ax HE80 MODE 2TX IN THE UNII-5 BAND

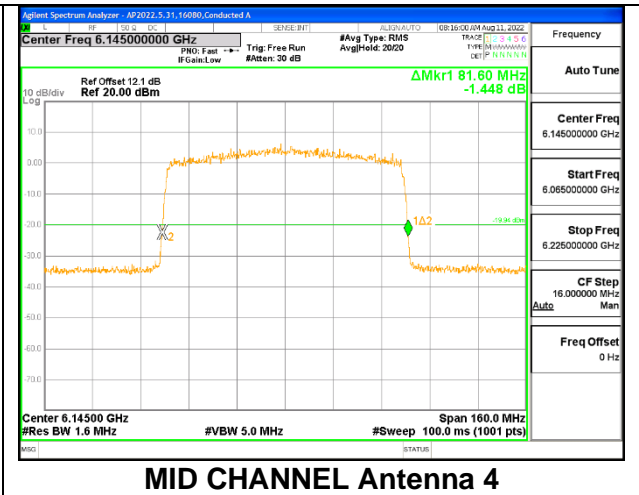
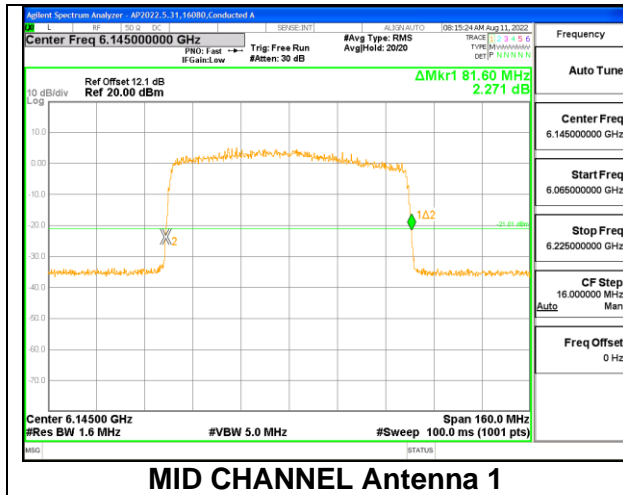
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	5985	81.76	81.60
Mid	6145	81.60	81.60
High	6385	81.76	81.28

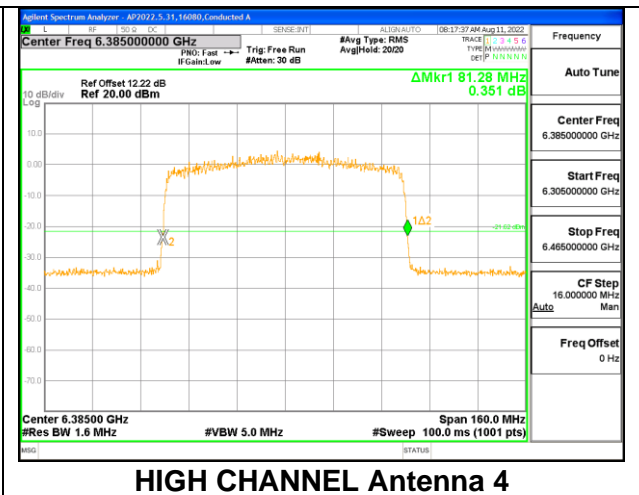
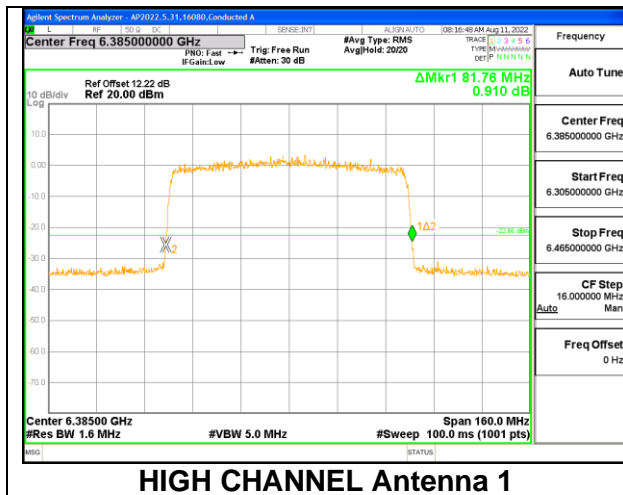
#### LOW CHANNEL



### MID CHANNEL



### HIGH CHANNEL

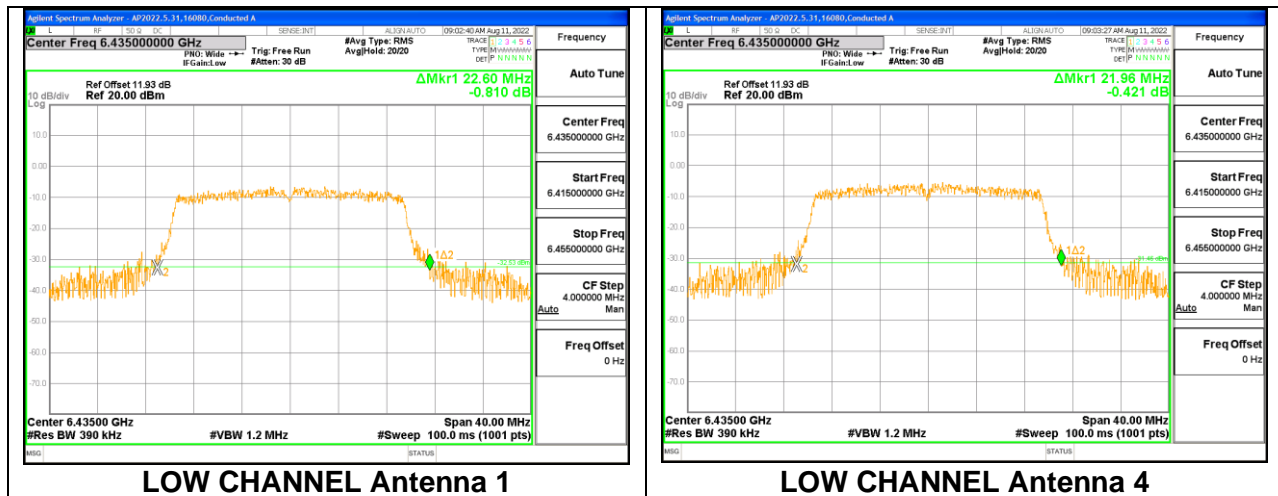


### 9.2.4. 802.11ax HE20 MODE 2TX IN THE UNII-6 BAND

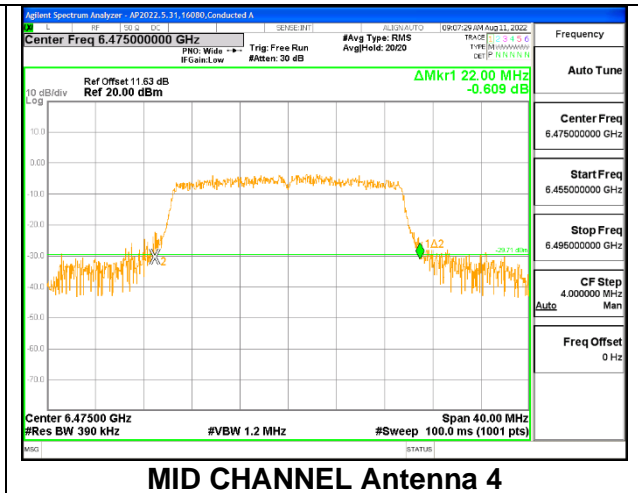
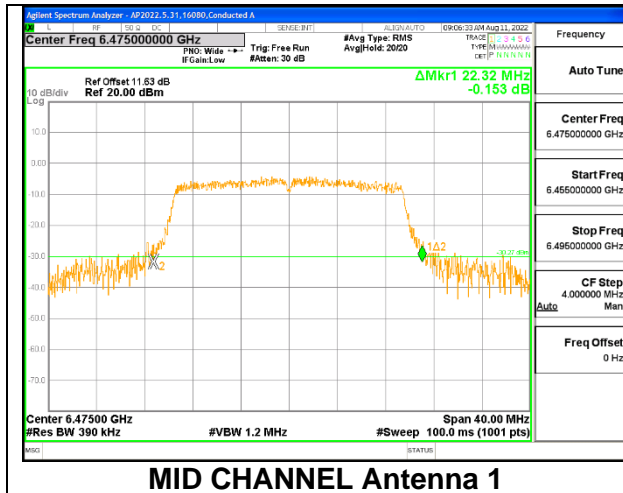
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6435	22.60	21.96
Mid	6475	22.32	22.00
High	6515	22.04	22.28

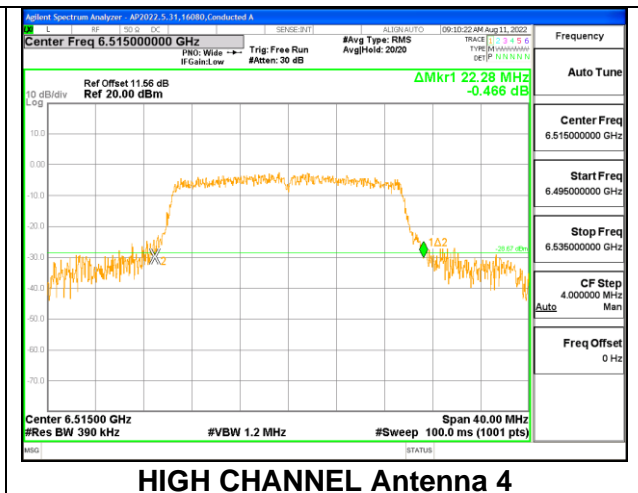
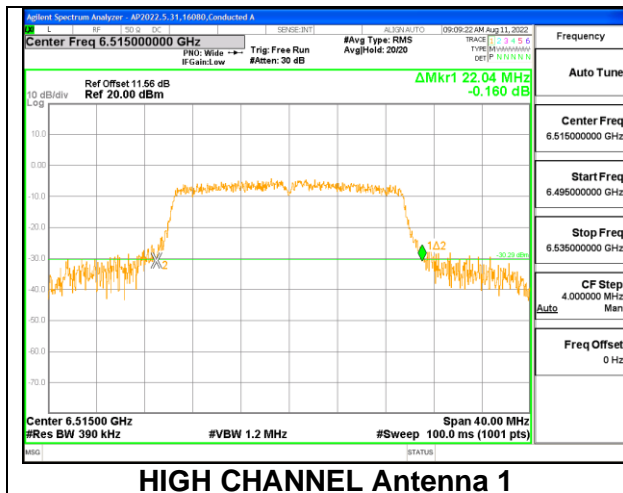
#### LOW CHANNEL



### MID CHANNEL



### HIGH CHANNEL

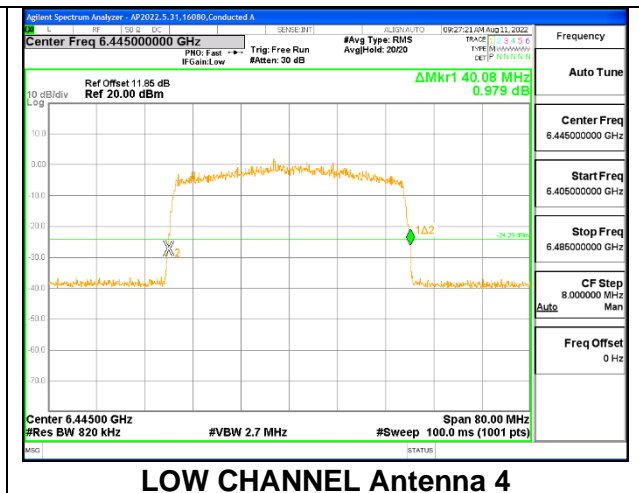
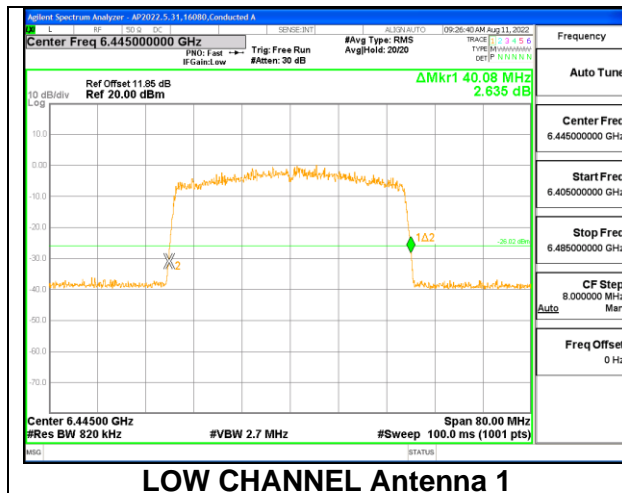


### 9.2.5. 802.11ax HE40 MODE 2TX IN THE UNII-6 BAND

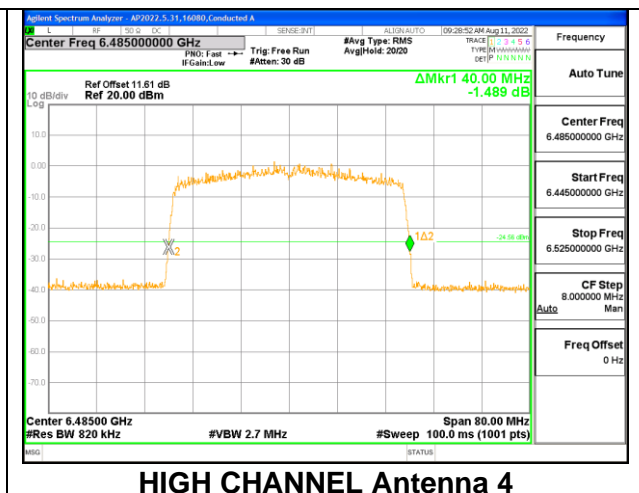
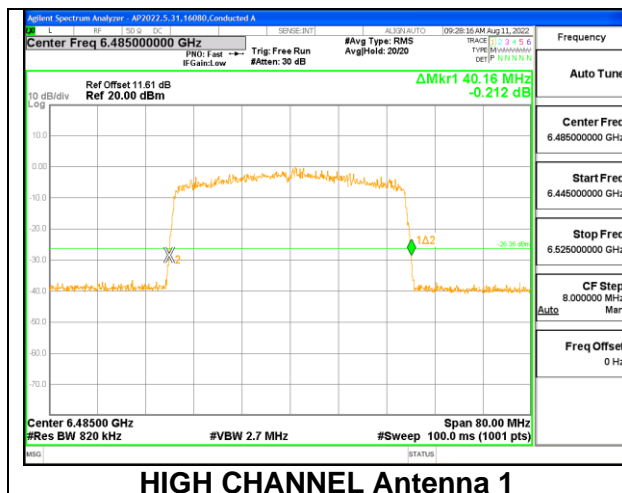
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6445	40.08	40.08
High	6485	40.16	40.00
Straddle	6525	40.16	40.16

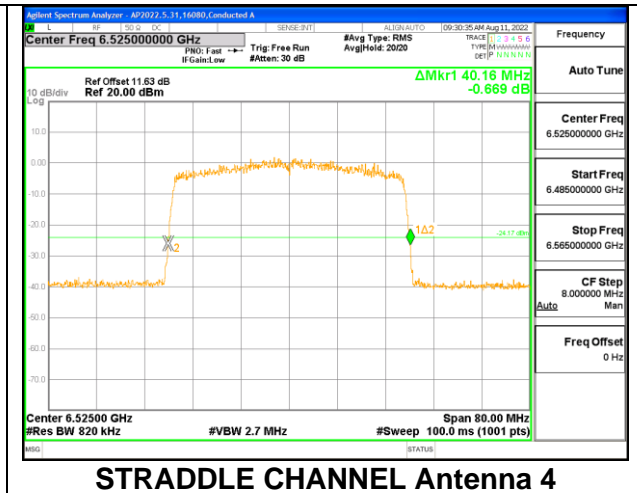
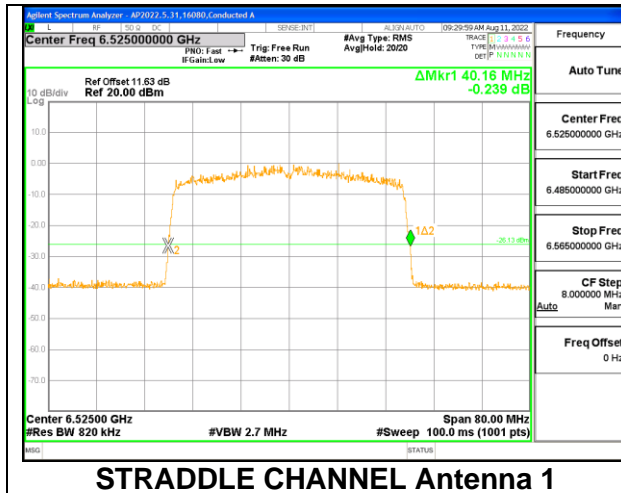
#### LOW CHANNEL



#### HIGH CHANNEL



### STRADDLE CHANNEL



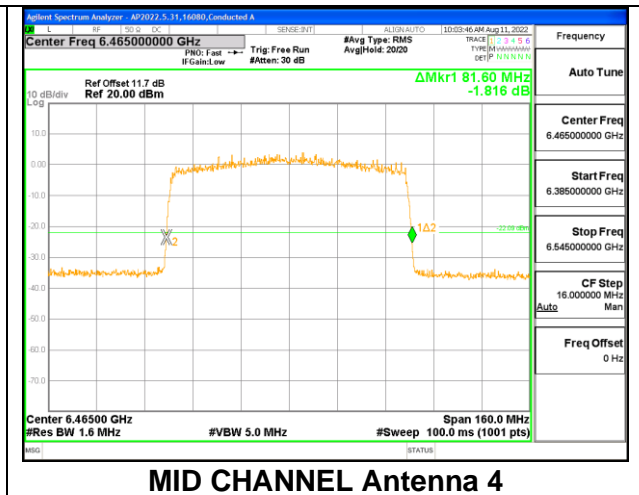
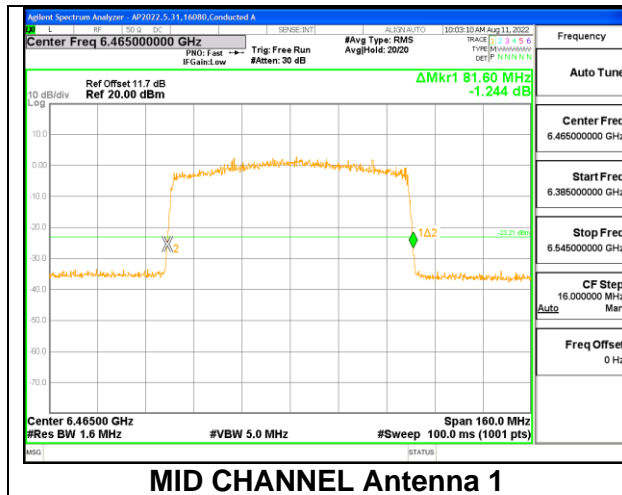


### 9.2.6. 802.11ax HE80 MODE 2TX IN THE UNII-6 BAND

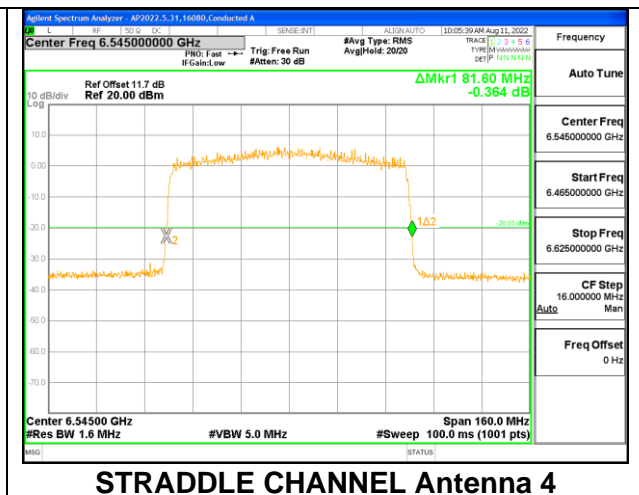
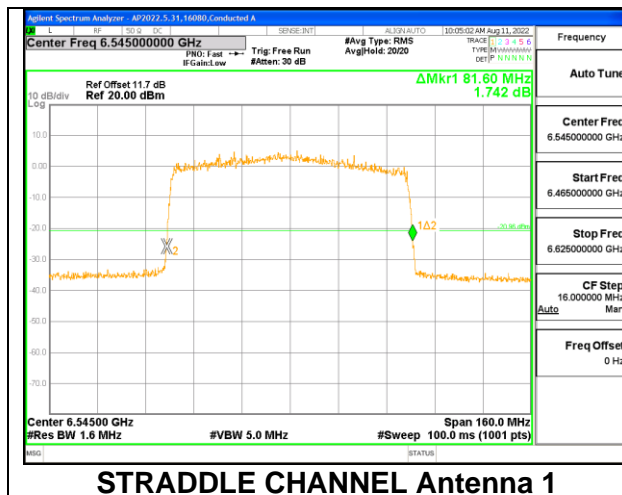
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Mid	6465	81.60	81.60
Straddle	6545	81.60	81.60

#### MID CHANNEL



#### STRADDLE CHANNEL

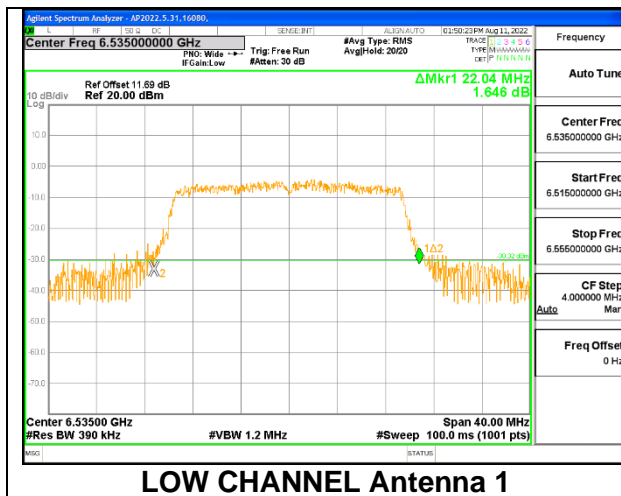


### 9.2.7. 802.11ax HE20 MODE 2TX IN THE UNII-7 BAND

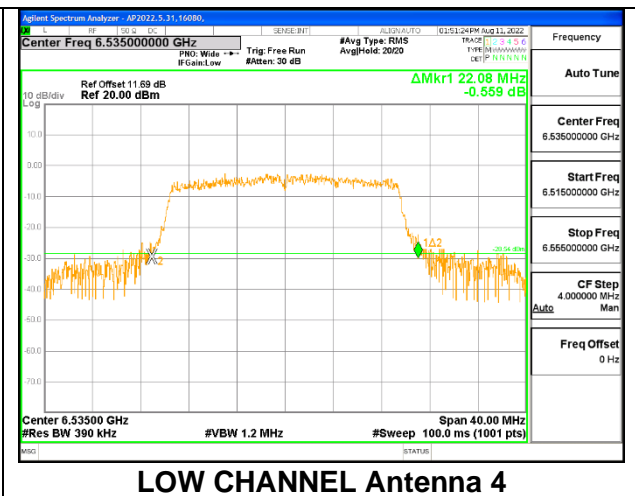
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6535	22.04	22.08
Mid	6715	22.32	22.00
High	6855	21.92	22.52
Straddle	6875	22.24	21.68

#### LOW CHANNEL

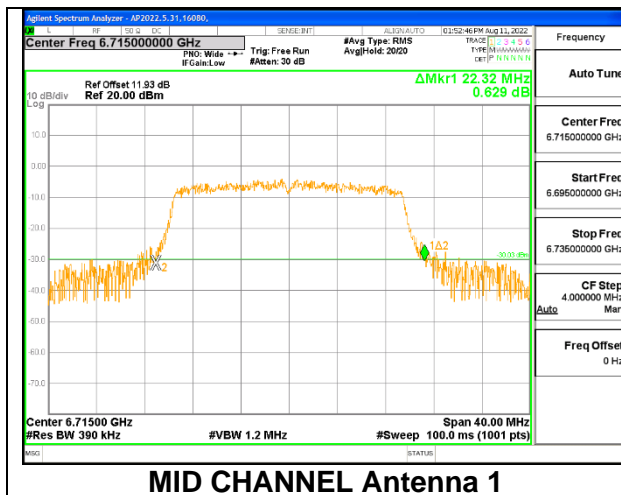


LOW CHANNEL Antenna 1

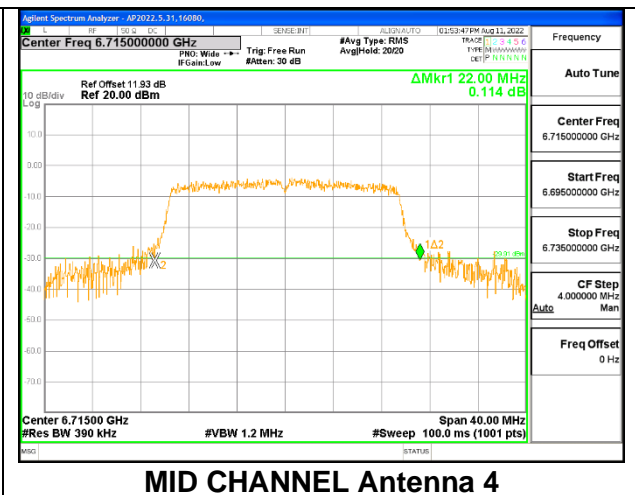


LOW CHANNEL Antenna 4

#### MID CHANNEL

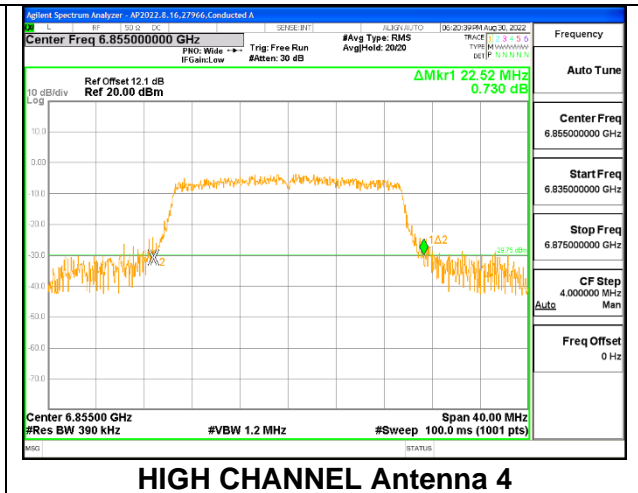
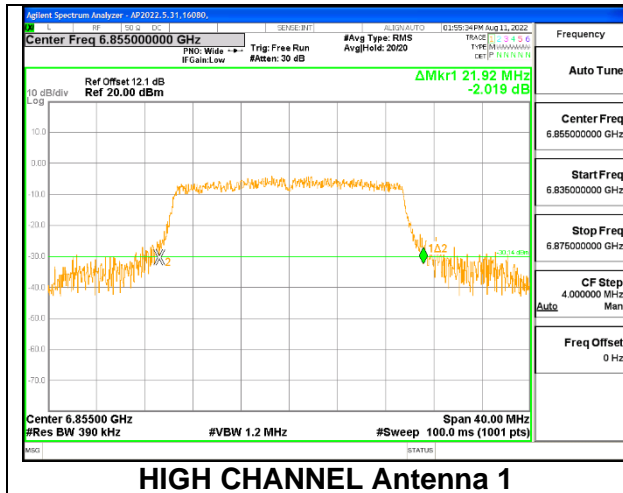


MID CHANNEL Antenna 1

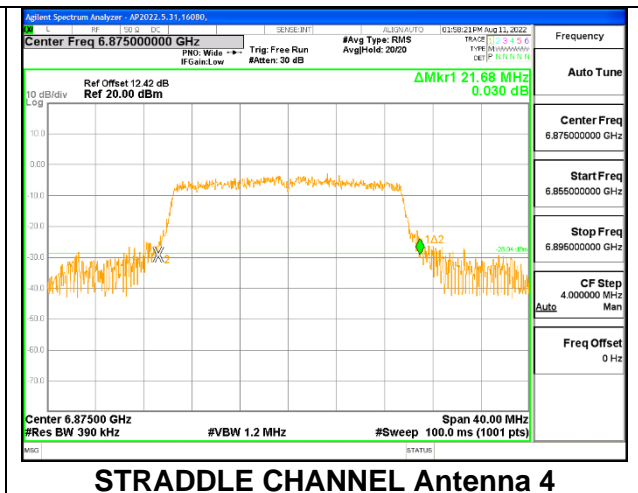
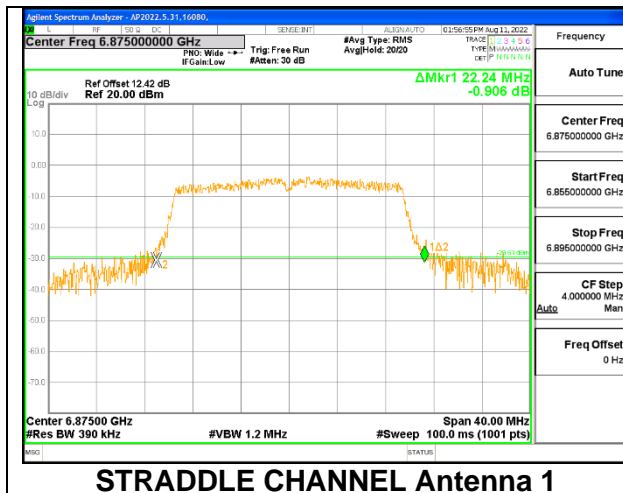


MID CHANNEL Antenna 4

### HIGH CHANNEL



### STRADDLE CHANNEL

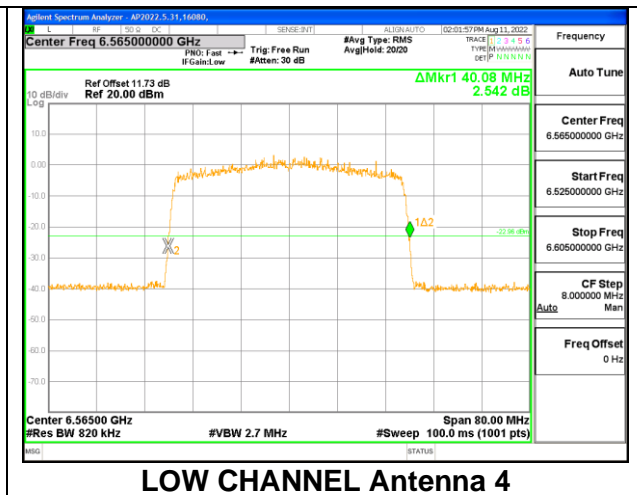
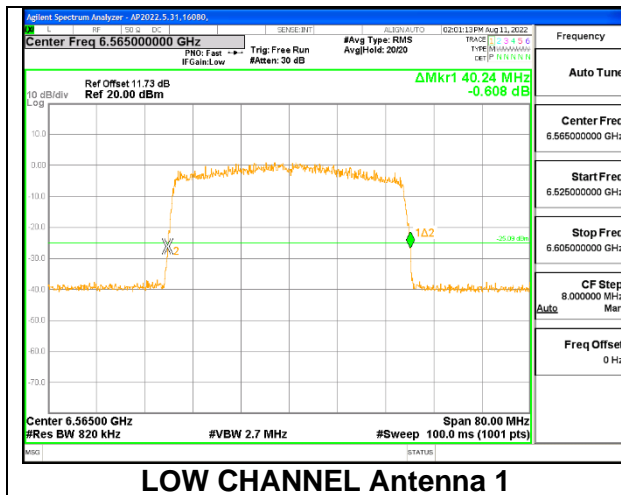


### 9.2.8. 802.11ax HE40 MODE 2TX IN THE UNII-7 BAND

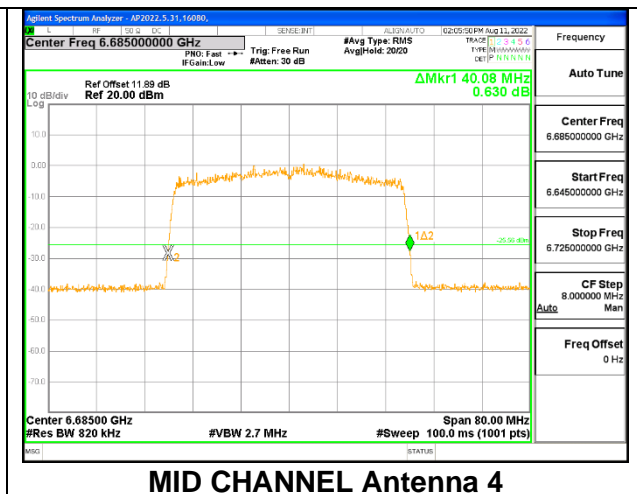
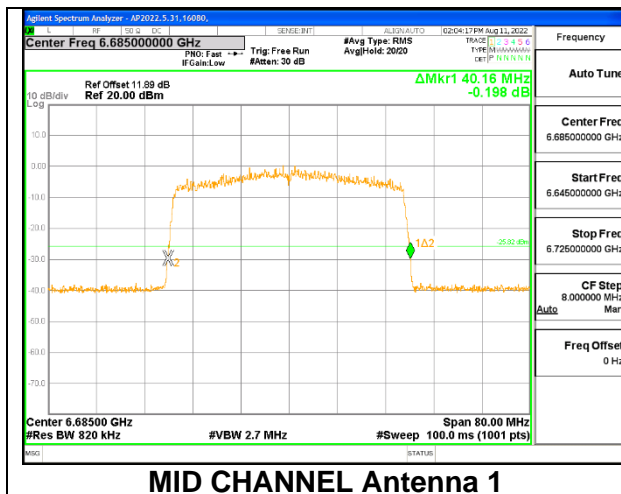
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6565	40.24	40.08
Mid	6685	40.16	40.08
High	6845	40.16	40.00
Straddle	6885	40.08	40.16

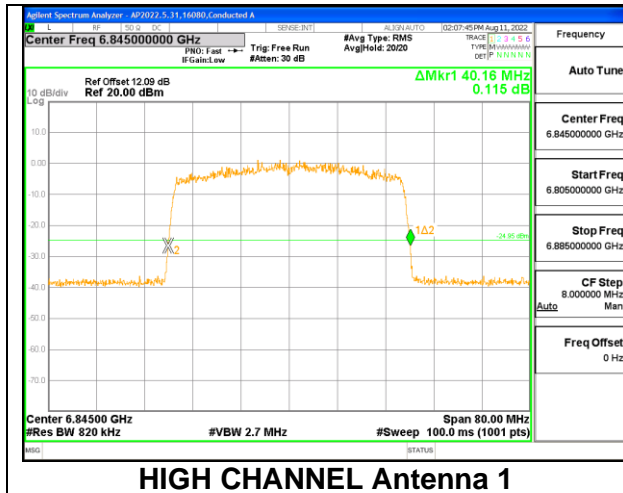
#### LOW CHANNEL



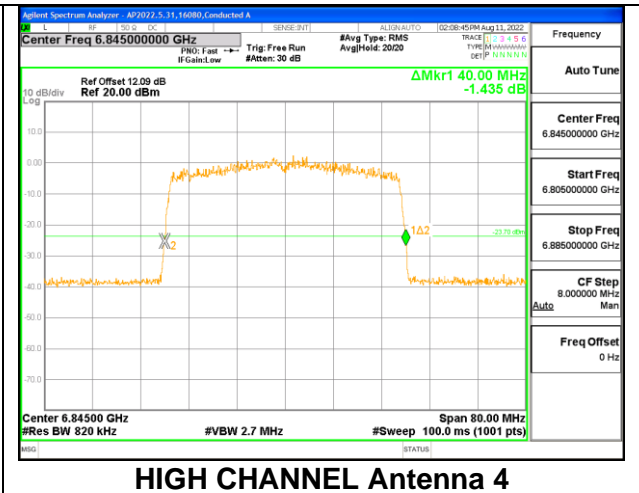
#### MID CHANNEL



### HIGH CHANNEL

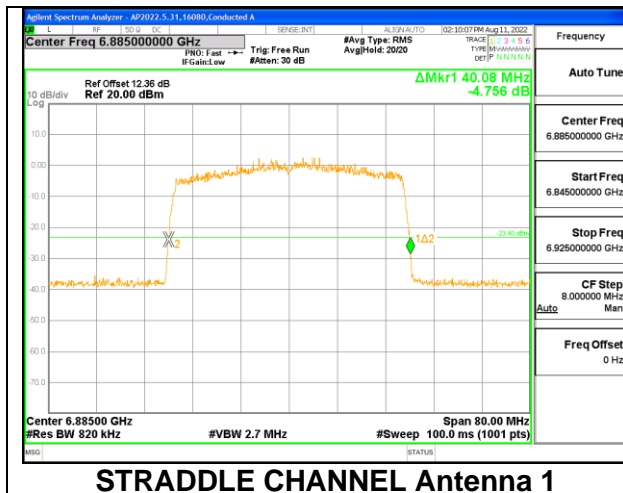


**HIGH CHANNEL Antenna 1**

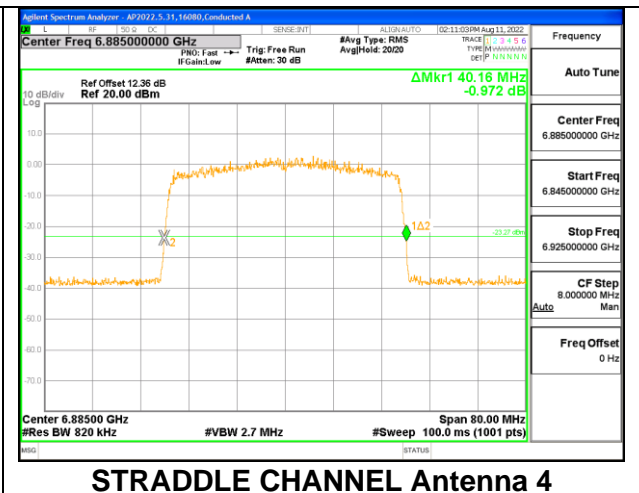


**HIGH CHANNEL Antenna 4**

### STRADDLE CHANNEL



**STRADDLE CHANNEL Antenna 1**



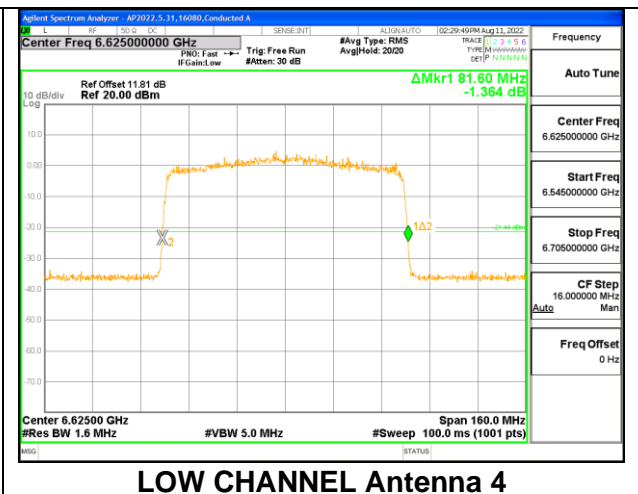
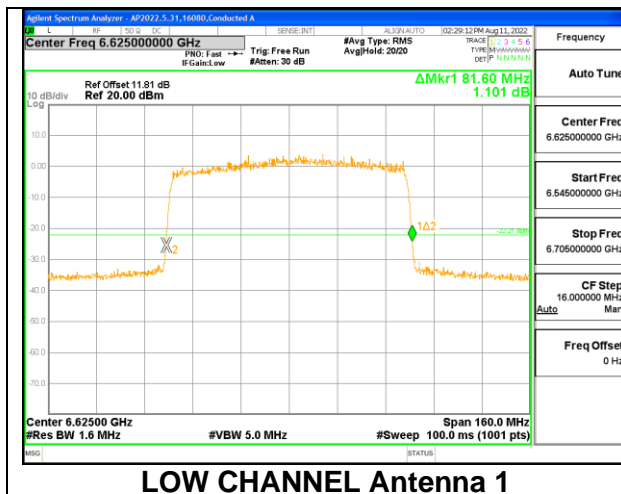
**STRADDLE CHANNEL Antenna 4**

### 9.2.9. 802.11ax HE80 MODE 2TX IN THE UNII-7 BAND

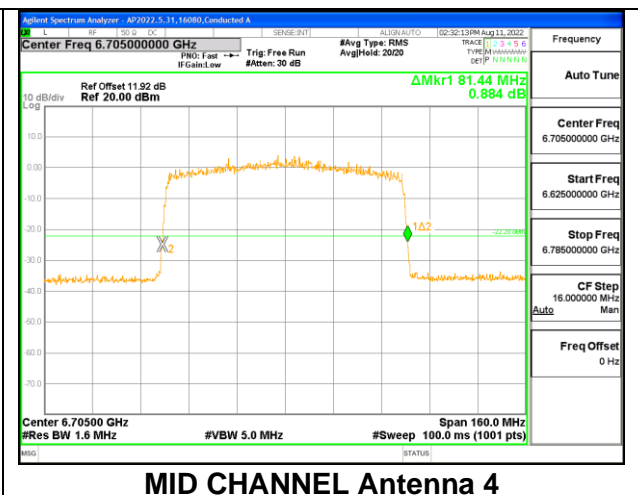
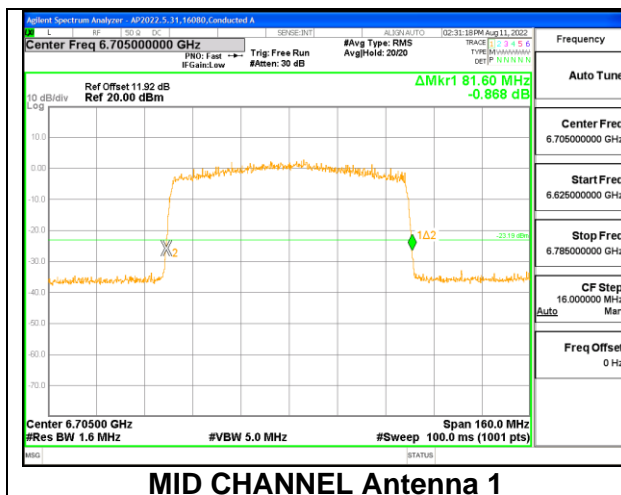
#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 996-Tones, RU Index 67

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6625	81.60	81.60
Mid	6705	81.60	81.44
High	6785	81.44	81.60
Straddle	6865	81.60	81.60

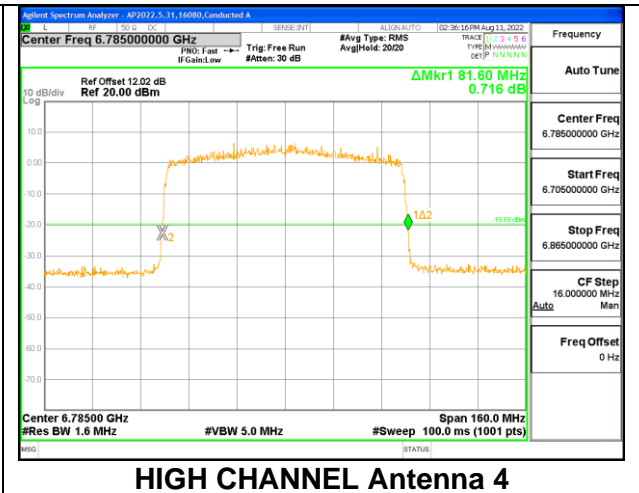
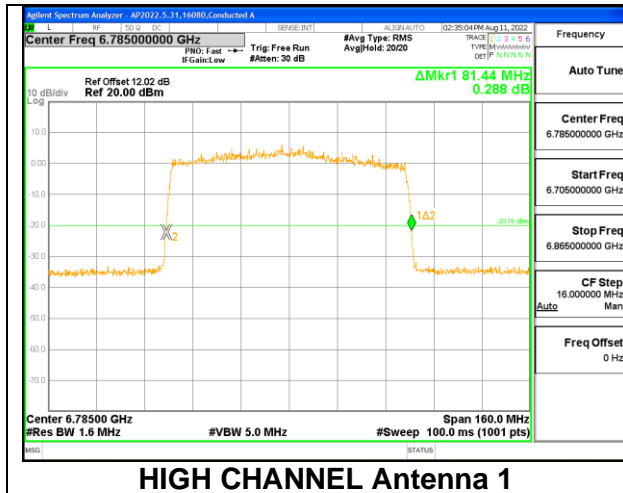
#### LOW CHANNEL



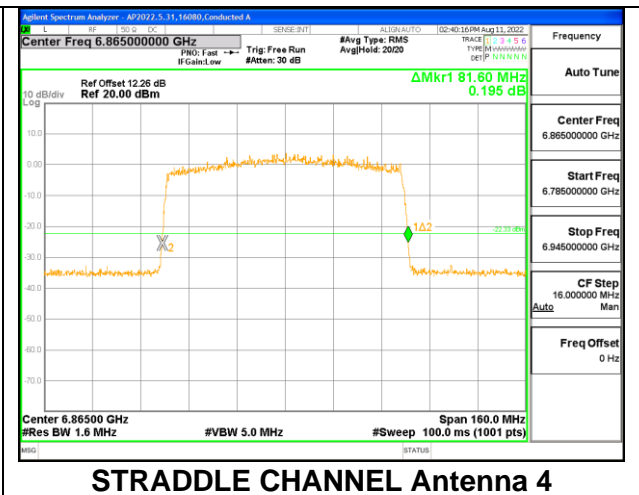
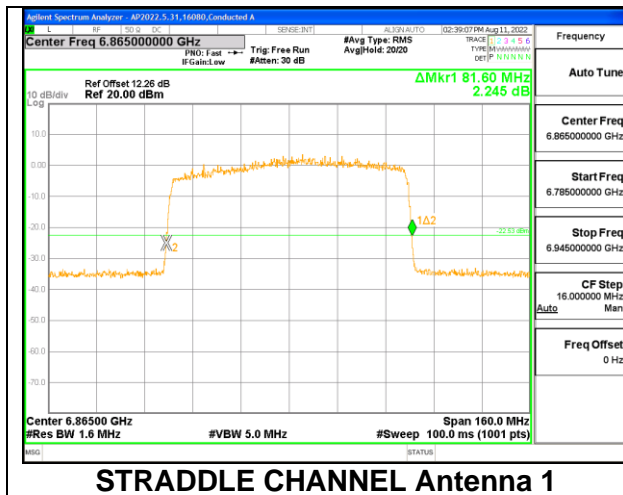
#### MID CHANNEL



### HIGH CHANNEL



### STRADDLE CHANNEL

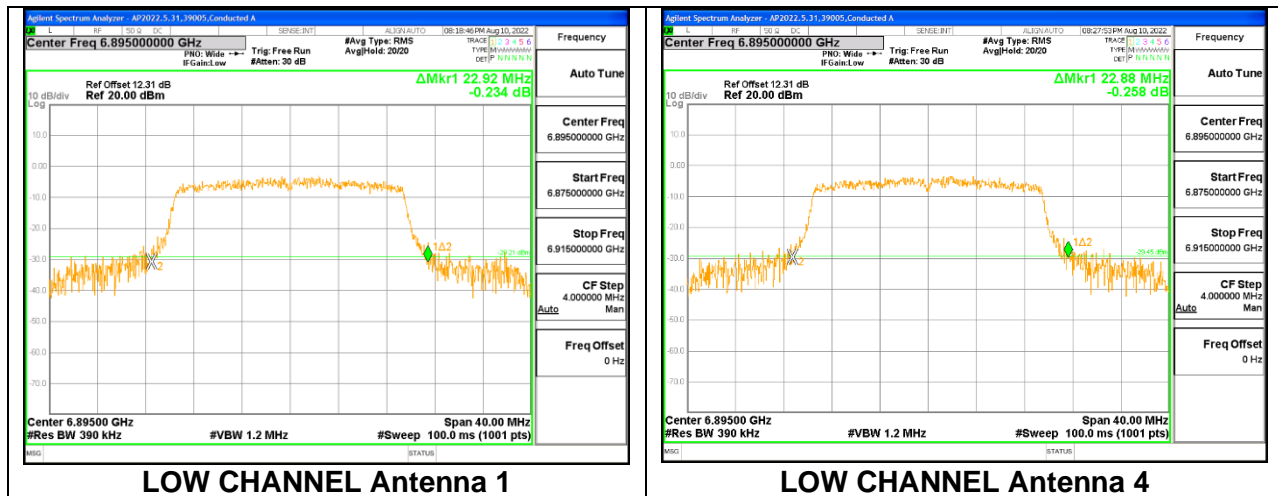


### 9.2.10. 802.11ax HE20 MODE 2TX IN THE UNII-8 BAND

#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 242-Tones, RU Index 61

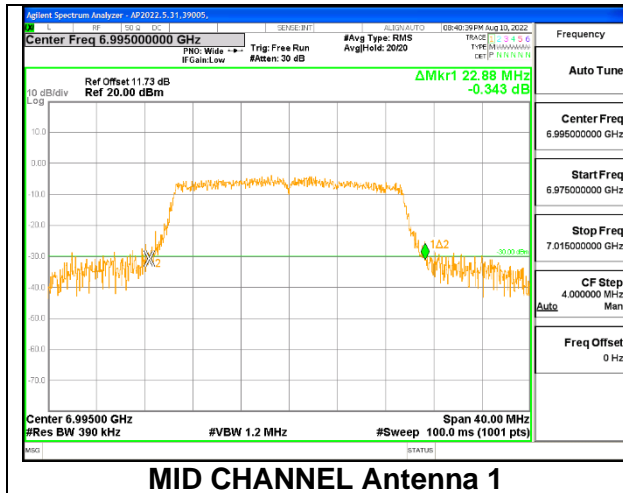
Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6895	22.92	22.88
Mid	6995	22.88	22.60
High	7115	22.92	22.80

#### LOW CHANNEL

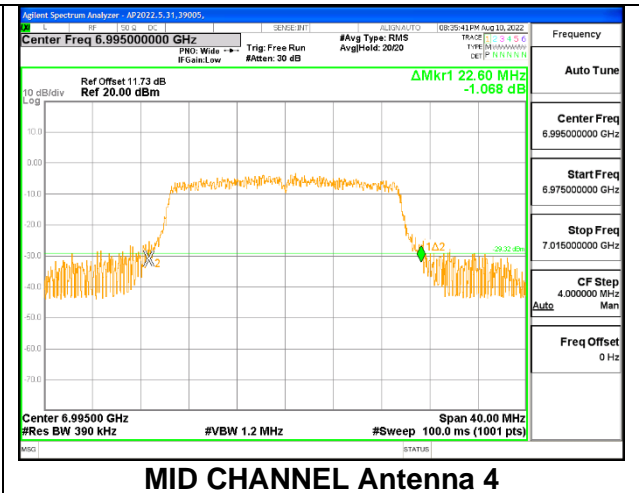




### MID CHANNEL

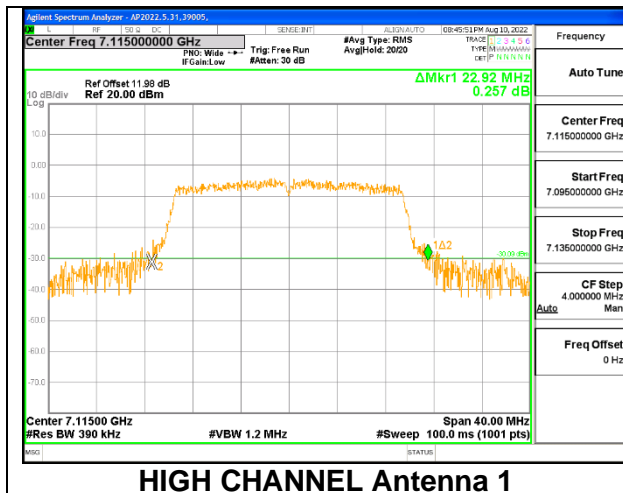


MID CHANNEL Antenna 1

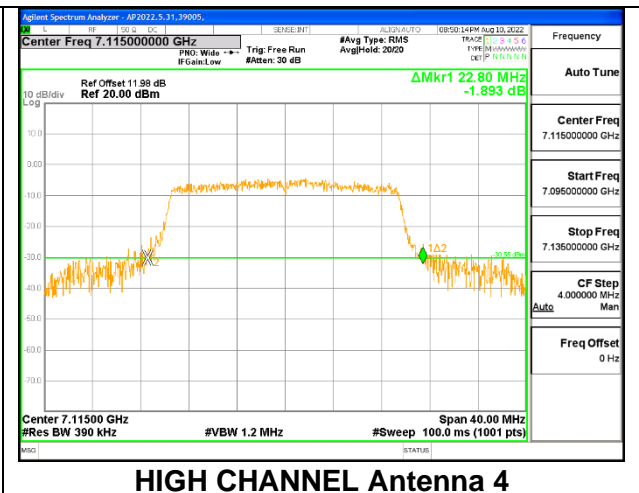


MID CHANNEL Antenna 4

### HIGH CHANNEL



HIGH CHANNEL Antenna 1



HIGH CHANNEL Antenna 4

### 9.2.11. 802.11ax HE40 MODE 2TX IN THE UNII-8 BAND

#### 2TX Antenna 1 + Antenna 4 CDD OFDMA MODE: 484-Tones, RU Index 65

Channel	Frequency (MHz)	26 dB Bandwidth Antenna 1 (MHz)	26 dB Bandwidth Antenna 4 (MHz)
Low	6925	40.16	40.08
Mid	6965	40.08	40.08
High	7085	40.00	40.16

#### LOW CHANNEL

