



**FCC PART 15
TEST REPORT
No. 2013WLN0793**

for

Sony Mobile Communications AB

GSM/WCDMA/LTE mobile phone

Type: PM-0640-BV

With

FCC ID: PY7PM-0640

Hardware Version: A

Software Version: 14.2.A.0.78

Issued Date: 2013-12-09

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

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CONTENTS

CONTENTS	2
1. TEST LATORATORY	9
1.1. TESTING LOCATION	9
1.2. PROJECT DATA.....	9
1.3. SIGNATURE.....	9
2. CLIENT INFORMATION	10
2.1. APPLICANT INFORMATION	10
2.2. MANUFACTURER INFORMATION.....	10
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE)	11
3.1. ABOUT EUT.....	11
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	11
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....	11
3.4. GENERAL DESCRIPTION	12
4. REFERENCE DOCUMENTS	12
4.1. DOCUMENTS SUPPLIED BY APPLICANT	12
4.2. REFERENCE DOCUMENTS FOR TESTING.....	12
5. LABORATORY ENVIRONMENT	12
6. SUMMARY OF TEST RESULTS	13
6.1. SUMMARY OF TEST RESULTS.....	13
6.2. STATEMENTS.....	13
6.3. TEST CONDITIONS.....	13
7. TEST EQUIPMENTS UTILIZED	14
ANNEX A: MEASUREMENT RESULTS	15
A.1. MEASUREMENT METHOD	15
A.2. MAXIMUM OUTPUT POWER.....	16
A.2.1. OUTPUT POWER VERIFICATION	16
A.2.2. ANTENNA GAIN	17
A.2.3. MAXIMUM OUTPUT POWER	17
A.3. PEAK POWER SPECTRAL DENSITY (CONDUCTED)	19
A.4. OCCUPIED 26DB BANDWIDTH(CONDUCTED)	20
FIG. 1 OCCUPIED 26DB BANDWIDTH (802.11A, 5180MHZ).....	21
FIG. 2 OCCUPIED 26DB BANDWIDTH (802.11A, 5200MHZ).....	21
FIG. 3 OCCUPIED 26DB BANDWIDTH (802.11A, 5240MHZ).....	22
FIG. 4 OCCUPIED 26DB BANDWIDTH (802.11A, 5260MHZ).....	22
FIG. 5 OCCUPIED 26DB BANDWIDTH (802.11A, 5280MHZ).....	23
FIG. 6 OCCUPIED 26DB BANDWIDTH (802.11A, 5320MHZ).....	23
FIG. 7 OCCUPIED 26DB BANDWIDTH (802.11A, 5500MHZ).....	24

FIG. 8	OCCUPIED 26DB BANDWIDTH (802.11A, 5600MHZ).....	24
FIG. 9	OCCUPIED 26DB BANDWIDTH (802.11A, 5700MHZ).....	25
FIG. 10	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5180MHZ).....	25
FIG. 11	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5200MHZ).....	26
FIG. 12	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5240MHZ).....	26
FIG. 13	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5260MHZ).....	27
FIG. 14	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5280MHZ).....	27
FIG. 15	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5320MHZ).....	28
FIG. 16	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5500MHZ).....	28
FIG. 17	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5600MHZ).....	29
FIG. 18	OCCUPIED 26DB BANDWIDTH (802.11N-HT20, 5700MHZ).....	29
FIG. 19	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5190MHZ).....	30
FIG. 20	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5230MHZ).....	30
FIG. 21	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5270MHZ).....	31
FIG. 22	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5310MHZ).....	31
FIG. 23	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5510MHZ).....	32
FIG. 24	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5590MHZ).....	32
FIG. 25	OCCUPIED 26DB BANDWIDTH (802.11N-HT40, 5670MHZ).....	33
FIG. 26	OCCUPIED 26DB BANDWIDTH (802.11AC-HT80, 5210MHZ).....	33
FIG. 27	OCCUPIED 26DB BANDWIDTH (802.11AC-HT80, 5290MHZ).....	34
FIG. 28	OCCUPIED 26DB BANDWIDTH (802.11AC-HT80, 5530MHZ).....	34
A.5.	BAND EDGES COMPLIANCE.....	35
A5.1	BAND EDGES - CONDUCTED.....	35
FIG. 29	BAND EDGES (802.11A, 5180MHZ).....	36
FIG. 30	BAND EDGES (802.11A, 5320MHZ).....	36
FIG. 31	BAND EDGES (802.11A, 5500MHZ).....	37
FIG. 32	BAND EDGES (802.11N-HT20, 5180MHZ).....	37
FIG. 33	BAND EDGES (802.11N-HT20, 5320MHZ).....	38
FIG. 34	BAND EDGES (802.11N-HT20, 5500MHZ).....	38
FIG. 35	BAND EDGES (802.11N-HT40, 5190MHZ).....	39
FIG. 36	BAND EDGES (802.11N-HT40, 5310MHZ).....	39
FIG. 37	BAND EDGES (802.11N-HT40, 5510MHZ).....	40
FIG. 38	BAND EDGES (802.11AC-HT80, 5210MHZ).....	40
FIG. 39	BAND EDGES (802.11AC-HT80, 5290MHZ).....	41
FIG. 40	BAND EDGES (802.11AC-HT80, 5530MHZ).....	41
A5.2	BAND EDGES - RADIATED.....	42
FIG. 41	BAND EDGES (802.11A, 5180MHZ).....	43
FIG. 42	BAND EDGES (802.11A, 5320MHZ).....	43
FIG. 43	BAND EDGES (802.11A, 5500MHZ).....	44
FIG. 44	BAND EDGES (802.11N-HT20, 5180MHZ).....	44
FIG. 45	BAND EDGES (802.11N-HT20, 5320MHZ).....	45
FIG. 46	BAND EDGES (802.11N-HT20, 5500MHZ).....	45
FIG. 47	BAND EDGES (802.11N-HT40, 5190MHZ).....	46
FIG. 48	BAND EDGES (802.11N-HT40, 5310MHZ).....	46

FIG. 49	BAND EDGES (802.11N-HT40, 5510MHZ)	47
FIG. 50	BAND EDGES (802.11AC-HT80, 5210MHZ)	47
FIG. 51	BAND EDGES (802.11AC-HT80, 5290MHZ)	48
FIG. 52	BAND EDGES (802.11AC-HT80, 5530MHZ)	48
A.6.	TRANSMITTER SPURIOUS EMISSION	49
FIG. 53	RADIATED SPURIOUS EMISSION (802.11A, CH36, 30 MHz-1 GHz).....	55
FIG. 54	RADIATED SPURIOUS EMISSION (802.11A, CH36, 1 GHz-6 GHz).....	55
FIG. 55	RADIATED SPURIOUS EMISSION (802.11A, CH36, 6 GHz-18 GHz).....	56
FIG. 56	RADIATED SPURIOUS EMISSION (802.11A, CH40, 30 MHz-1 GHz).....	56
FIG. 57	RADIATED SPURIOUS EMISSION (802.11A, CH40, 1 GHz-6 GHz).....	57
FIG. 58	RADIATED SPURIOUS EMISSION (802.11A, CH40, 6 GHz-18 GHz).....	57
FIG. 59	RADIATED SPURIOUS EMISSION (802.11A, CH48, 30 MHz-1 GHz).....	58
FIG. 60	RADIATED SPURIOUS EMISSION (802.11A, CH48, 1 GHz-6 GHz).....	58
FIG. 61	RADIATED SPURIOUS EMISSION (802.11A, CH48, 6 GHz-18 GHz).....	59
FIG. 62	RADIATED SPURIOUS EMISSION (802.11A, U-NII 1, 18 GHz-26.5 GHz).....	59
FIG. 63	RADIATED SPURIOUS EMISSION (802.11A, U-NII 1, 26.5 GHz-40 GHz).....	60
FIG. 64	RADIATED SPURIOUS EMISSION (802.11A, CH52, 30 MHz-1 GHz).....	60
FIG. 65	RADIATED SPURIOUS EMISSION (802.11A, CH52, 1 GHz-6 GHz).....	61
FIG. 66	RADIATED SPURIOUS EMISSION (802.11A, CH52, 6 GHz-18 GHz).....	61
FIG. 67	RADIATED SPURIOUS EMISSION (802.11A, CH56, 30 MHz-1 GHz).....	62
FIG. 68	RADIATED SPURIOUS EMISSION (802.11A, CH56, 1 GHz-6 GHz).....	62
FIG. 69	RADIATED SPURIOUS EMISSION (802.11A, CH56, 6 GHz-18 GHz).....	63
FIG. 70	RADIATED SPURIOUS EMISSION (802.11A, CH64, 30 MHz-1 GHz).....	63
FIG. 71	RADIATED SPURIOUS EMISSION (802.11A, CH64, 1 GHz-6 GHz).....	64
FIG. 72	RADIATED SPURIOUS EMISSION (802.11A, CH64, 6 GHz-18 GHz).....	64
FIG. 73	RADIATED SPURIOUS EMISSION (802.11A, U-NII 2, 18 GHz-26.5 GHz).....	65
FIG. 74	RADIATED SPURIOUS EMISSION (802.11A, U-NII 2, 26.5 GHz-40 GHz).....	65
FIG. 75	RADIATED SPURIOUS EMISSION (802.11A, CH100, 30 MHz-1 GHz).....	66
FIG. 76	RADIATED SPURIOUS EMISSION (802.11A, CH100, 1 GHz-6 GHz).....	66
FIG. 77	RADIATED SPURIOUS EMISSION (802.11A, CH100, 6 GHz-18 GHz).....	67
FIG. 78	RADIATED SPURIOUS EMISSION (802.11A, CH120, 30 MHz-1 GHz).....	67
FIG. 79	RADIATED SPURIOUS EMISSION (802.11A, CH120, 1 GHz-6 GHz).....	68
FIG. 80	RADIATED SPURIOUS EMISSION (802.11A, CH120, 6 GHz-18 GHz).....	68
FIG. 81	RADIATED SPURIOUS EMISSION (802.11A, CH140, 30 MHz-1 GHz).....	69
FIG. 82	RADIATED SPURIOUS EMISSION (802.11A, CH140, 1 GHz-6 GHz).....	69
FIG. 83	RADIATED SPURIOUS EMISSION (802.11A, CH140, 6 GHz-18 GHz).....	70
FIG. 84	RADIATED SPURIOUS EMISSION (802.11A, U-NII 3, 18 GHz-26.5 GHz).....	70
FIG. 85	RADIATED SPURIOUS EMISSION (802.11A, U-NII 3, 26.5 GHz-40 GHz).....	71
FIG. 86	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH36, 30 MHz-1 GHz)	71
FIG. 87	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH36, 1 GHz-6 GHz).....	72
FIG. 88	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH36, 6 GHz-18 GHz).....	72
FIG. 89	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH40, 30 MHz-1 GHz)	73
FIG. 90	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH40, 1 GHz-6 GHz).....	73
FIG. 91	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH40, 6 GHz-18 GHz).....	74

FIG. 92	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH48, 30 MHz-1 GHz)	74
FIG. 93	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH48, 1 GHz-6 GHz).....	75
FIG. 94	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH48, 6 GHz-18 GHz).....	75
FIG. 95	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 1, 18 GHz-26.5 GHz).....	76
FIG. 96	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 1, 26.5 GHz-40 GHz).....	76
FIG. 97	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH52, 30 MHz-1 GHz)	77
FIG. 98	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH52, 1 GHz-6 GHz).....	77
FIG. 99	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH52, 6 GHz-18 GHz).....	78
FIG. 100	RADIATED SPURIOUS EMISSION (802.11N-HT20 CH56, 30 MHz-1 GHz)	78
FIG. 101	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH56, 1 GHz-6 GHz).....	79
FIG. 102	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH56, 6 GHz-18 GHz).....	79
FIG. 103	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH64, 30 MHz-1 GHz)	80
FIG. 104	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH64, 1 GHz-6 GHz).....	80
FIG. 105	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH64, 6 GHz-18 GHz).....	81
FIG. 106	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 2, 18 GHz-26.5 GHz).....	81
FIG. 107	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 2, 26.5 GHz-40 GHz).....	82
FIG. 108	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH100, 30 MHz-1 GHz)	82
FIG. 109	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH100, 1 GHz-6 GHz).....	83
FIG. 110	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH100, 6 GHz-18 GHz).....	83
FIG. 111	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH120, 30 MHz-1 GHz)	84
FIG. 112	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH120, 1 GHz-6 GHz).....	84
FIG. 113	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH120, 6 GHz-18 GHz).....	85
FIG. 114	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH140, 30 MHz-1 GHz)	85
FIG. 115	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH140, 1 GHz-6 GHz).....	86
FIG. 116	RADIATED SPURIOUS EMISSION (802.11N-HT20, CH140, 6 GHz-18 GHz).....	86
FIG. 117	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 3, 18 GHz-26.5 GHz).....	87
FIG. 118	RADIATED SPURIOUS EMISSION (802.11N-HT20, U-NII 3, 26.5 GHz-40 GHz).....	87
FIG. 119	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH38, 30 MHz-1 GHz)	88
FIG. 120	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH38, 1 GHz-6 GHz).....	88
FIG. 121	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH38, 6 GHz-18 GHz).....	89
FIG. 122	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH46, 30 MHz-1 GHz)	89
FIG. 123	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH46, 1 GHz-6 GHz).....	90
FIG. 124	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH46, 6 GHz-18 GHz).....	90
FIG. 125	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 1, 18 GHz-26.5 GHz).....	91
FIG. 126	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 1, 26.5 GHz-40 GHz).....	91
FIG. 127	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH54, 30 MHz-1 GHz)	92
FIG. 128	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH54, 1 GHz-6 GHz).....	92
FIG. 129	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH54, 6 GHz-18 GHz).....	93
FIG. 130	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH62, 30 MHz-1 GHz)	93
FIG. 131	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH62, 1 GHz-6 GHz).....	94
FIG. 132	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH62, 6 GHz-18 GHz).....	94
FIG. 133	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 2, 18 GHz-26.5 GHz).....	95
FIG. 134	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 2, 26.5 GHz-40 GHz).....	95
FIG. 135	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH102, 30 MHz-1 GHz)	96

FIG. 136	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH102, 1 GHz-6 GHz).....	96
FIG. 137	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH102, 6 GHz-18 GHz).....	97
FIG. 138	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH118, 30 MHz-1 GHz).....	97
FIG. 139	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH118, 1 GHz-6 GHz).....	98
FIG. 140	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH118, 6 GHz-18 GHz).....	98
FIG. 141	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH134, 30 MHz-1 GHz)	99
FIG. 142	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH134, 1 GHz-6 GHz).....	99
FIG. 143	RADIATED SPURIOUS EMISSION (802.11N-HT40, CH134, 6 GHz-18 GHz).....	100
FIG. 144	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 3, 18 GHz-26.5 GHz).....	100
FIG. 145	RADIATED SPURIOUS EMISSION (802.11N-HT40, U-NII 3, 26.5 GHz-40 GHz).....	101
FIG. 146	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH42, 30 MHz-1 GHz)	102
FIG. 147	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH42, 1 GHz-6 GHz).....	102
FIG. 148	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH42, 6 GHz-18 GHz).....	103
FIG. 149	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH58, 30 MHz-1 GHz)	103
FIG. 150	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH58, 1 GHz-6 GHz).....	104
FIG. 151	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH58, 6 GHz-18 GHz).....	104
FIG. 152	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH106, 30 MHz-1 GHz)	105
FIG. 153	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH106, 1 GHz-6 GHz).....	105
FIG. 154	RADIATED SPURIOUS EMISSION (802.11AC-HT80, CH106, 6 GHz-18 GHz).....	106
FIG. 155	RADIATED SPURIOUS EMISSION (802.11AC-HT80, 18 GHz-26.5 GHz).....	106
FIG. 156	RADIATED SPURIOUS EMISSION (802.11AC-HT80, 26.5 GHz-40 GHz).....	107
A.7.	SPURIOUS EMISSIONS RADIATED < 30MHz	108
FIG. 157	RADIATED SPURIOUS EMISSION (802.11A, CH40, 9 kHz ~30 MHz).....	108
A.8.	CONDUCTED EMISSION (150kHz- 30MHz).....	109
FIG. 158	CONDUCTED EMISSION(802.11A, CH40, TX).....	110
FIG. 159	CONDUCTED EMISSION(802.11A, IDLE).....	111
A.9.	PEAK EXCURSION.....	112
FIG. 160	PEAK EXCURSIONS (802.11A, CH36, PEAK)	114
FIG. 161	PEAK EXCURSIONS (802.11A, CH40, PEAK)	114
FIG. 162	PEAK EXCURSIONS (802.11A, CH48, PEAK)	115
FIG. 163	PEAK EXCURSIONS (802.11A, CH36, AVERAGE)	115
FIG. 164	PEAK EXCURSIONS (802.11A, CH40, AVERAGE)	116
FIG. 165	PEAK EXCURSIONS (802.11A, CH48, AVERAGE)	116
FIG. 166	PEAK EXCURSIONS (802.11A, CH52, PEAK)	117
FIG. 167	PEAK EXCURSIONS (802.11A, CH56, PEAK)	117
FIG. 168	PEAK EXCURSIONS (802.11A, CH64, PEAK)	118
FIG. 169	PEAK EXCURSIONS (802.11A, CH52, AVERAGE)	118
FIG. 170	PEAK EXCURSIONS (802.11A, CH56, AVERAGE)	119
FIG. 171	PEAK EXCURSIONS (802.11A, CH64, AVERAGE)	119
FIG. 172	PEAK EXCURSIONS (802.11A, CH100, PEAK)	120
FIG. 173	PEAK EXCURSIONS (802.11A, CH120, PEAK)	120
FIG. 174	PEAK EXCURSIONS (802.11A, CH140, PEAK)	121
FIG. 175	PEAK EXCURSIONS (802.11A, CH100, AVERAGE)	121
FIG. 176	PEAK EXCURSIONS (802.11A, CH120, AVERAGE)	122

FIG. 177	PEAK EXCURSIONS (802.11A, CH140, AVERAGE)	122
FIG. 178	PEAK EXCURSIONS (802.11N-HT20, CH36, PEAK).....	123
FIG. 179	PEAK EXCURSIONS (802.11N-HT20, CH40, PEAK).....	123
FIG. 180	PEAK EXCURSIONS (802.11N-HT20, CH48, PEAK).....	124
FIG. 181	PEAK EXCURSIONS (802.11N-HT20, CH36, AVERAGE).....	124
FIG. 182	PEAK EXCURSIONS (802.11N-HT20, CH40, AVERAGE).....	125
FIG. 183	PEAK EXCURSIONS (802.11N-HT20, CH48, AVERAGE).....	125
FIG. 184	PEAK EXCURSIONS (802.11N-HT20, CH52, PEAK).....	126
FIG. 185	PEAK EXCURSIONS (802.11N-HT20, CH56, PEAK).....	126
FIG. 186	PEAK EXCURSIONS (802.11N-HT20, CH64, PEAK).....	127
FIG. 187	PEAK EXCURSIONS (802.11N-HT20, CH52, AVERAGE).....	127
FIG. 188	PEAK EXCURSIONS (802.11N-HT20, CH56, AVERAGE).....	128
FIG. 189	PEAK EXCURSIONS (802.11N-HT20, CH64, AVERAGE).....	128
FIG. 190	PEAK EXCURSIONS (802.11N-HT20, CH100, PEAK).....	129
FIG. 191	PEAK EXCURSIONS (802.11N-HT20, CH120, PEAK).....	129
FIG. 192	PEAK EXCURSIONS (802.11N-HT20, CH140, PEAK).....	130
FIG. 193	PEAK EXCURSIONS (802.11N-HT20, CH100, AVERAGE).....	130
FIG. 194	PEAK EXCURSIONS (802.11N-HT20, CH120, AVERAGE).....	131
FIG. 195	PEAK EXCURSIONS (802.11N-HT20, CH140, AVERAGE).....	131
FIG. 196	PEAK EXCURSIONS (802.11N-HT40, CH38, PEAK).....	132
FIG. 197	PEAK EXCURSIONS (802.11N-HT40, CH46, PEAK).....	132
FIG. 198	PEAK EXCURSIONS (802.11N-HT40, CH54, PEAK).....	133
FIG. 199	PEAK EXCURSIONS (802.11N-HT40, CH62, PEAK).....	133
FIG. 200	PEAK EXCURSIONS (802.11N-HT40, CH38, AVERAGE).....	134
FIG. 201	PEAK EXCURSIONS (802.11N-HT40, CH46, AVERAGE).....	134
FIG. 202	PEAK EXCURSIONS (802.11N-HT40, CH54, AVERAGE).....	135
FIG. 203	PEAK EXCURSIONS (802.11N-HT40, CH62, AVERAGE).....	135
FIG. 204	PEAK EXCURSIONS (802.11N-HT40, CH102, PEAK).....	136
FIG. 205	PEAK EXCURSIONS (802.11N-HT40, CH118, PEAK).....	136
FIG. 206	PEAK EXCURSIONS (802.11N-HT40, CH134, PEAK).....	137
FIG. 207	PEAK EXCURSIONS (802.11N-HT40, CH102, AVERAGE).....	137
FIG. 208	PEAK EXCURSIONS (802.11N-HT40, CH118, AVERAGE).....	138
FIG. 209	PEAK EXCURSIONS (802.11N-HT40, CH134, AVERAGE).....	138
FIG. 210	PEAK EXCURSIONS (802.11AC-HT80, CH42, PEAK).....	139
FIG. 211	PEAK EXCURSIONS (802.11AC-HT80, CH58, PEAK).....	139
FIG. 212	PEAK EXCURSIONS (802.11AC-HT80, CH106, PEAK).....	140
FIG. 213	PEAK EXCURSIONS (802.11AC-HT80, CH42, AVERAGE).....	140
FIG. 214	PEAK EXCURSIONS (802.11AC-HT80, CH58, AVERAGE).....	141
FIG. 215	PEAK EXCURSIONS (802.11AC-HT80, CH106, AVERAGE).....	141
A.10.	FREQUENCY STABILITY	142
A.11.	POWER CONTROL	142
ANNEX B: PHOTOGRAPHS OF THE TEST SET-UP		143

Documents revision history

Revision	Update	Date
2013WLN0793-FCC 5G	/	2013-11-18
2013WLN0793-FCC 5G-rev1	Revised the Occupied 26dB Bandwidth (Page 20)	2013-12-09

1. TEST LATORATORY

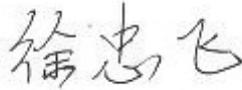
1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China
Postal Code: 100191
Telephone: 008610623046332561
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1.2. Project data

Testing Start Date: 2013-10-30
Testing End Date: 2013-12-09

1.3. Signature



Xu Zhongfei
(Prepared this test report)



Jiang Afang
(Reviewed this test report)



Xiao Li
Deputy Director of the laboratory
(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: Sony Mobile Communications AB
Address /Post: Sony Mobile R&D Center, No. 16, Guangshun South Street,
Chaoyang District
City: Beijing
Postal Code: 100102
Country: China
Contact Ma, Gang
Telephone: +86-10-58656312
Fax: +86-10-58659049

2.2. Manufacturer Information

Company Name: Sony Mobile Communications AB
Address /Post: Sony Mobile R&D Center, No. 16, Guangshun South Street,
Chaoyang District
City: Beijing
Postal Code: 100102
Country: China
Contact Ma, Gang
Telephone: +86-10-58656312
Fax: +86-10-58659049

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY

EQUIPMENT(AE)

3.1. About EUT

Description	GSM 850/900/1800/1900 quad bands, GPRS, EDGE, WCDMA FDD bands 1/2/4/5/8, HSDPA, HSUPA, LTE FDD bands 1/2/3/4/5/7/8/20, Bluetooth (EDR and 4.0), ANT+, WLAN (802.11 a/ac/b/g/n), NFC, FM, GPS mobile phone
Type	PM-0640-BV
FCC ID	PY7PM-0640
WLAN Frequency Range	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
MAX Conducted Power	14.97dBm(OFDM)
MAX Radiated Power	16.94dBm(OFDM)
Extreme Temperature	-30/+55°C
Extreme vol. Limits	3.6VDC to 4.2VDC (nominal: 4.2VDC)

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	S/N	IMEI	HW Version	SW Version
EUT1	CB5A1VG620	004402451604411	A	14.2.A.0.78
EUT2	CB5A1VG61J	004402451604122	A	14.2.A.0.78

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	SN
AE1	USB Cable	AI-0401	123307DD003654E

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of GSM/WCDMA/LTE mobile phone with integrated antenna and inbuilt battery.

The EUT supports GSM 850/900/1800/1900MHz bands, WCDMA FDD band 1/2/4/5/8 and LTE FDD bands 1/2/3/4/5/7/8/20. It supports GPRS service with multi-slots class 33 and EGPRS service with multi-slots class 33. The HSDPA and HSUPA features are also supported.

It has MP3, camera, USB memory, Mobile High-Definition Link (MHL), FM radio, GPS receiver, NFC, Bluetooth (EDR and Bluetooth 4.0), ANT+, WLAN (802.11 a/ac/b/g/n) and Wi-Fi hotspot functions. For WLAN 802.11n, it supports 20MHz bandwidth on 2.4GHz band and 20MHz/40MHz bandwidths on 5GHz/5.8GHz band. For WLAN 802.11 ac, it supports 20MHz/40MHz/80MHz bandwidths.

It includes normal option: USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	Oct, 2012
UNII: KDB 789033	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E	April, 2013

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	P
Power Spectral Density	15.407	/	P
Occupied 26dB Bandwidth	15.403	/	P
Band edge compliance	15.407	/	P
Transmitter spurious emissions radiated	15.407	/	P
Spurious emissions radiated < 30 MHz	15.407	/	P
Spurious emissions conducted < 30 MHz	15.407	/	P
Peak Excursion	15.407	/	P
Frequency Stability	15.407	/	NA
Transmit Power Control	15.407	/	NA

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by TMC
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

TMC has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26°C
Voltage	4.2V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2013-07-08	2014-07-07
2	Test Receiver	ESS	847151/015	Rohde & Schwarz	2013-10-29	2014-10-28
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2013-4-15	2014-08-12
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

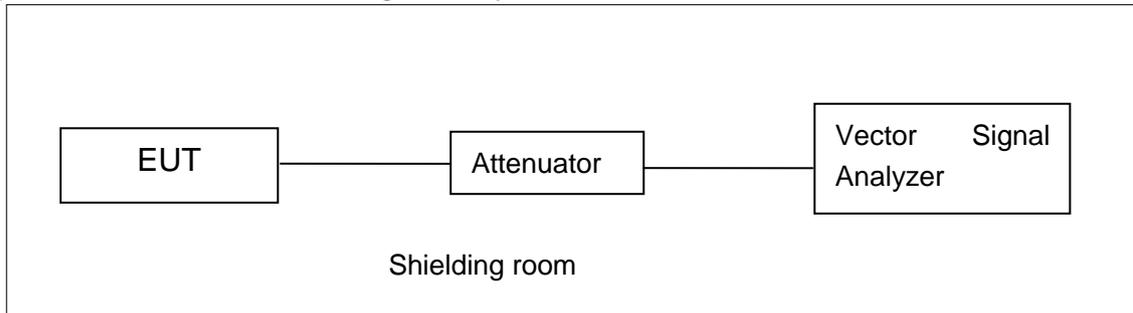
No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESCI	100344	Rohde & Schwarz	2013-11-8	2014-11-7
2	Test Receiver	ESCI 7	100948	Rohde & Schwarz	2013-07-19	2014-07-18
3	BiLog Antenna	VULB9163	9163-514	Schwarzbeck	2011-11-11	2014-11-10
4	Dual-Ridge Waveguide Horn Antenna	3117	00119024	ETS-Lindgren	2011-2-2	2014-2-1
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2011-7-1	2014-06-30
6	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2011-12-21	2014-12-20
7	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode.
- 3). Set the EUT to the required channel.
- 4). Set the spectrum analyzer to start measurement.
- 5). Record the values. Vector Signal Analyzer

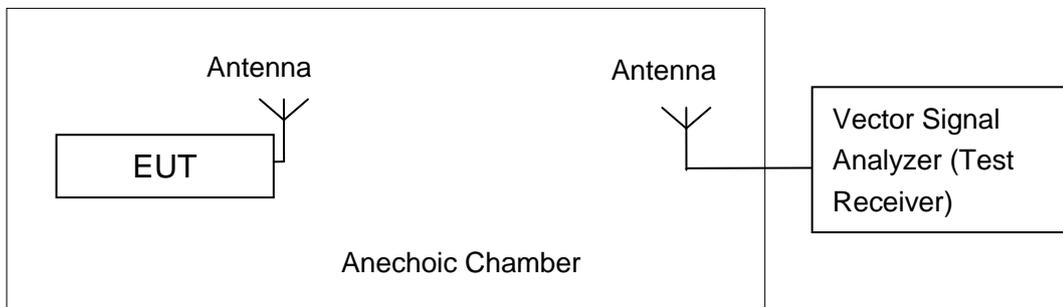


A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;



The measurement is made according to KDB 789033

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	17dBm or 4+10logB
	5250MHz~5350MHz	24dBm or 11+10logB
	5470MHz~5725MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurement method SA-1 is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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A.2.1. Output Power Verification

This test is only for mode verification, and the selected mode will be used for the future measurement.

Measurement Results:

OFDM/a mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	6	9	12	18	24	36	48	54
36 (5180 MHz)	12.44	12.40	12.40	12.38	6.57	6.54	6.45	6.43

OFDM/n-HT20 mode	Maximum Conducted Power (dBm)							
data rate (Mbps)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
36 (5180 MHz)	12.87	12.84	12.79	6.04	6.02	6.00	6.00	6.01

OFDM/n-HT40 mode	Maximum Conducted Power (dBm)							
data rate (Index)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
38 (5190 MHz)	9.12	9.13	9.12	7.05	7.02	7.00	6.99	7.00

OFDM/ac-HT80 mode	Maximum Conducted Power (dBm)							
data rate (Index)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
42 (5210 MHz)	6.82	7.20	7.13	5.57	5.43	5.48	5.41	5.43

Selected data rate for all measurement:

OFDM /a-mode: 6Mbps

OFDM /n-HT20 mode: MCS0

OFDM /n-HT40 mode: MCS1

OFDM /ac-HT80 mode: MCS1

A.2.2. Antenna Gain

The antenna gain of the complete system is calculated by the difference of radiated power and the conducted power of the EUT.

Band 5150MHz to 5350MHz,

Test	Channel			
	Low(5180MHz)	High(5240MHz)	Low(5260MHz)	High(5320MHz)
Tnom,Vnom				
Conducted Power(dBm)	16.79	17.46	18.15	16.71
Radiated Power(dBm)	19.09	19.91	19.95	19.52
Gain(dBi)	2.30	2.45	1.80	2.81

Band 5470MHz to 5725MHz,

Test	Channel		
	Low(5500MHz)	Middle(5600MHz)	High(5700MHz)
Tnom,Vnom			
Conducted Power(dBm)	16.75	16.59	16.42
Radiated Power(dBm)	19.83	19.80	17.92
Gain(dBi)	3.08	3.21	1.50

Antenna Gain = Radiated value (with radiated sample) - Conducted values (with conducted samples)

A.2.3. Maximum Output Power

Measurement Results:

802.11a mode

Type	Test Result					
	5180MHz (Ch36)	5200MHz (Ch40)	5240MHz (Ch48)	5260MHz (Ch52)	5280MHz (Ch56)	5320 MHz (Ch64)
Conducted(dBm)	12.57	13.09	13.35	14.50	14.08	13.26
radiated(dBm)	14.87	15.54	15.80	16.30	16.89	16.07

Type	Test Result		
	5500MHz (Ch100)	5600MHz (Ch120)	5700MHz (Ch140)
conducted(dBm)	12.95	13.07	12.63
radiated(dBm)	16.03	16.28	14.13

802.11n-HT20 mode

Type	Test Result					
	5180MHz (Ch36)	5200MHz (Ch40)	5240MHz (Ch48)	5260MHz (Ch52)	5280MHz (Ch56)	5320 MHz (Ch64)
conducted(dBm)	13.30	13.77	13.48	14.97	14.13	13.74
radiated(dBm)	15.60	16.22	15.93	16.77	16.94	16.55

Type	Test Result		
	5500MHz (Ch100)	5600MHz (Ch120)	5700MHz (Ch140)
conducted(dBm)	13.51	13.50	13.12
radiated(dBm)	16.59	16.71	14.62

802.11n-HT40 mode

Type	Test Result			
	5190MHz (Ch38)	5230MHz (Ch46)	5270MHz (Ch55)	5310 MHz (Ch63)
conducted(dBm)	9.19	9.73	10.45	8.80
radiated(dBm)	11.49	12.18	12.25	11.61

Type	Test Result		
	5510MHz (Ch102)	5590MHz (Ch118)	5670MHz (Ch134)
conducted(dBm)	9.49	9.83	8.98
radiated(dBm)	12.57	13.04	10.48

802.11ac-HT80 mode

Type	Test Result		
	5210MHz (Ch42)	5290MHz (Ch58)	5530MHz (Ch106)
conducted(dBm)	7.33	8.91	7.83
radiated(dBm)	9.63	10.71	10.91

Conclusion: PASS

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	4
	5250MHz~5350MHz	11
	5470MHz~5725MHz	11

The output power measurement method SA-1 is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Results:

Mode	Channel	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	-13.28	P
	5200 MHz	-11.26	P
	5240 MHz	-12.18	P
	5260 MHz	-11.72	P
	5280 MHz	-11.91	P
	5320 MHz	-12.17	P
	5500 MHz	-13.28	P
	5600 MHz	-12.98	P
	5700 MHz	-13.1	P
802.11n HT20	5180 MHz	-12.32	P
	5200 MHz	-11.97	P
	5240 MHz	-12.23	P
	5260 MHz	-10.16	P
	5280 MHz	-11.59	P
	5320 MHz	-12.66	P
	5500 MHz	-11.93	P
	5600 MHz	-12.73	P
	5700 MHz	-12.58	P
802.11n HT40	5190 MHz	-19.59	P
	5230 MHz	-19.34	P
	5270 MHz	-17.74	P
	5310 MHz	-20.1	P
	5510 MHz	-19.33	P
	5590 MHz	-18.36	P
	5670 MHz	-18.86	P
802.11ac HT80	5210 MHz	-21.96	P
	5290 MHz	-20.43	P
	5530 MHz	-21.45	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth(conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

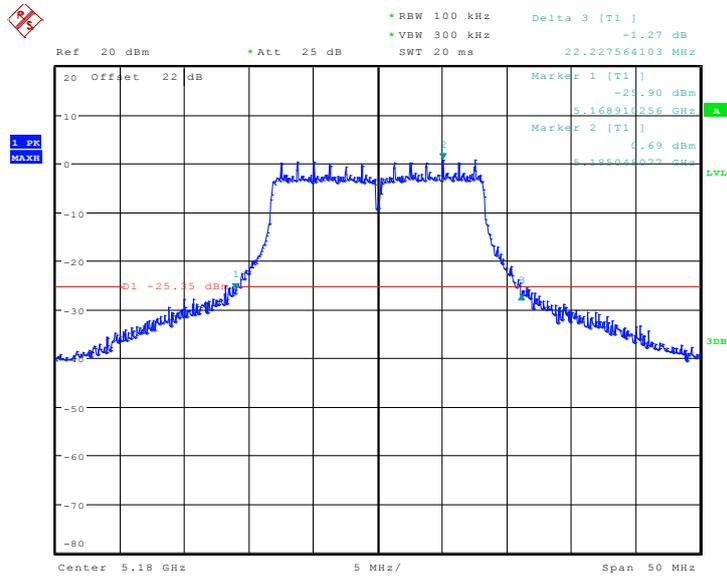
Measurement Uncertainty	60.80Hz
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Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (kHz)		conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	22228	P
	5200 MHz	Fig.2	22308	P
	5240 MHz	Fig.3	23638	P
	5260 MHz	Fig.4	26875	P
	5280 MHz	Fig.5	24503	P
	5320 MHz	Fig.6	22436	P
	5500 MHz	Fig.7	23317	P
	5600 MHz	Fig.8	24359	P
802.11n HT20	5180 MHz	Fig.10	23510	P
	5200 MHz	Fig.11	23718	P
	5240 MHz	Fig.12	23317	P
	5260 MHz	Fig.13	28397	P
	5280 MHz	Fig.14	24920	P
	5320 MHz	Fig.15	24199	P
	5500 MHz	Fig.16	23317	P
	5600 MHz	Fig.17	28285	P
802.11n HT40	5190 MHz	Fig.19	45513	P
	5230 MHz	Fig.20	45769	P
	5270 MHz	Fig.21	45513	P
	5310 MHz	Fig.22	46410	P
	5510 MHz	Fig.23	46538	P
	5590 MHz	Fig.24	46410	P
	5670 MHz	Fig.25	45385	P
802.11ac HT80	5210 MHz	Fig.26	87500	P
	5290 MHz	Fig.27	87692	P
	5530 MHz	Fig.28	87500	P

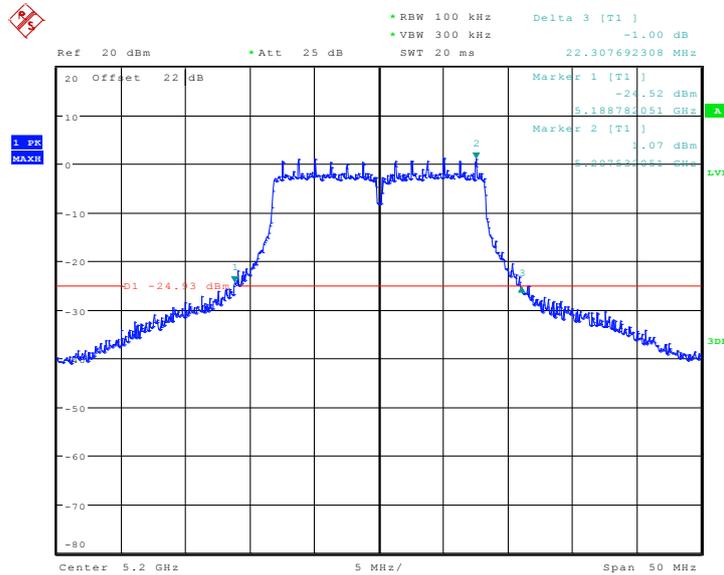
Conclusion: PASS

Test graphs as below:



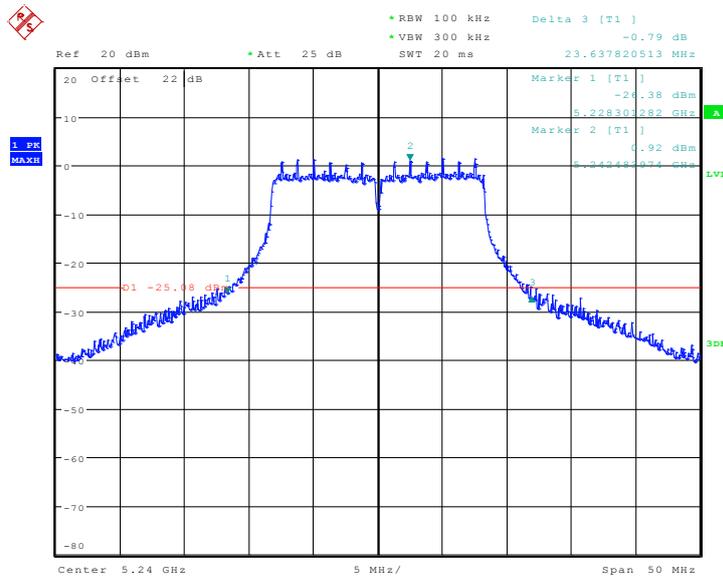
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Fig. 1 Occupied 26dB Bandwidth (802.11a, 5180MHz)



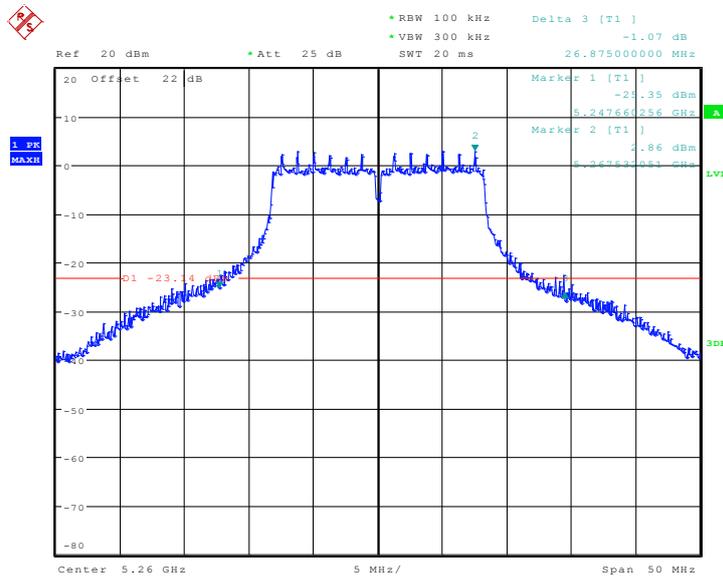
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Fig. 2 Occupied 26dB Bandwidth (802.11a, 5200MHz)



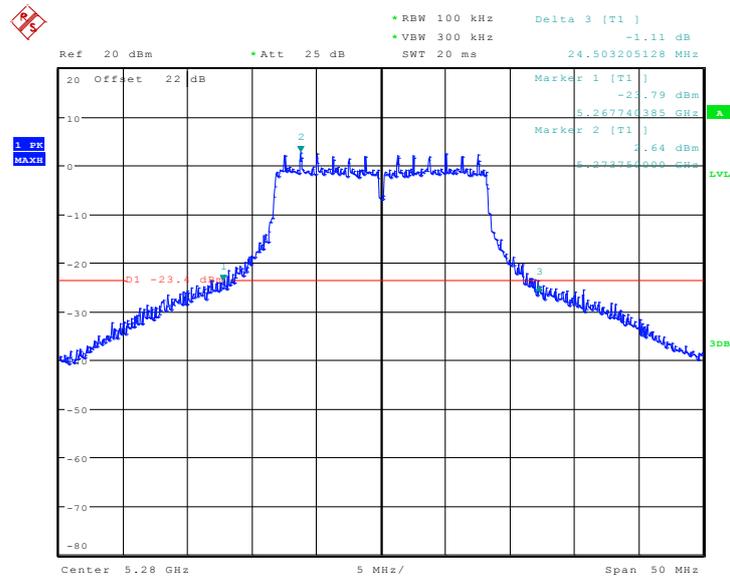
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Fig. 3 Occupied 26dB Bandwidth (802.11a, 5240MHz)



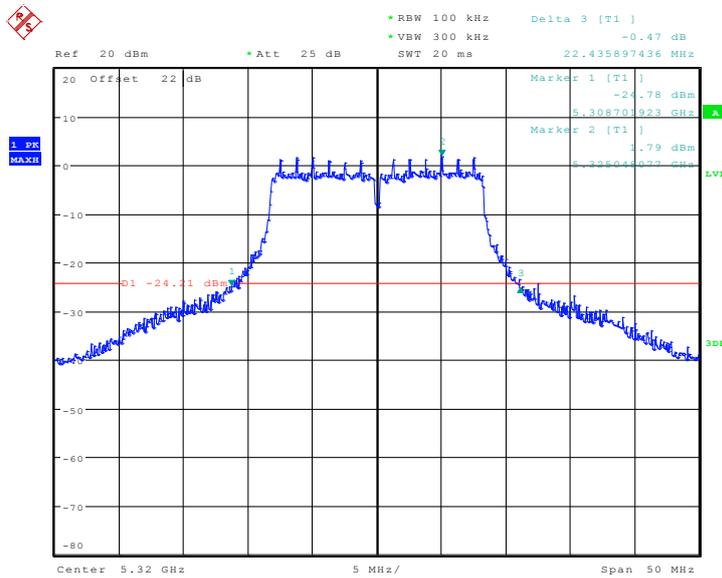
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Fig. 4 Occupied 26dB Bandwidth (802.11a, 5260MHz)



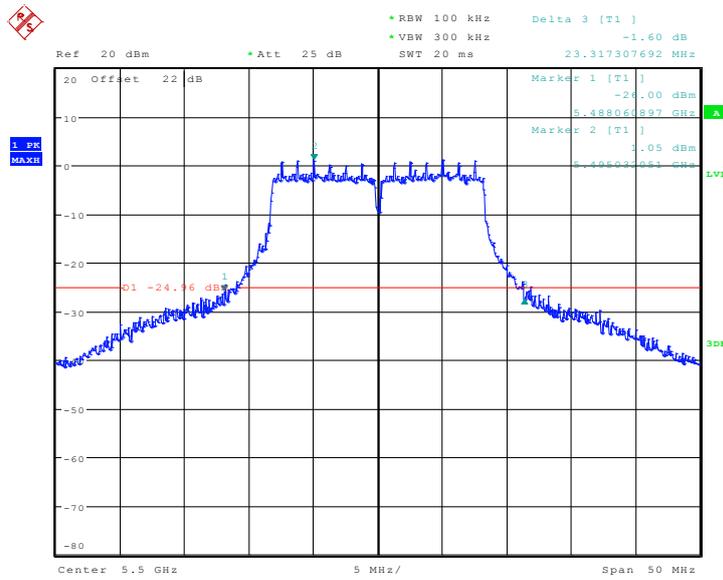
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Fig. 5 Occupied 26dB Bandwidth (802.11a, 5280MHz)



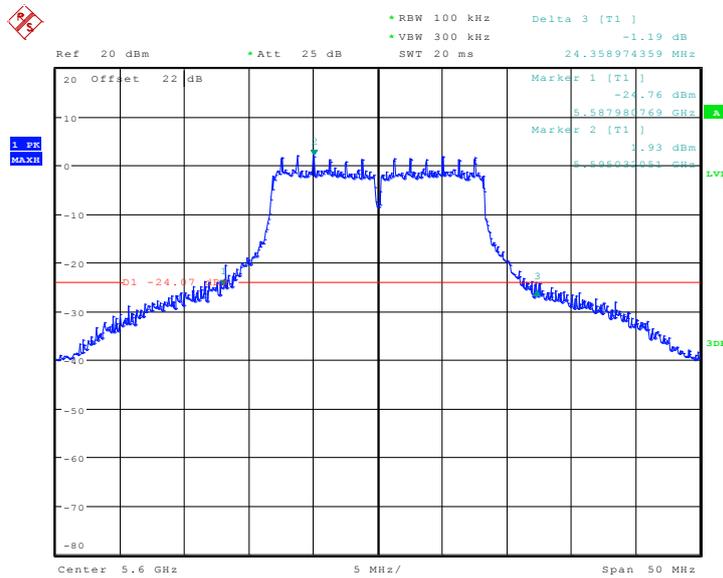
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Fig. 6 Occupied 26dB Bandwidth (802.11a, 5320MHz)



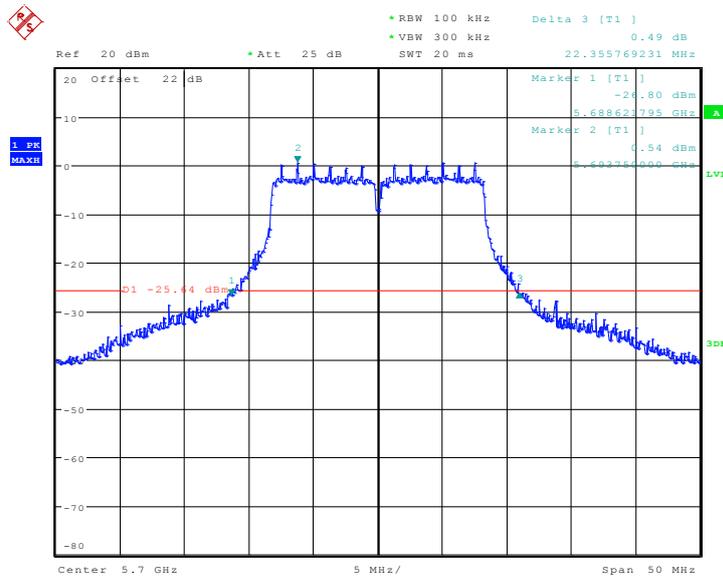
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Fig. 7 Occupied 26dB Bandwidth (802.11a, 5500MHz)



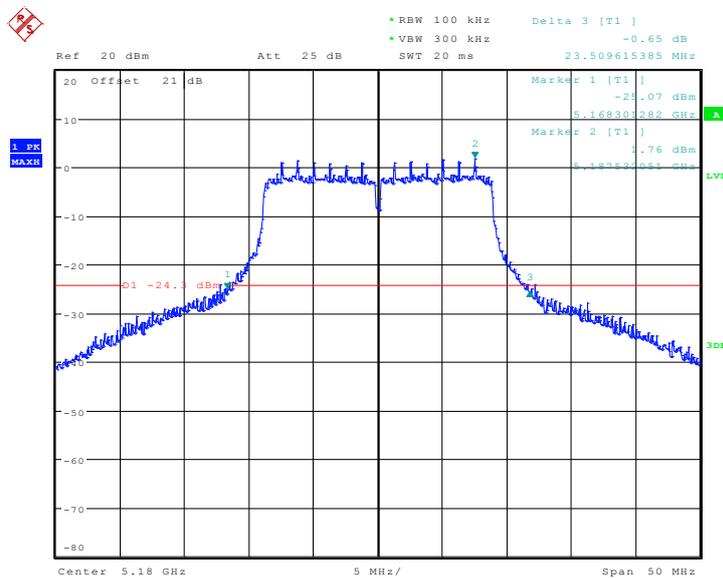
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Fig. 8 Occupied 26dB Bandwidth (802.11a, 5600MHz)



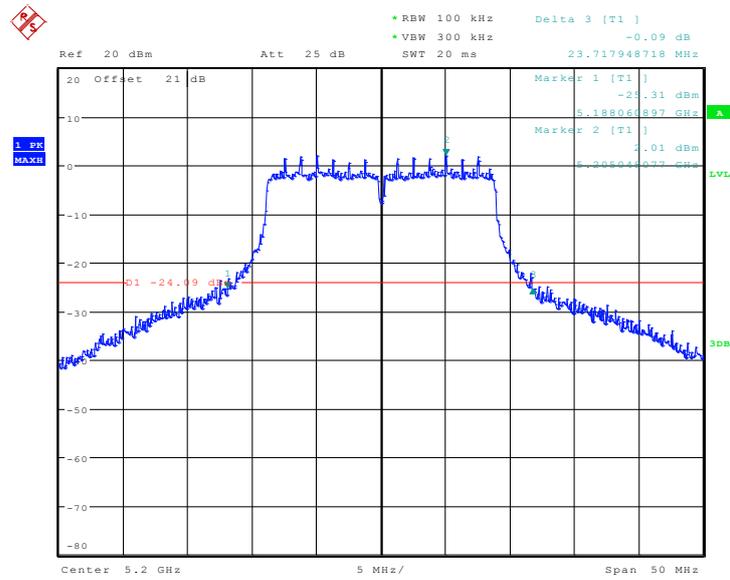
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Fig. 9 Occupied 26dB Bandwidth (802.11a, 5700MHz)



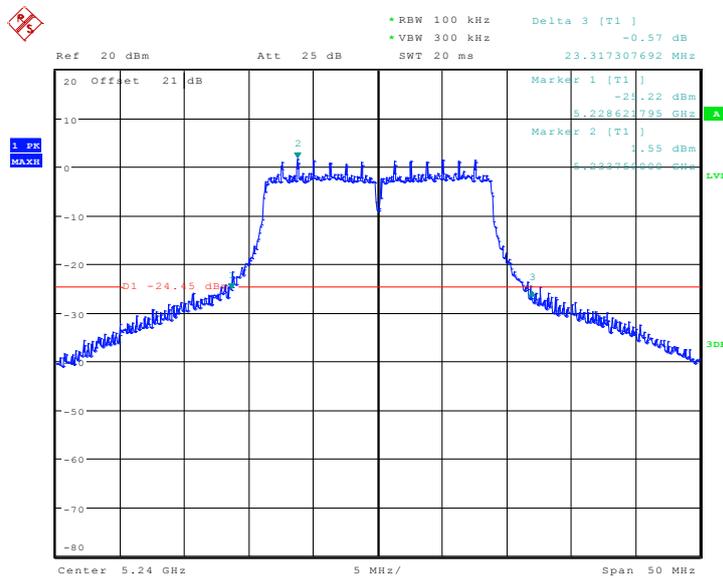
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Fig. 10 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)



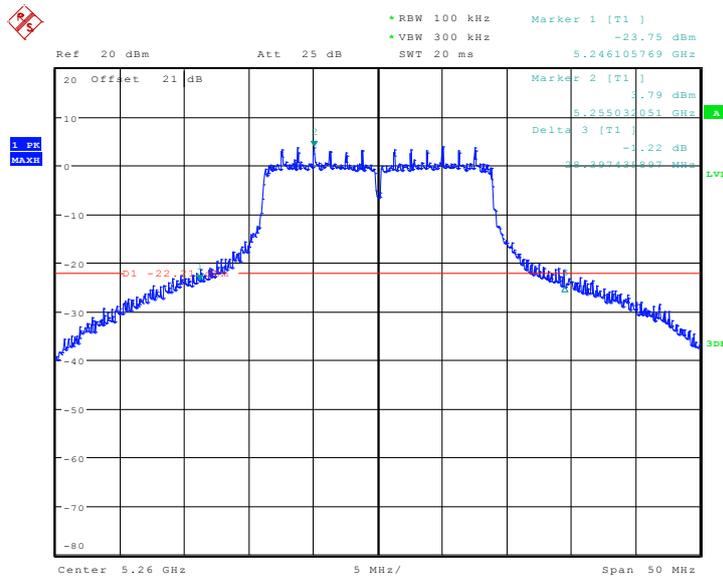
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Fig. 11 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)



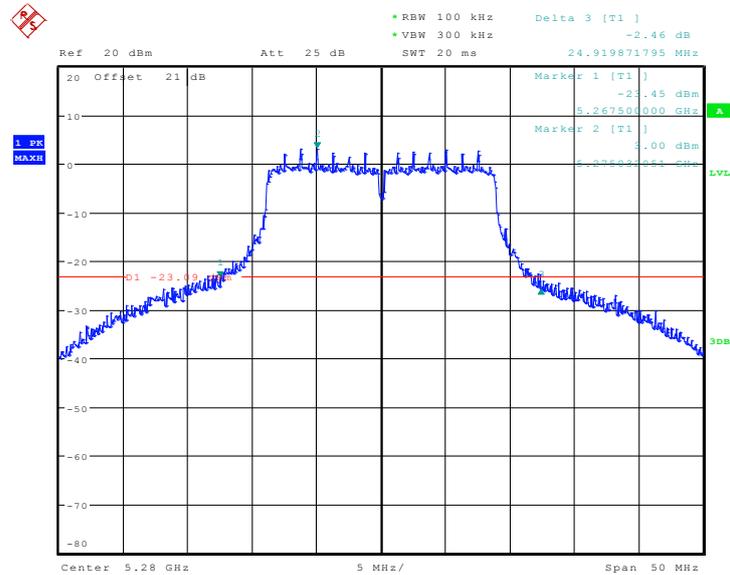
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Fig. 12 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)



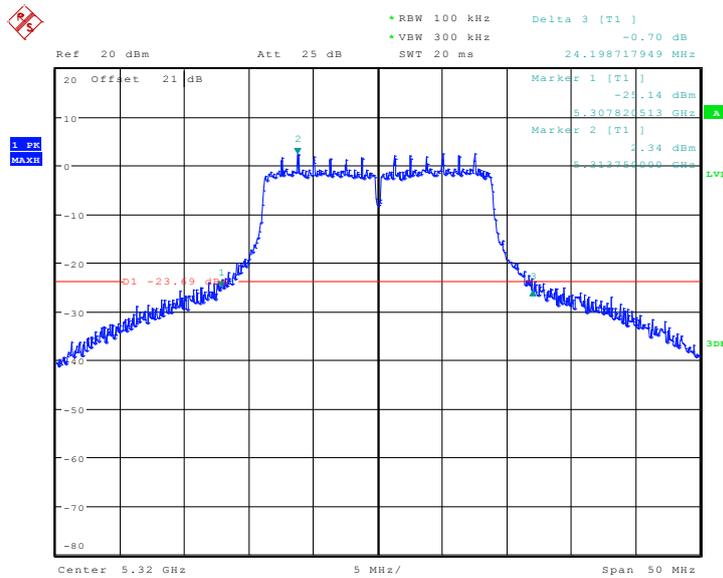
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Fig. 13 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)



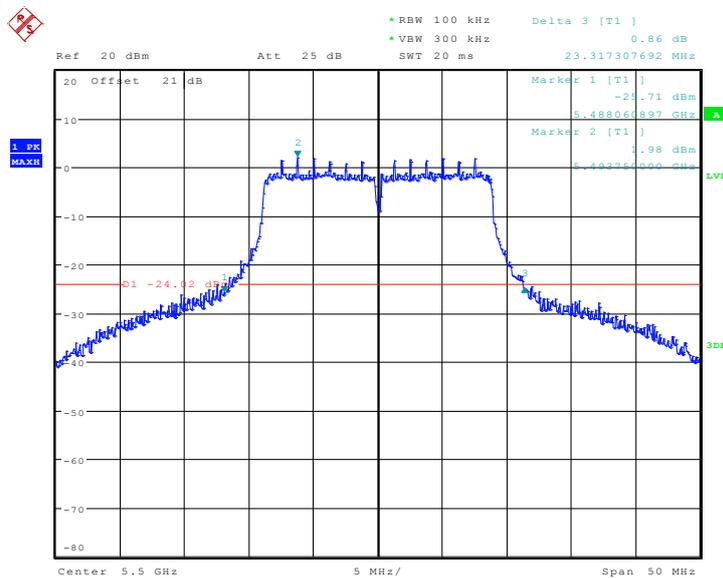
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Fig. 14 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)



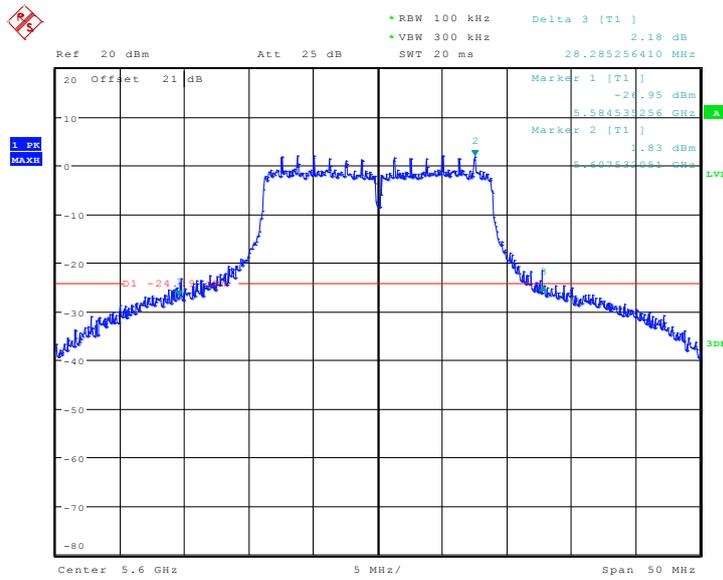
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Fig. 15 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)



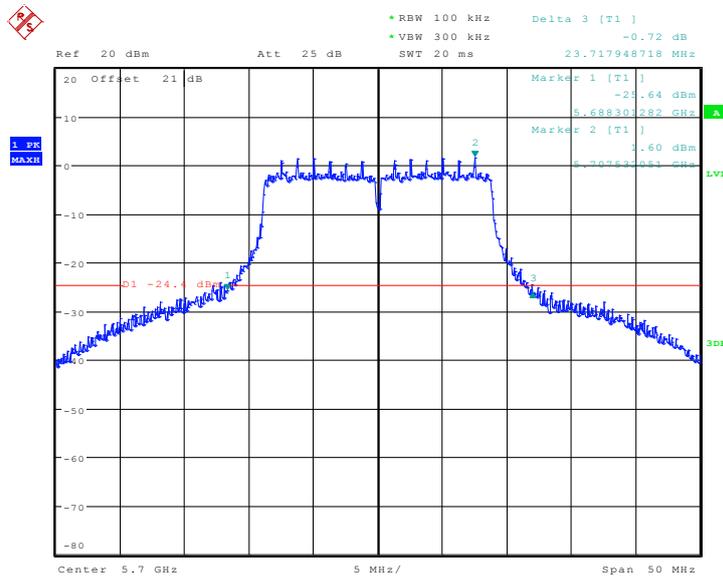
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Fig. 16 Occupied 26dB Bandwidth (802.11n-HT20, 5500MHz)



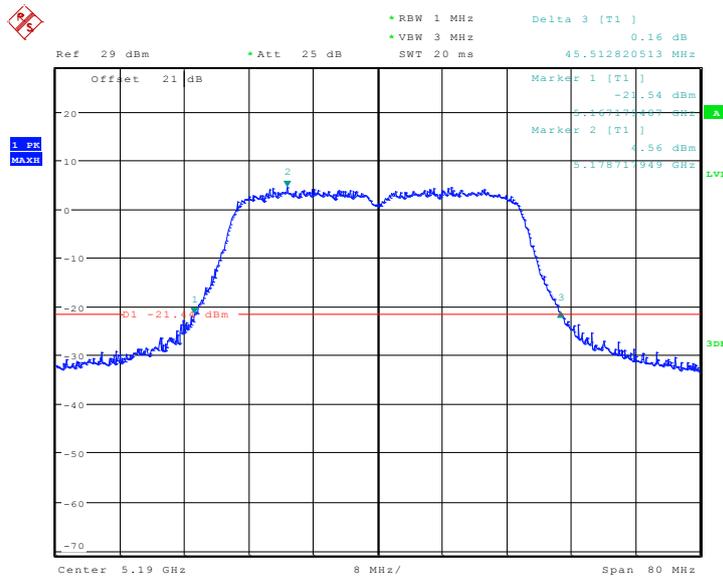
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Fig. 17 Occupied 26dB Bandwidth (802. 11n-HT20, 5600MHz)



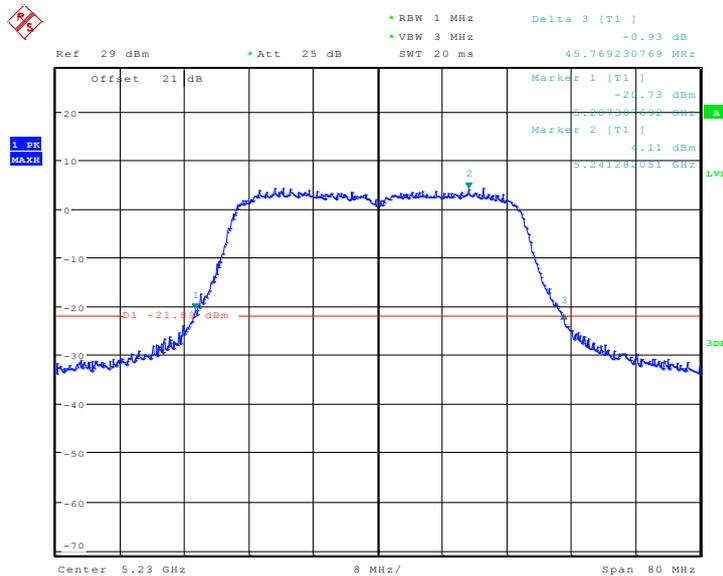
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Fig. 18 Occupied 26dB Bandwidth (802. 11n-HT20, 5700MHz)



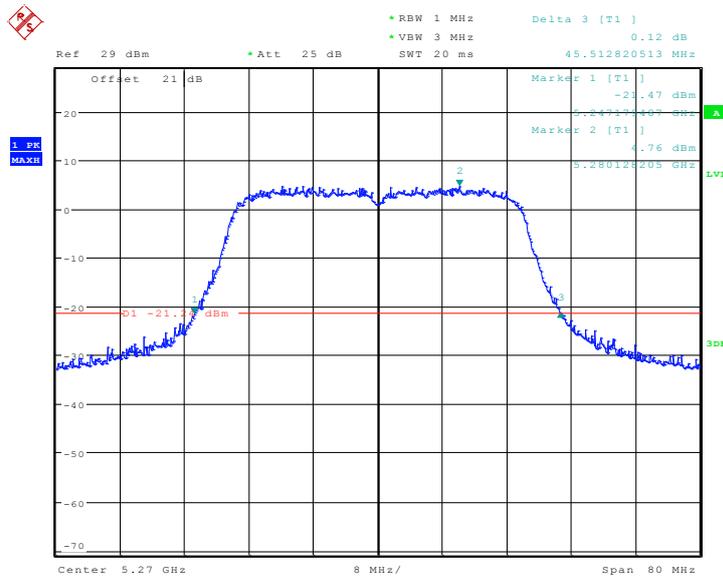
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Fig. 19 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)



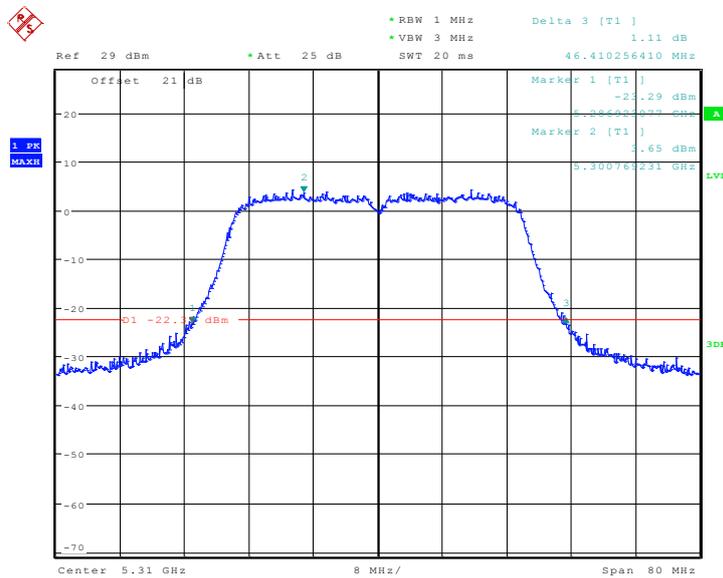
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Fig. 20 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)



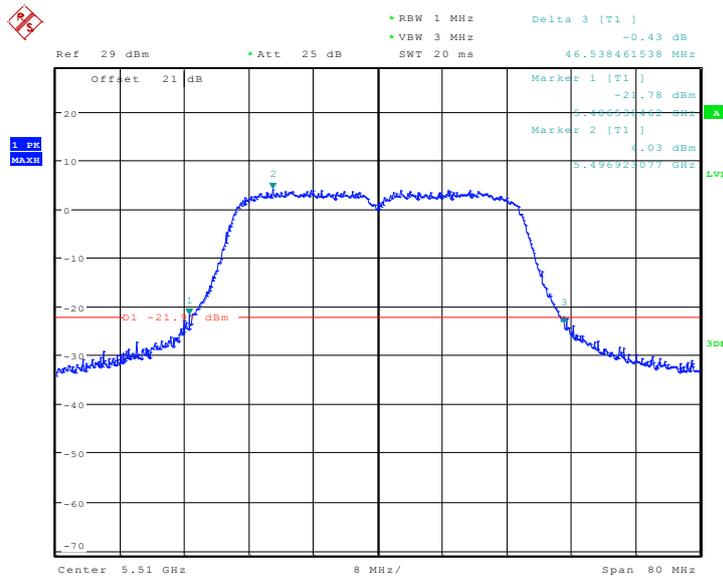
Date: 9.DEC.2013 14:16:32

Fig. 21 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)



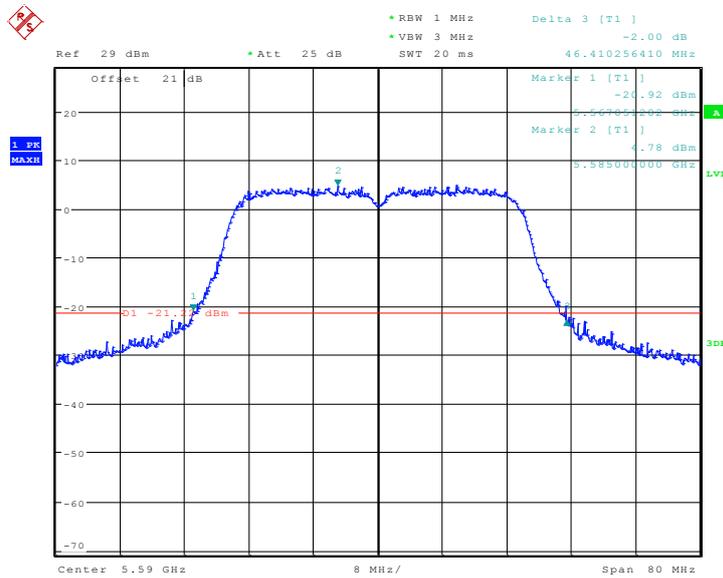
Date: 9.DEC.2013 14:18:23

Fig. 22 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)



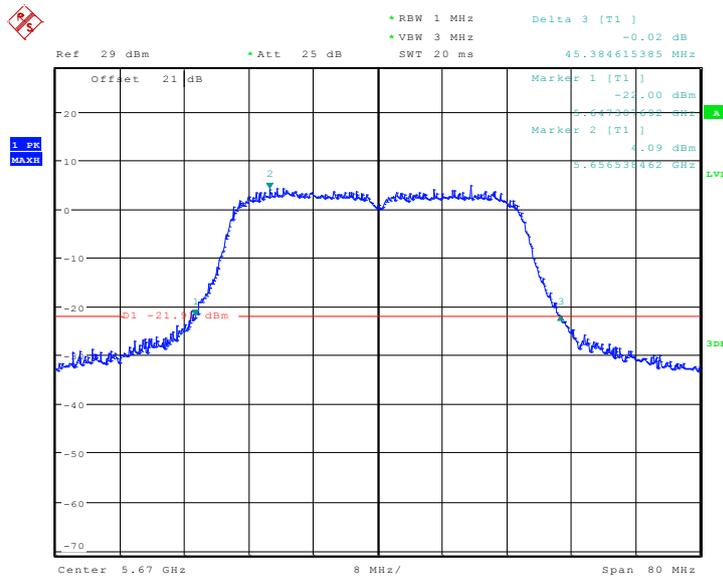
Date: 9.DEC.2013 14:20:09

Fig. 23 Occupied 26dB Bandwidth (802. 11n-HT40, 5510MHz)



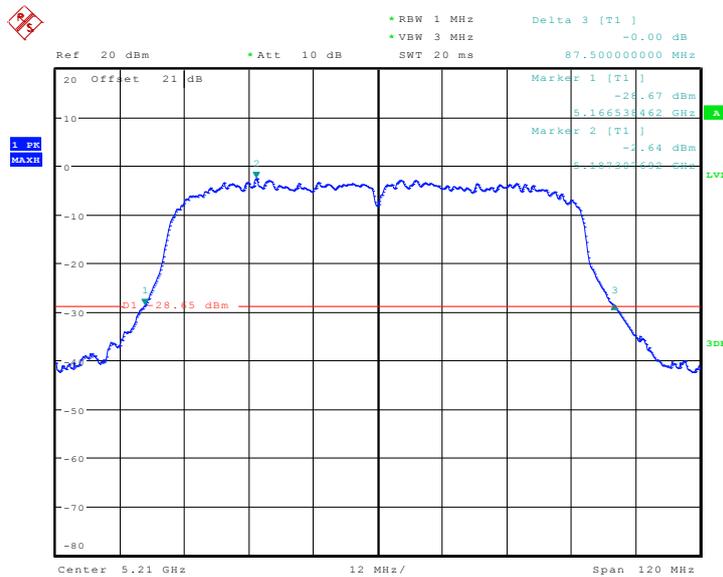
Date: 9.DEC.2013 14:22:05

Fig. 24 Occupied 26dB Bandwidth (802. 11n-HT40, 5590MHz)



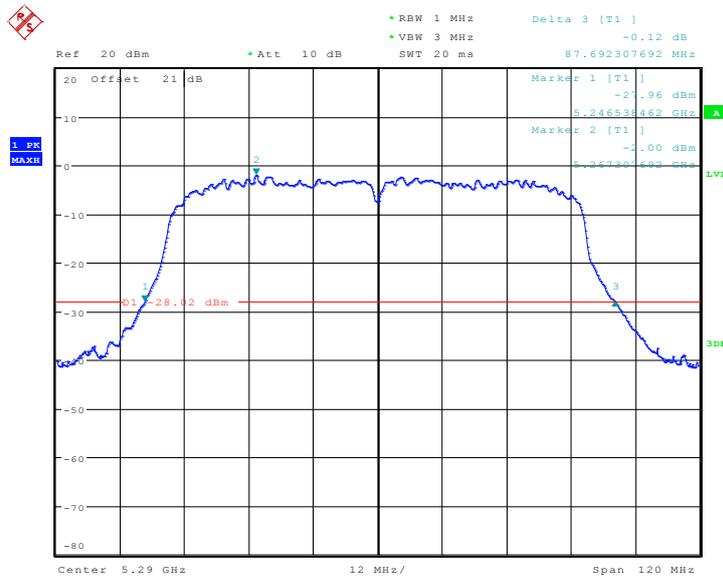
Date: 9.DEC.2013 14:43:01

Fig. 25 Occupied 26dB Bandwidth (802. 11n-HT40, 5670MHz)



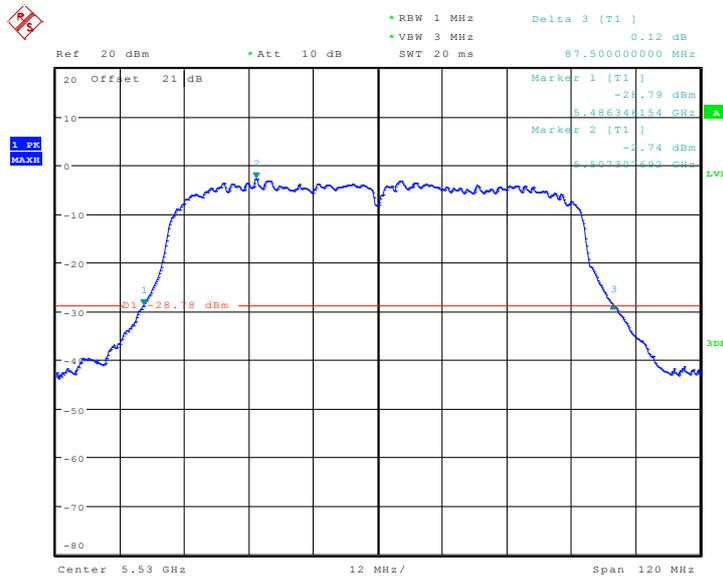
Date: 9.DEC.2013 14:48:38

Fig. 26 Occupied 26dB Bandwidth (802. 11ac-HT80, 5210MHz)



Date: 9.DEC.2013 14:50:21

Fig. 27 Occupied 26dB Bandwidth (802.11ac-HT80, 5290MHz)



Date: 9.DEC.2013 14:51:35

Fig. 28 Occupied 26dB Bandwidth (802.11ac-HT80, 5530MHz)

A.5. Band Edges Compliance

A5.1 Band Edges - conducted

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.407	> 20

The measurement is made according to KDB 789033

Measurement Uncertainty:

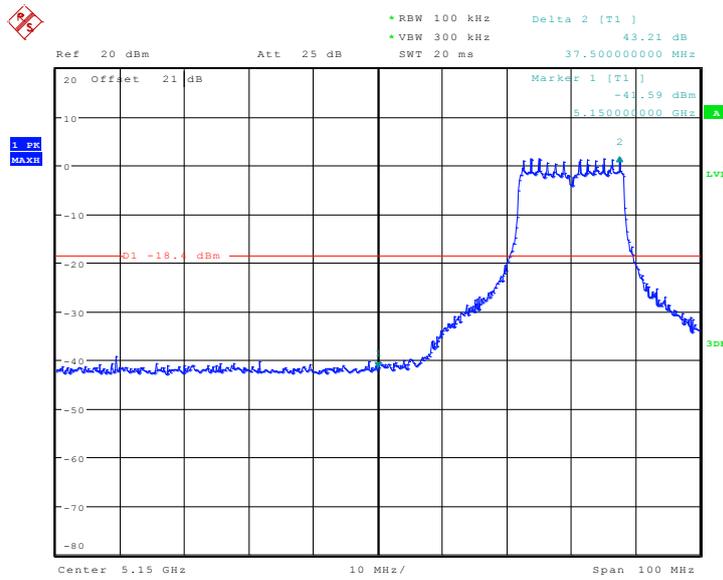
Measurement Uncertainty	0.75dB
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Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.29	P
	5320 MHz	Fig.30	P
	5500 MHz	Fig.31	P
802.11n HT20	5180 MHz	Fig.32	P
	5320 MHz	Fig.33	P
	5500 MHz	Fig.34	P
802.11n HT40	5190 MHz	Fig.35	P
	5310 MHz	Fig.36	P
	5510 MHz	Fig.37	P
802.11ac HT80	5210 MHz	Fig.38	P
	5290 MHz	Fig.39	P
	5530 MHz	Fig.40	P

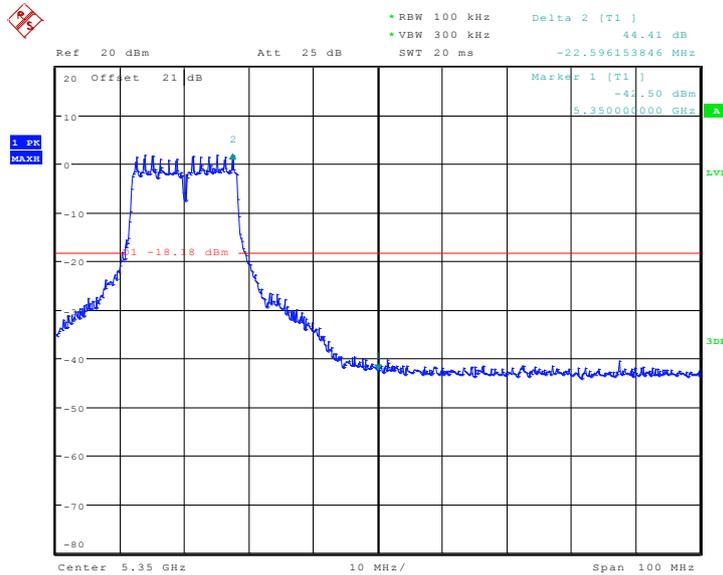
Conclusion: PASS

Test graphs as below:



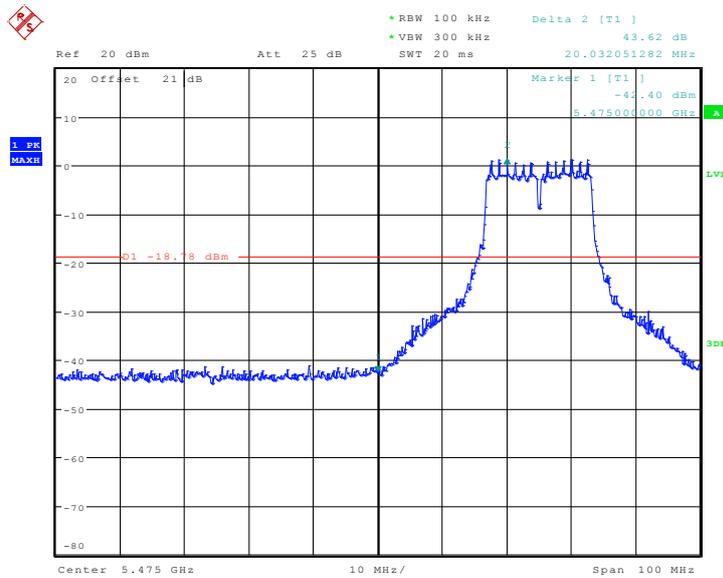
Date: 6.NOV.2013 08:49:12

Fig. 29 Band Edges (802.11a, 5180MHz)



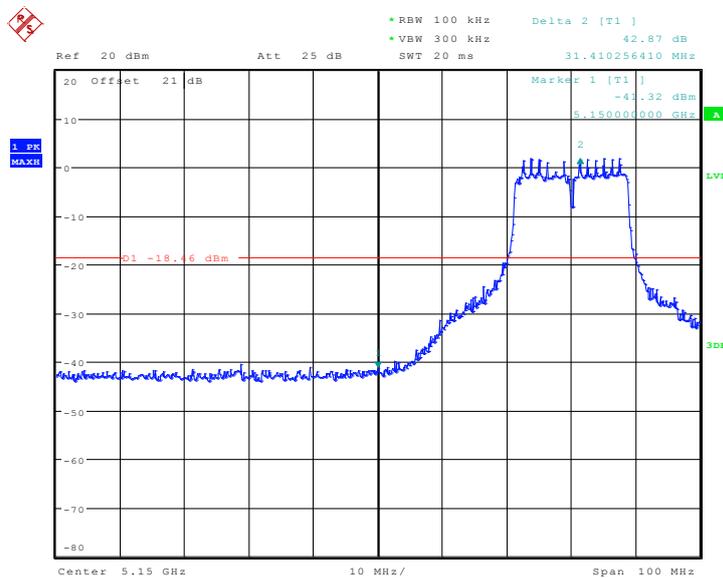
Date: 6.NOV.2013 08:51:27

Fig. 30 Band Edges (802.11a, 5320MHz)



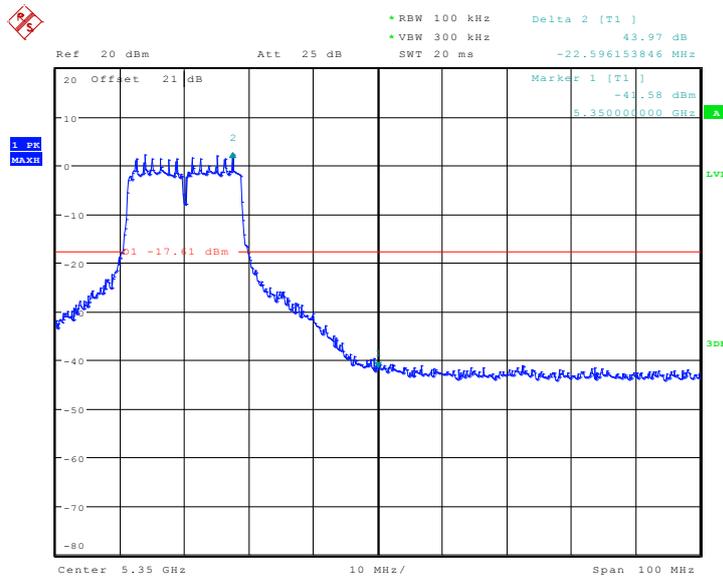
Date: 6.NOV.2013 08:52:30

Fig. 31 Band Edges (802.11a, 5500MHz)



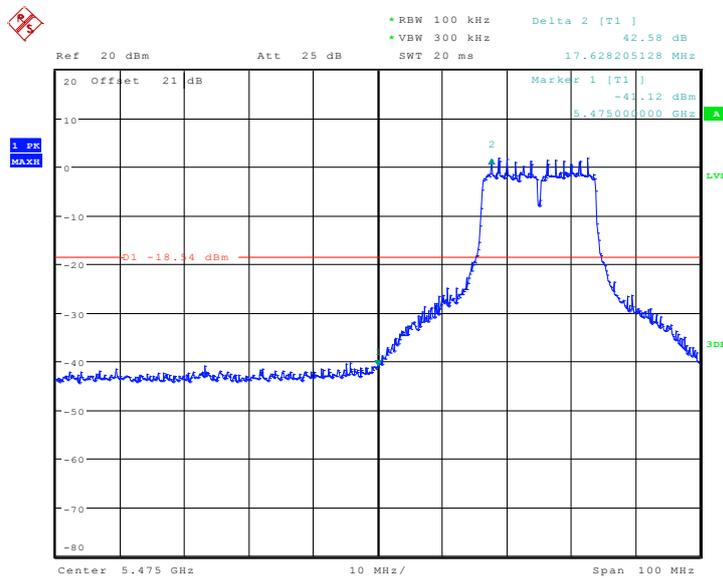
Date: 6.NOV.2013 08:54:05

Fig. 32 Band Edges (802.11n-HT20, 5180MHz)



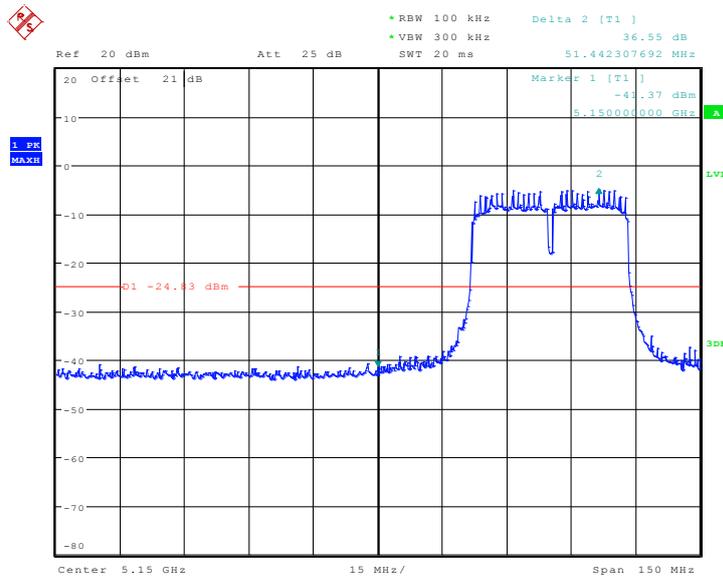
Date: 6.NOV.2013 08:55:05

Fig. 33 Band Edges (802.11n-HT20, 5320MHz)



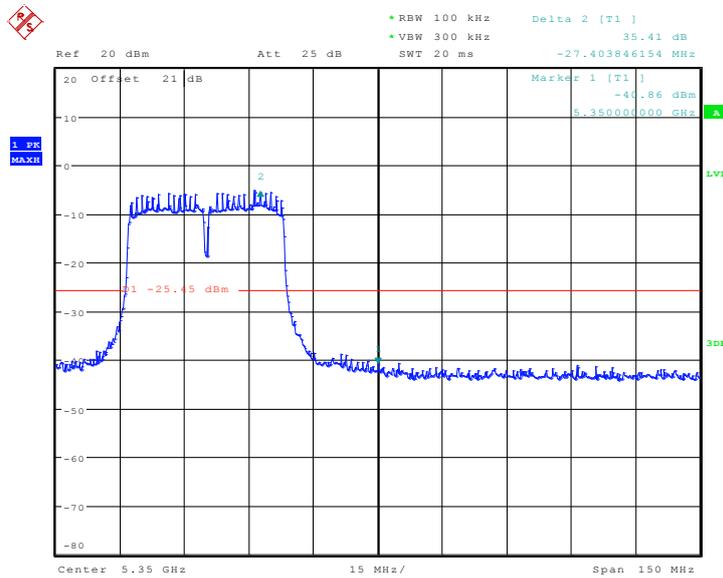
Date: 6.NOV.2013 08:56:05

Fig. 34 Band Edges (802.11n-HT20, 5500MHz)



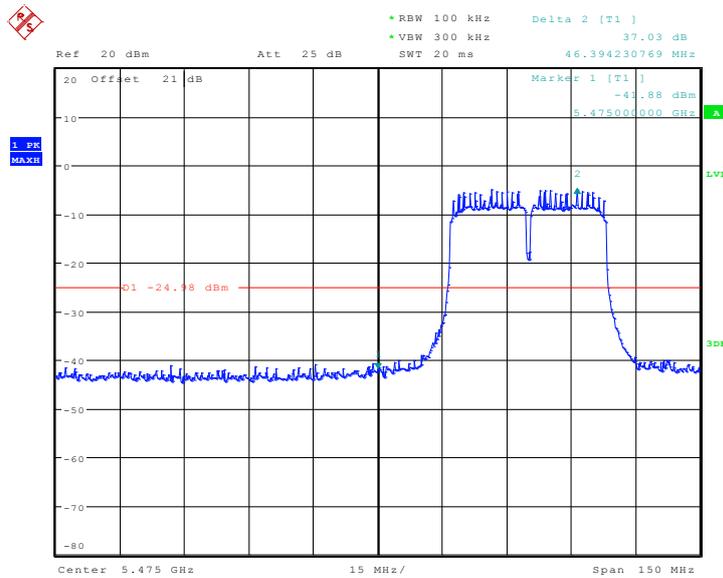
Date: 6.NOV.2013 08:57:26

Fig. 35 Band Edges (802.11n-HT40, 5190MHz)



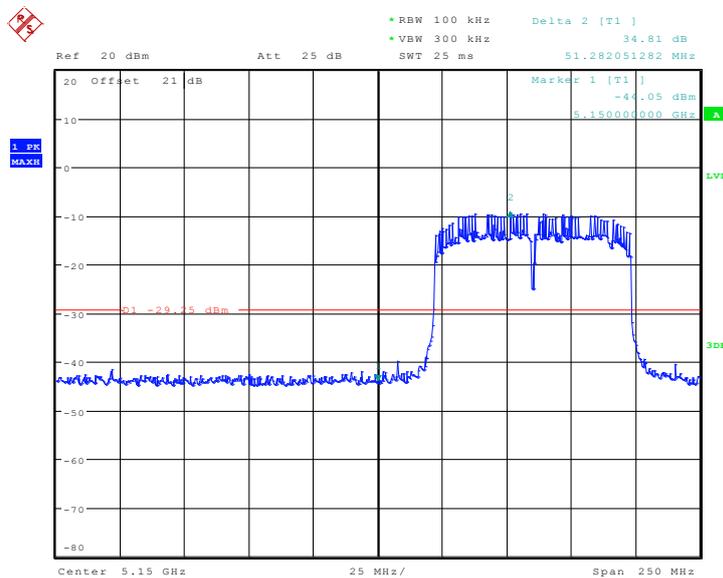
Date: 6.NOV.2013 08:58:54

Fig. 36 Band Edges (802.11n-HT40, 5310MHz)



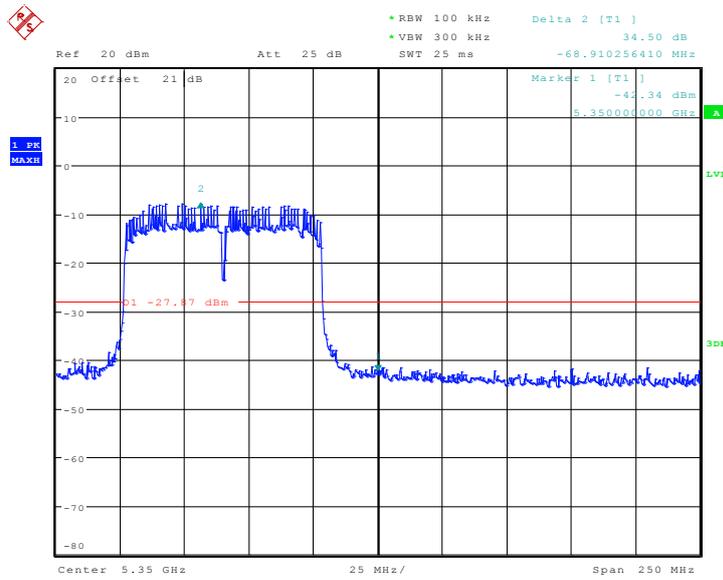
Date: 6.NOV.2013 08:59:43

Fig. 37 Band Edges (802.11n-HT40, 5510MHz)



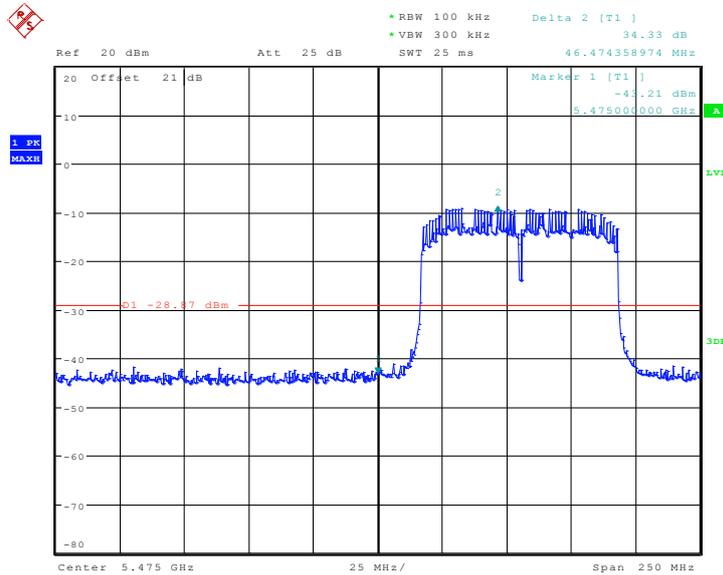
Date: 6.NOV.2013 09:01:33

Fig. 38 Band Edges (802.11ac-HT80, 5210MHz)



Date: 6.NOV.2013 09:02:37

Fig. 39 Band Edges (802.11ac-HT80, 5290MHz)



Date: 6.NOV.2013 09:03:27

Fig. 40 Band Edges (802.11ac-HT80, 5530MHz)

A5.2 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.407	> 20

The measurement is made according to KDB 789033

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Measurement Uncertainty:

Measurement Uncertainty	0.75dB
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Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.41	P
	5320 MHz	Fig.42	P
	5500 MHz	Fig.43	P
802.11n HT20	5180 MHz	Fig.44	P
	5320 MHz	Fig.45	P
	5500 MHz	Fig.46	P
802.11n HT40	5190 MHz	Fig.47	P
	5310 MHz	Fig.48	P
	5510 MHz	Fig.49	P
802.11ac HT80	5210 MHz	Fig.50	P
	5290 MHz	Fig.51	P
	5530 MHz	Fig.52	P

Conclusion: PASS

Test graphs as below:

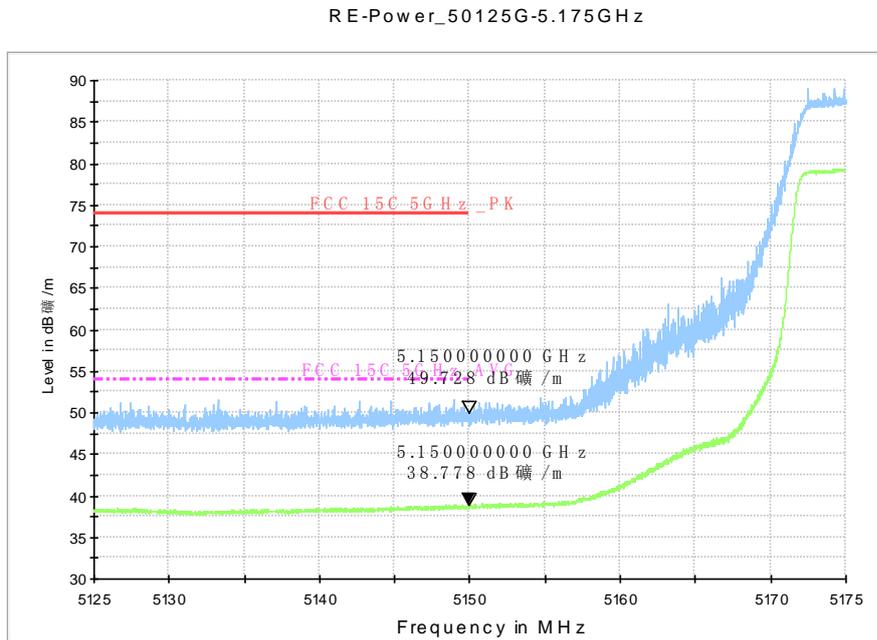


Fig. 41 Band Edges (802.11a, 5180MHz)

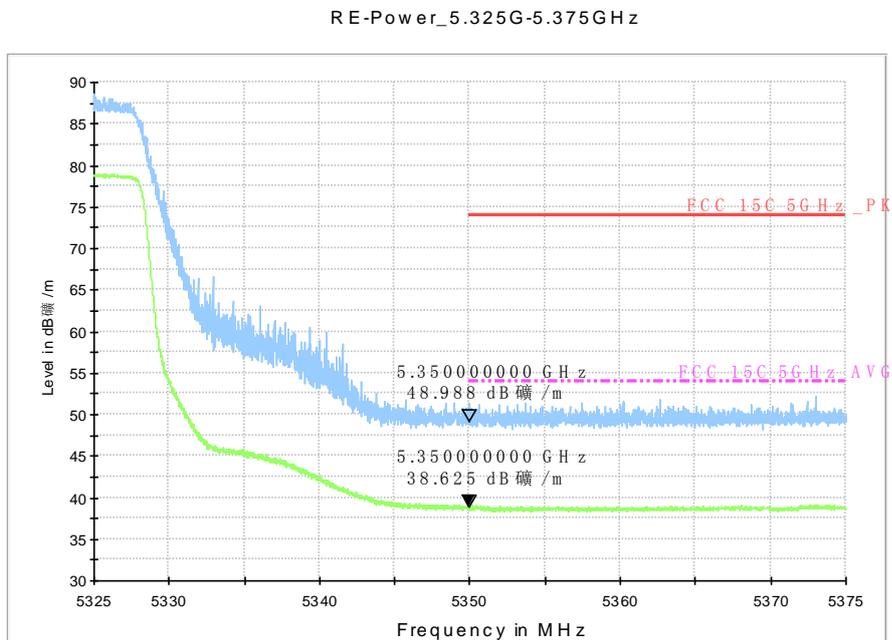


Fig. 42 Band Edges (802.11a, 5320MHz)

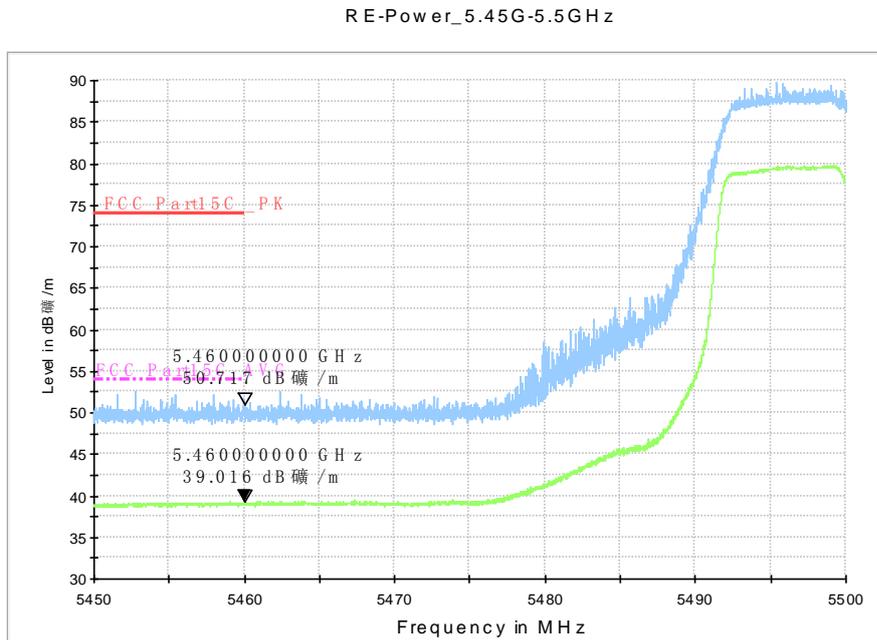


Fig. 43 Band Edges (802.11a, 5500MHz)

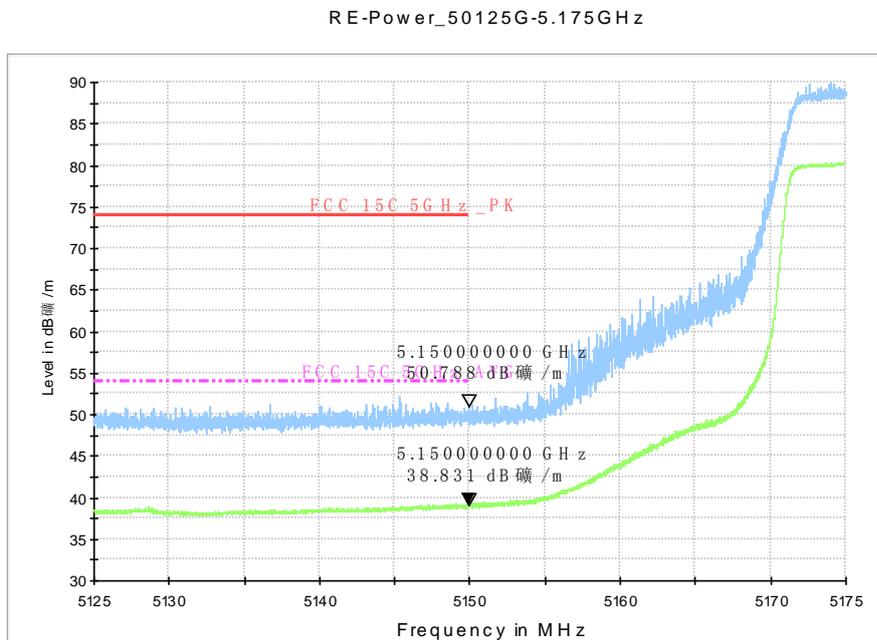


Fig. 44 Band Edges (802.11n-HT20, 5180MHz)

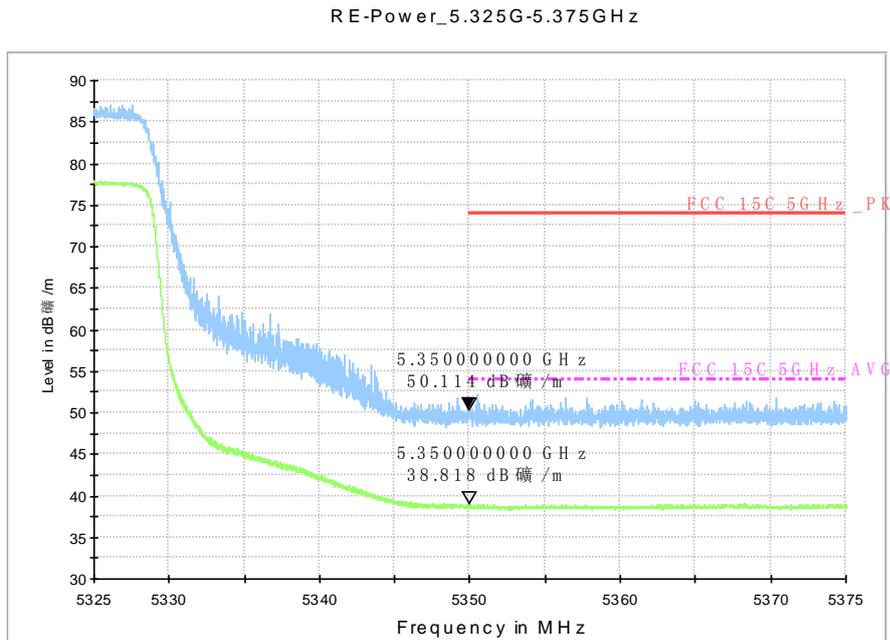


Fig. 45 Band Edges (802.11n-HT20, 5320MHz)

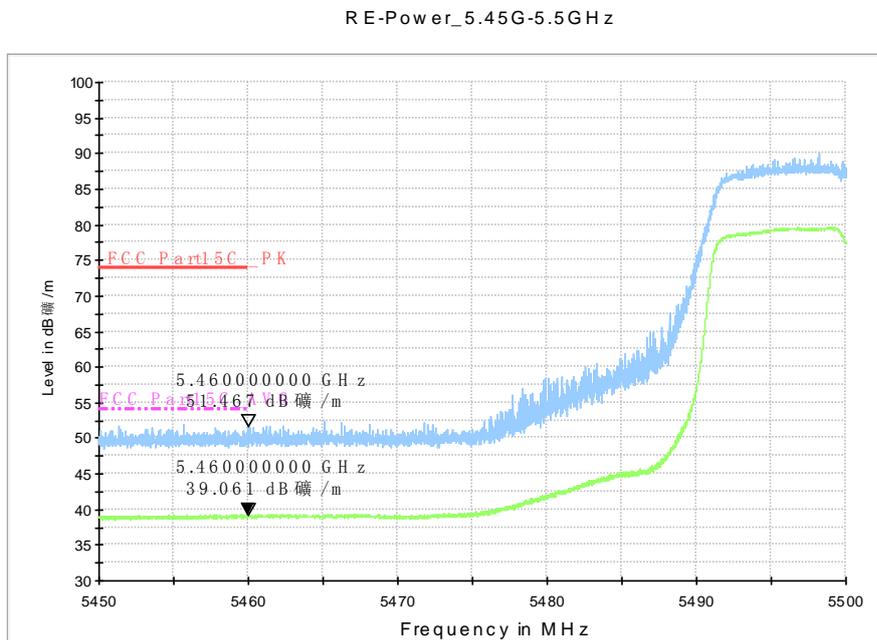


Fig. 46 Band Edges (802.11n-HT20, 5500MHz)

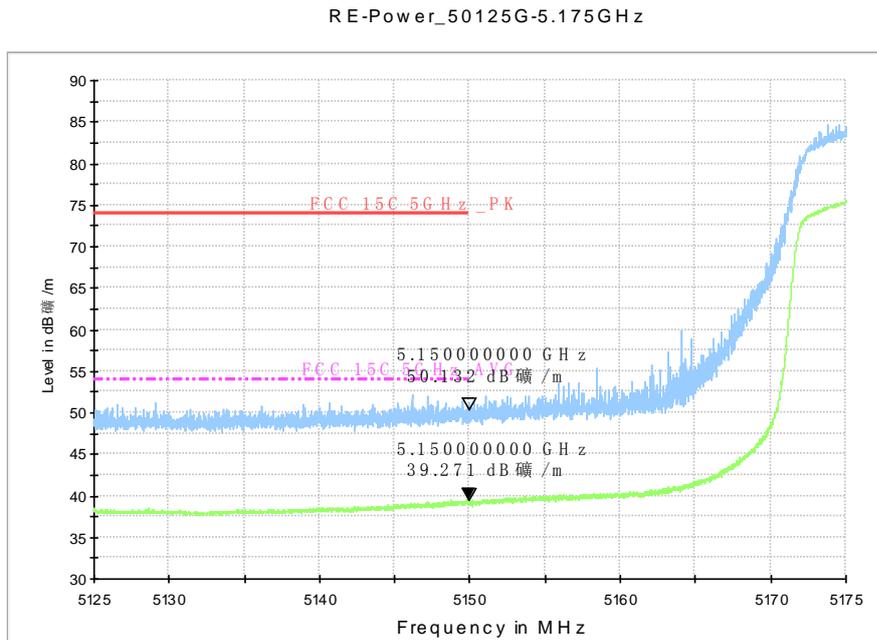


Fig. 47 Band Edges (802.11n-HT40, 5190MHz)

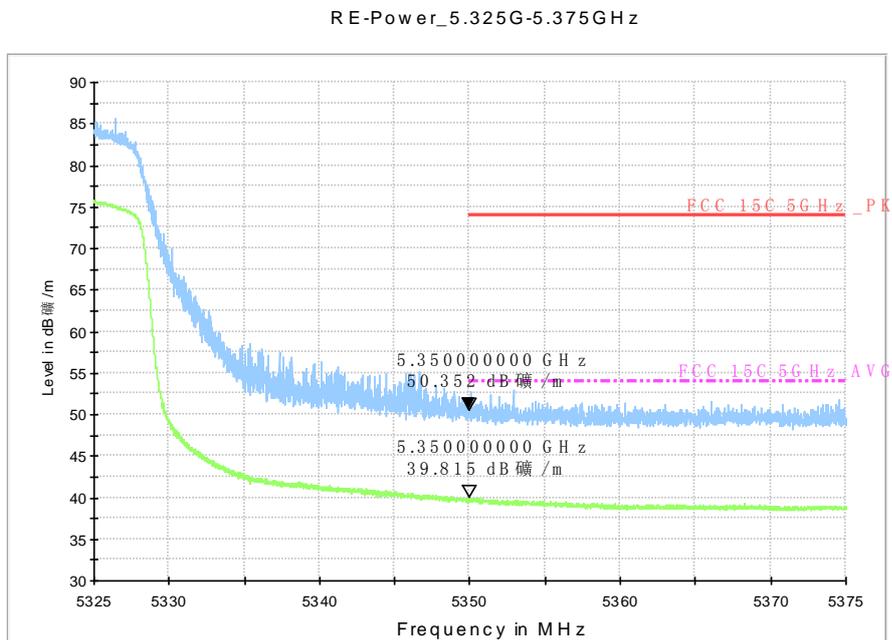


Fig. 48 Band Edges (802.11n-HT40, 5310MHz)

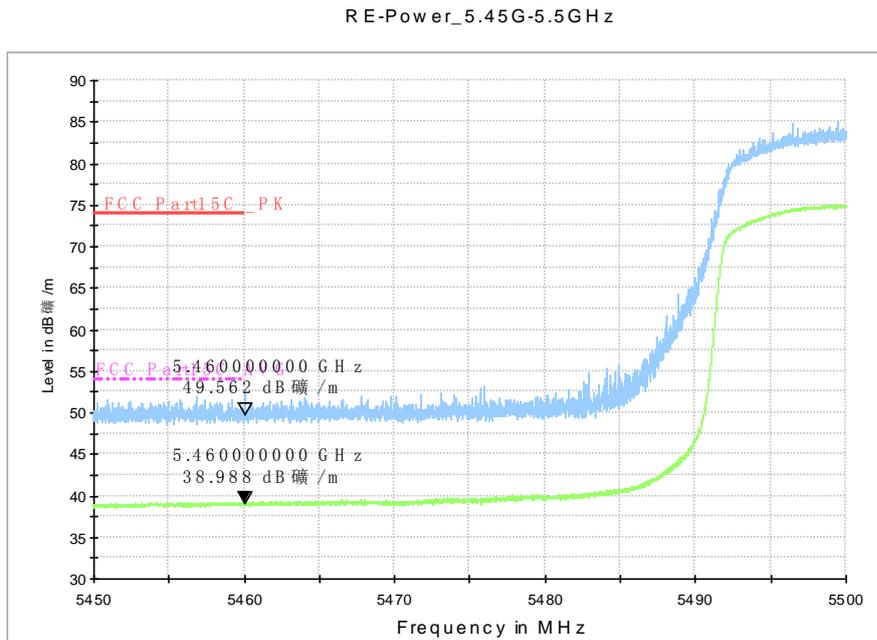


Fig. 49 Band Edges (802.11n-HT40, 5510MHz)

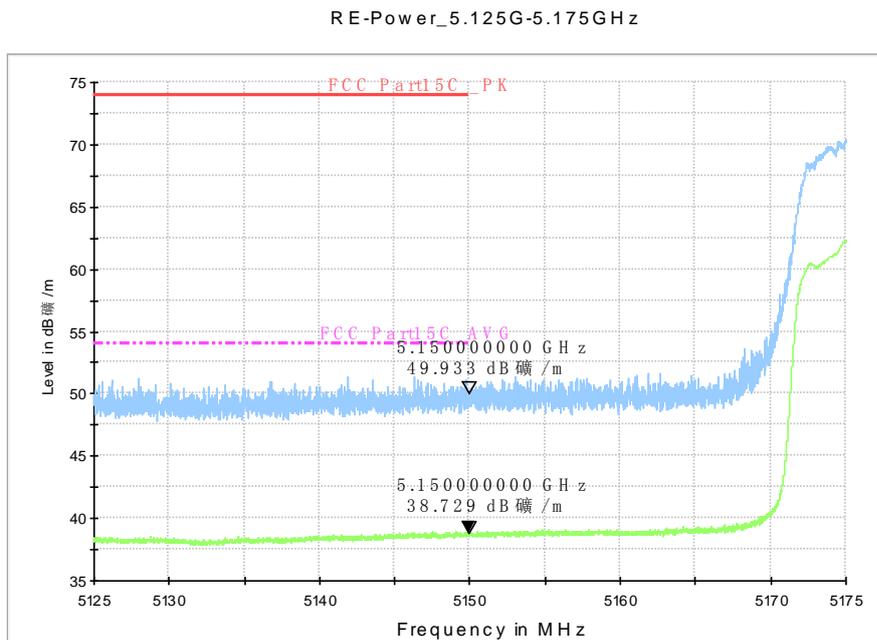


Fig. 50 Band Edges (802.11ac-HT80, 5210MHz)

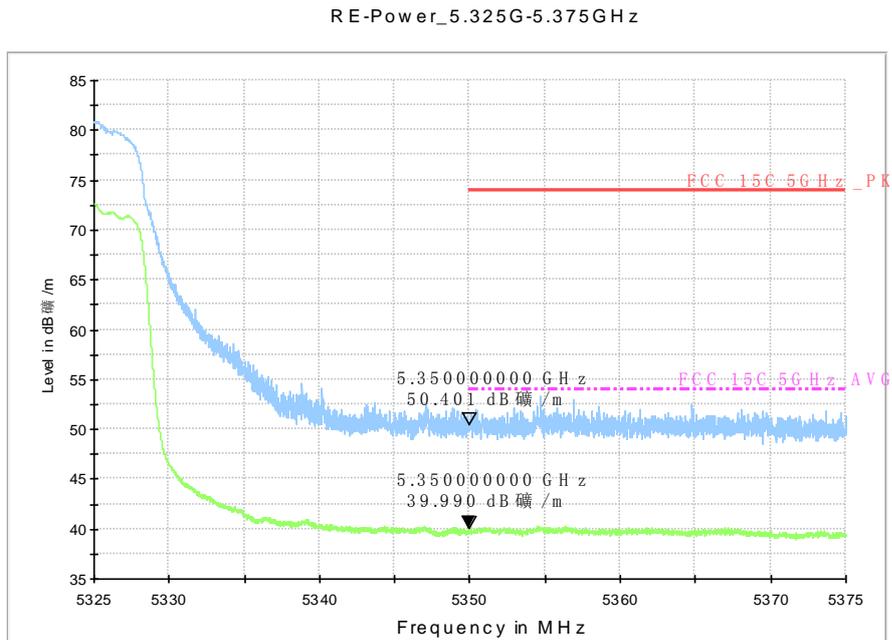


Fig. 51 Band Edges (802.11ac-HT80, 5290MHz)

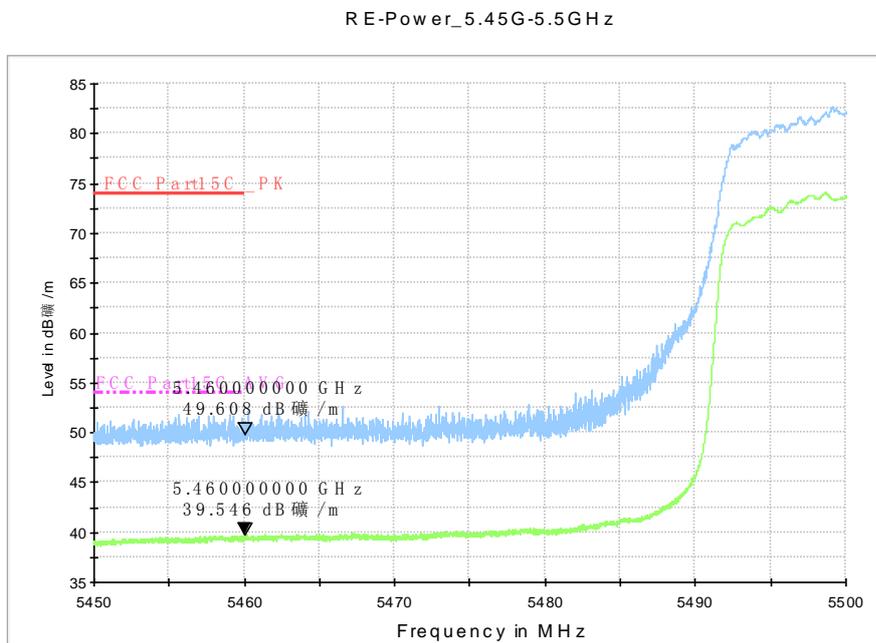


Fig. 52 Band Edges (802.11ac-HT80, 5530MHz)

A.6. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-27 dBm/MHz

The measurement is made according to KDB 789033

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(dBμV/m)	Measurement distance(m)
30-88	40.0	3
88-216	43.5	3
216-960	46.0	3
Above 960	54.0	3

Note: for frequency range below 960MHz, the limit in 15.209 is defined in 10m test distance. The limit used above is calculated from 10m to 3m

Measurement uncertainty:

Expanded measurement uncertainty for this test item is U =3.9 dB, k=2.

Measurement Results:

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	30 MHz ~1 GHz	Fig.53	P
		1 GHz ~ 6 GHz	Fig.54	P
		6 GHz ~ 18 GHz	Fig.55	P
	40(5200MHz)	30 MHz ~1 GHz	Fig.56	P
		1 GHz ~ 6 GHz	Fig.57	P
		6 GHz ~ 18 GHz	Fig.58	P
	48(5240MHz)	30 MHz ~1 GHz	Fig.59	P
		1 GHz ~ 6 GHz	Fig.60	P
		6 GHz ~ 18 GHz	Fig.61	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.62	P
		26.5 GHz ~ 40 GHz	Fig.63	P
	52(5260MHz)	30 MHz ~1 GHz	Fig.64	P
		1 GHz ~ 6 GHz	Fig.65	P
		6 GHz ~ 18 GHz	Fig.66	P
	56(5280MHz)	30 MHz ~1 GHz	Fig.67	P
		1 GHz ~ 6 GHz	Fig.68	P
		6 GHz ~ 18 GHz	Fig.69	P
	64(5320MHz)	30 MHz ~1 GHz	Fig.70	P
		1 GHz ~ 6 GHz	Fig.71	P
		6 GHz ~ 18 GHz	Fig.72	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.73	P
26.5 GHz ~ 40 GHz		Fig.74	P	

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	100(5500MHz)	30 MHz ~1 GHz	Fig.75	P
		1 GHz ~ 6 GHz	Fig.76	P
		6 GHz ~ 18 GHz	Fig.77	P
	120(5600MHz)	30 MHz ~1 GHz	Fig.78	P
		1 GHz ~ 6 GHz	Fig.79	P
		6 GHz ~ 18 GHz	Fig.80	P
	140(5700MHz)	30 MHz ~1 GHz	Fig.81	P
		1 GHz ~ 6 GHz	Fig.82	P
		6 GHz ~ 18 GHz	Fig.83	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.84	P
		26.5 GHz ~ 40 GHz	Fig.85	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	30 MHz ~1 GHz	Fig.86	P
		1 GHz ~ 6 GHz	Fig.87	P
		6 GHz ~ 18 GHz	Fig.88	P
	40(5200MHz)	30 MHz ~1 GHz	Fig.89	P
		1 GHz ~ 6 GHz	Fig.90	P
		6 GHz ~ 18 GHz	Fig.91	P
	48(5240MHz)	30 MHz ~1 GHz	Fig.92	P
		1 GHz ~ 6 GHz	Fig.93	P
		6 GHz ~ 18 GHz	Fig.94	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.95	P
		26.5 GHz ~ 40 GHz	Fig.96	P
	52(5260MHz)	30 MHz ~1 GHz	Fig.97	P
		1 GHz ~ 6 GHz	Fig.98	P
		6 GHz ~ 18 GHz	Fig.99	P
	56(5280MHz)	30 MHz ~1 GHz	Fig.100	P
		1 GHz ~ 6 GHz	Fig.101	P
		6 GHz ~ 18 GHz	Fig.102	P
	64(5320MHz)	30 MHz ~1 GHz	Fig.103	P
		1 GHz ~ 6 GHz	Fig.104	P
		6 GHz ~ 18 GHz	Fig.105	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.106	P
26.5 GHz ~ 40 GHz		Fig.107	P	

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	100(5500MHz)	30 MHz ~1 GHz	Fig.108	P
		1 GHz ~ 6 GHz	Fig.109	P
		6 GHz ~ 18 GHz	Fig.110	P
	120(5600MHz)	30 MHz ~1 GHz	Fig.111	P
		1 GHz ~ 6 GHz	Fig.112	P
		6 GHz ~ 18 GHz	Fig.113	P
	140(5700MHz)	30 MHz ~1 GHz	Fig.114	P
		1 GHz ~ 6 GHz	Fig.115	P
		6 GHz ~ 18 GHz	Fig.116	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.117	P
		26.5 GHz ~ 40 GHz	Fig.118	P

802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n HT40	38(5190MHz)	30 MHz ~1 GHz	Fig.119	P
		1 GHz ~ 6 GHz	Fig.120	P
		6 GHz ~ 18 GHz	Fig.121	P
	46(5230MHz)	30 MHz ~1 GHz	Fig.122	P
		1 GHz ~ 6 GHz	Fig.123	P
		6 GHz ~ 18 GHz	Fig.124	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.125	
		26.5 GHz ~ 40 GHz	Fig.126	
	54(5270MHz)	30 MHz ~1 GHz	Fig.127	P
		1 GHz ~ 6 GHz	Fig.128	P
		6 GHz ~ 18 GHz	Fig.129	P
	62(5310MHz)	30 MHz ~1 GHz	Fig.130	P
		1 GHz ~ 6 GHz	Fig.131	P
		6 GHz ~ 18 GHz	Fig.132	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.133	P
26.5 GHz ~ 40 GHz		Fig.134	P	

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n HT40	102(5510MHz)	30 MHz ~1 GHz	Fig.135	P
		1 GHz ~ 6 GHz	Fig.136	P
		6 GHz ~ 18 GHz	Fig.137	P
	118(5590MHz)	30 MHz ~1 GHz	Fig.138	P
		1 GHz ~ 6 GHz	Fig.139	P
		6 GHz ~ 18 GHz	Fig.140	P
	134(5670MHz)	30 MHz ~1 GHz	Fig.141	P
		1 GHz ~ 6 GHz	Fig.142	P
		6 GHz ~ 18 GHz	Fig.143	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.144	
		26.5 GHz ~ 40 GHz	Fig.145	

802.11ac-HT80 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11ac HT80	42(5210MHz)	30 MHz ~1 GHz	Fig.146	P
		1 GHz ~ 6 GHz	Fig.147	P
		6 GHz ~ 18 GHz	Fig.148	P
	58(5290MHz)	30 MHz ~1 GHz	Fig.149	P
		1 GHz ~ 6 GHz	Fig.150	P
		6 GHz ~ 18 GHz	Fig.151	P
	106(5530MHz)	30 MHz ~1 GHz	Fig.152	P
		1 GHz ~ 6 GHz	Fig.153	P
		6 GHz ~ 18 GHz	Fig.154	P
	All Channels	18 GHz ~ 26.5 GHz	Fig.155	
		26.5 GHz ~ 40 GHz	Fig.156	

Conclusion: PASS

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

802.11a

The worse case is measured in channel 56

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P_{Mea} (dBuV/m)	Polarization
17808.000	54.6	-18.5	45.6	27.500	HORIZONTAL
17950.500	53.5	-17.7	45.6	25.600	VERTICAL
17943.000	53.5	-17.7	45.6	25.600	VERTICAL
17749.500	53.5	-18.5	45.6	26.400	HORIZONTAL
17979.750	53.2	-17.7	45.6	25.300	HORIZONTAL
17990.250	53.2	-17.7	45.6	25.300	VERTICAL

802.11n-HT20

The worse case is measured in channel 56

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
17529.750	54.3	-19.2	45.6	27.900	HORIZONTAL
17724.750	53.9	-18.9	45.6	27.200	HORIZONTAL
17893.500	53.4	-18.5	45.6	26.300	HORIZONTAL
17913.750	53.1	-18.5	45.6	26.000	VERTICAL
17950.500	53.0	-17.7	45.6	25.100	HORIZONTAL
17655.750	52.9	-18.9	45.6	26.200	VERTICAL

802.11n-HT40

The worse case is measured in channel 118

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
17891.250	55.4	-18.5	45.6	28.300	VERTICAL
17981.250	54.7	-17.7	45.6	26.800	VERTICAL
17967.750	54.0	-17.7	45.6	26.100	VERTICAL
17951.250	53.8	-17.7	45.6	25.900	VERTICAL
17748.750	53.7	-18.5	45.6	26.600	HORIZONTAL
17912.250	53.4	-18.5	45.6	26.300	HORIZONTAL

802.11ac-HT80

The worse case is measured in channel 106

Frequency(MHz)	Result (dBuV/m)	Cable Loss	Antenna Factor	P _{Mea} (dBuV/m)	Polarization
5460.000	49.6	-34.9	34.6	49.900	VERTICAL
17960.250	54.0	-17.7	45.6	26.100	HORIZONTAL
17937.750	54.0	-17.7	45.6	26.100	VERTICAL
17956.500	53.9	-17.7	45.6	26.000	HORIZONTAL
17932.500	53.5	-17.7	45.6	25.600	VERTICAL
17802.750	53.4	-18.5	45.6	26.300	VERTICAL

Test graphs as below:

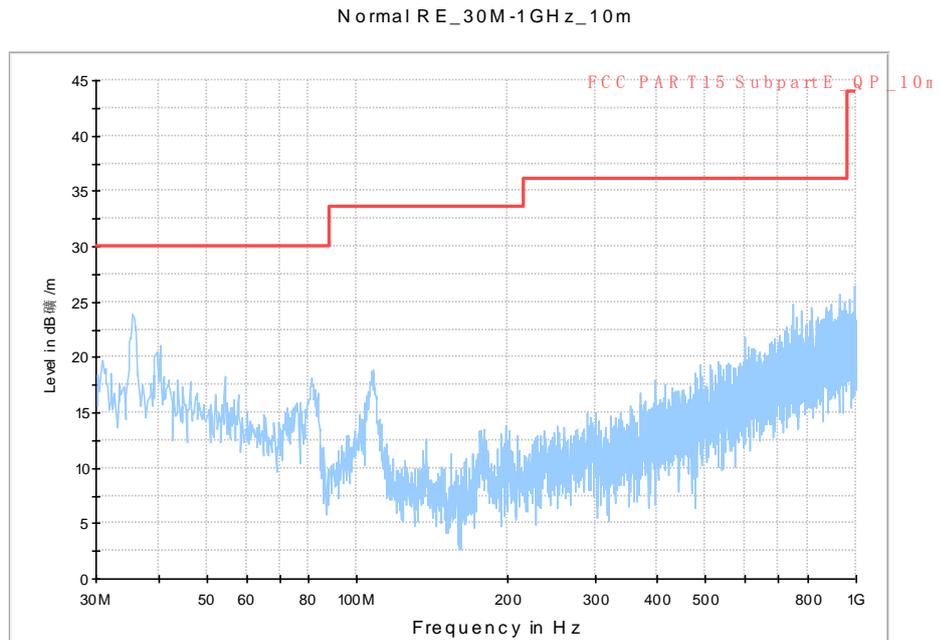


Fig. 53 Radiated Spurious Emission (802.11a, ch36, 30 MHz-1 GHz)

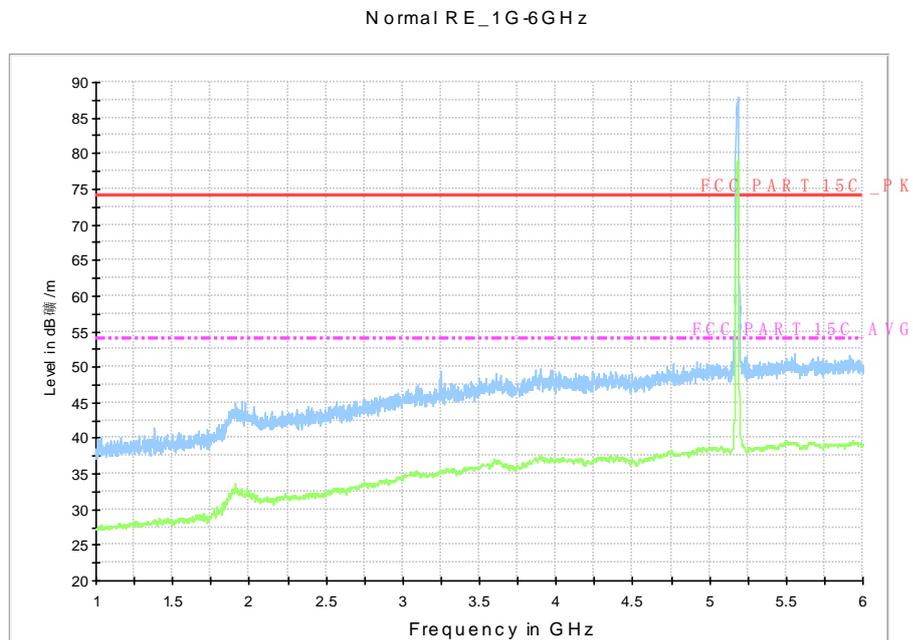


Fig. 54 Radiated Spurious Emission (802.11a, ch36, 1 GHz-6 GHz)

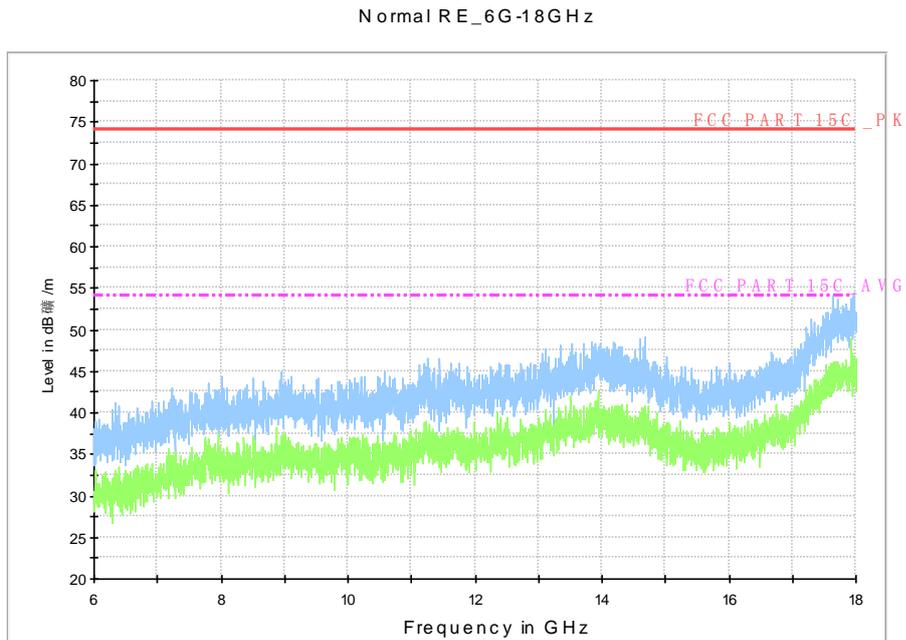


Fig. 55 Radiated Spurious Emission (802.11a, ch36, 6 GHz-18 GHz)

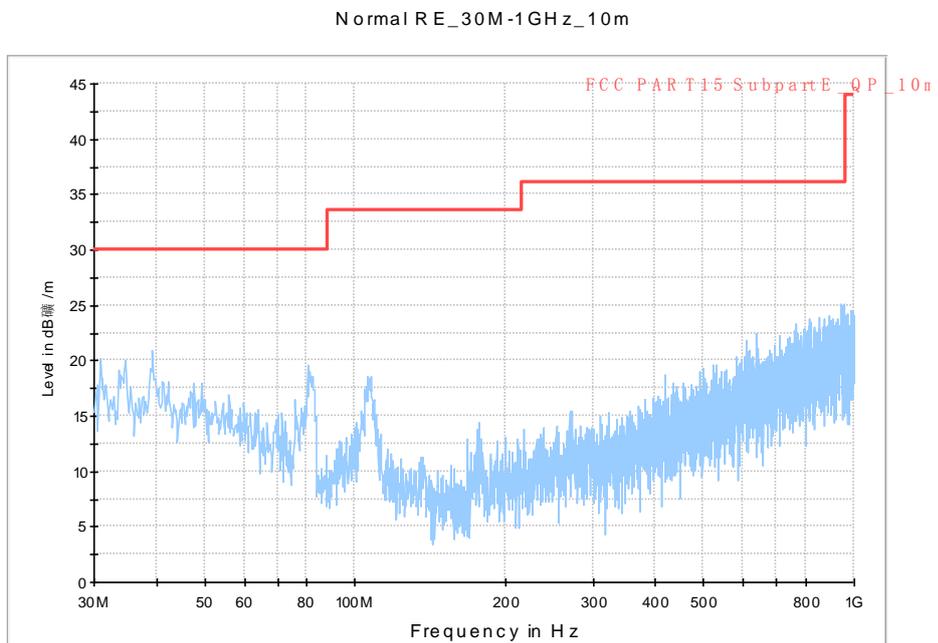


Fig. 56 Radiated Spurious Emission (802.11a, ch40, 30 MHz-1 GHz)

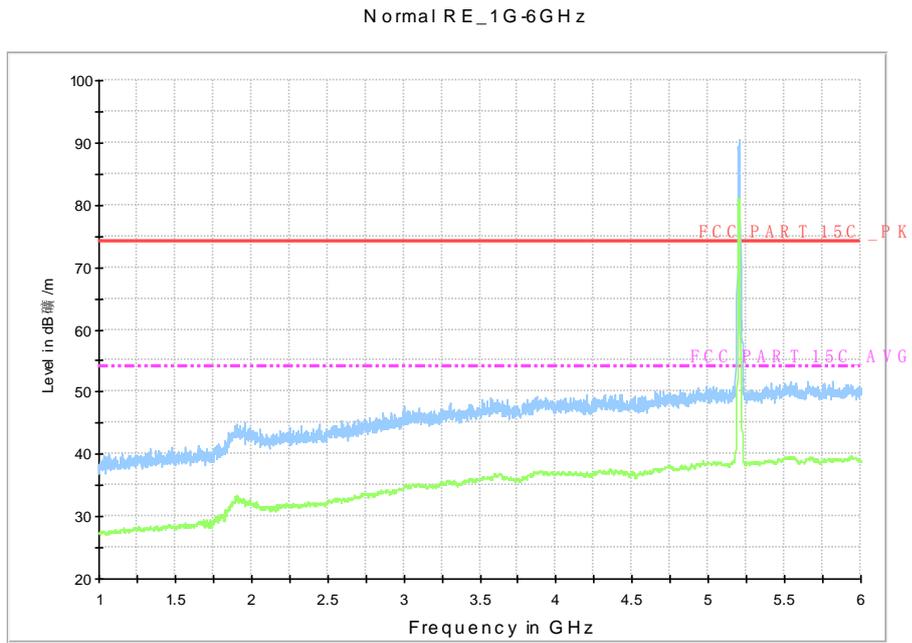


Fig. 57 Radiated Spurious Emission (802.11a, ch40, 1 GHz-6 GHz)

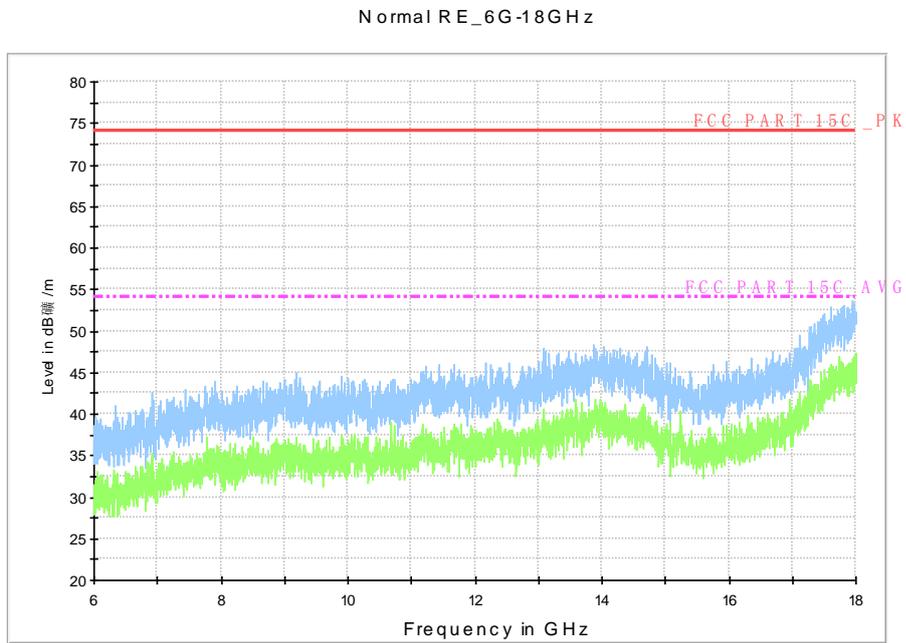


Fig. 58 Radiated Spurious Emission (802.11a, ch40, 6 GHz-18 GHz)

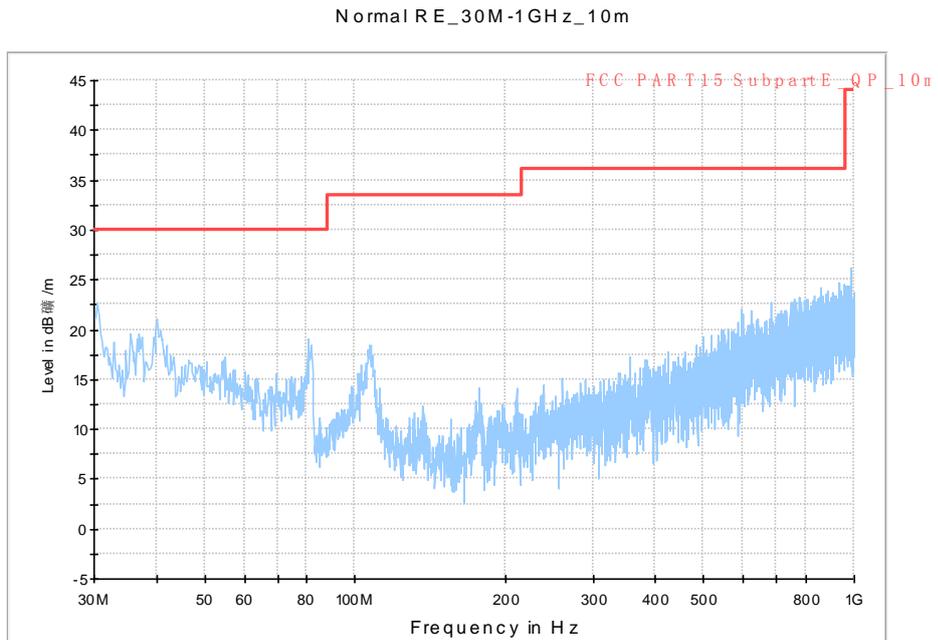


Fig. 59 Radiated Spurious Emission (802.11a, ch48, 30 MHz-1 GHz)

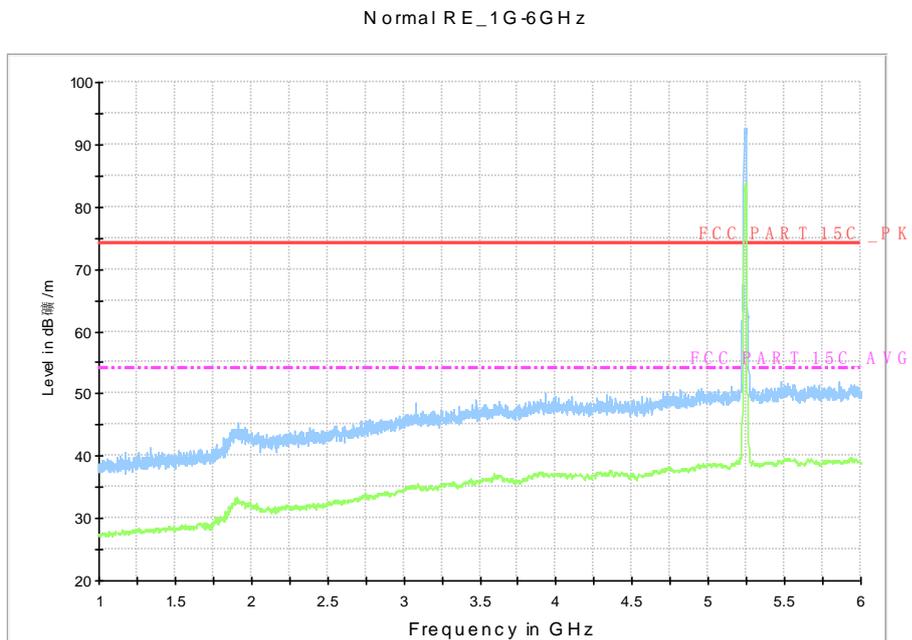


Fig. 60 Radiated Spurious Emission (802.11a, ch48, 1 GHz-6 GHz)

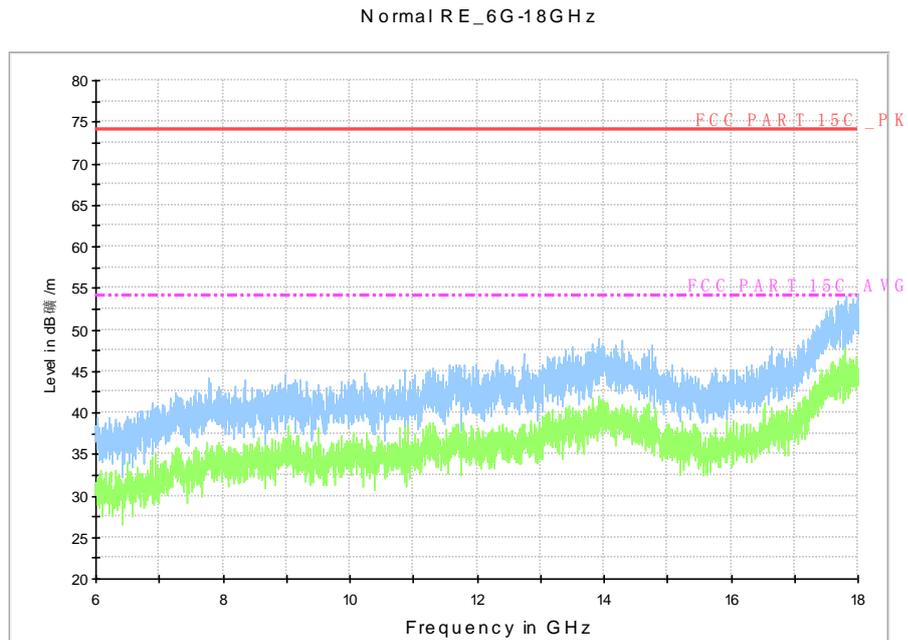


Fig. 61 Radiated Spurious Emission (802.11a, ch48, 6 GHz-18 GHz)

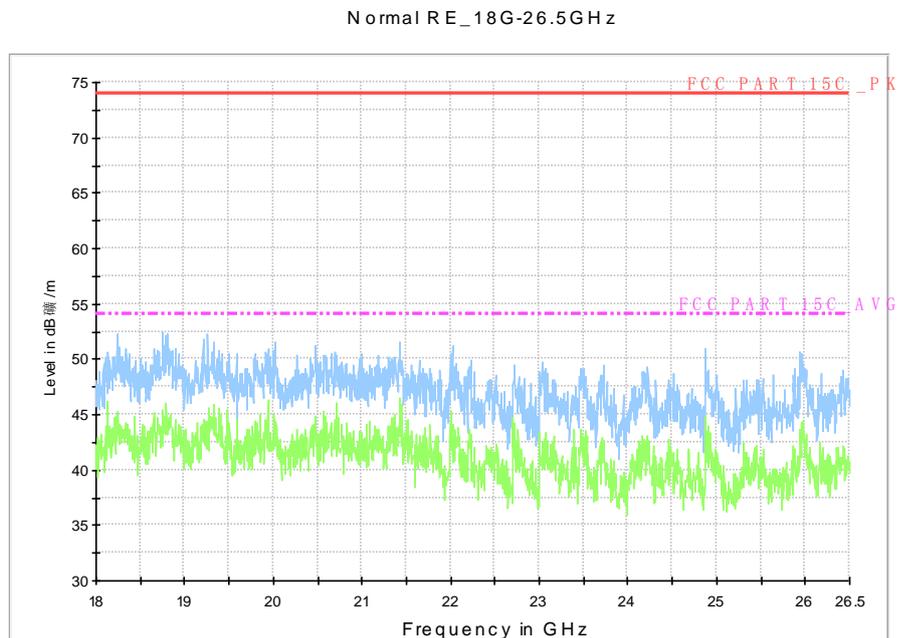


Fig. 62 Radiated Spurious Emission (802.11a, U-NII 1, 18 GHz-26.5 GHz)

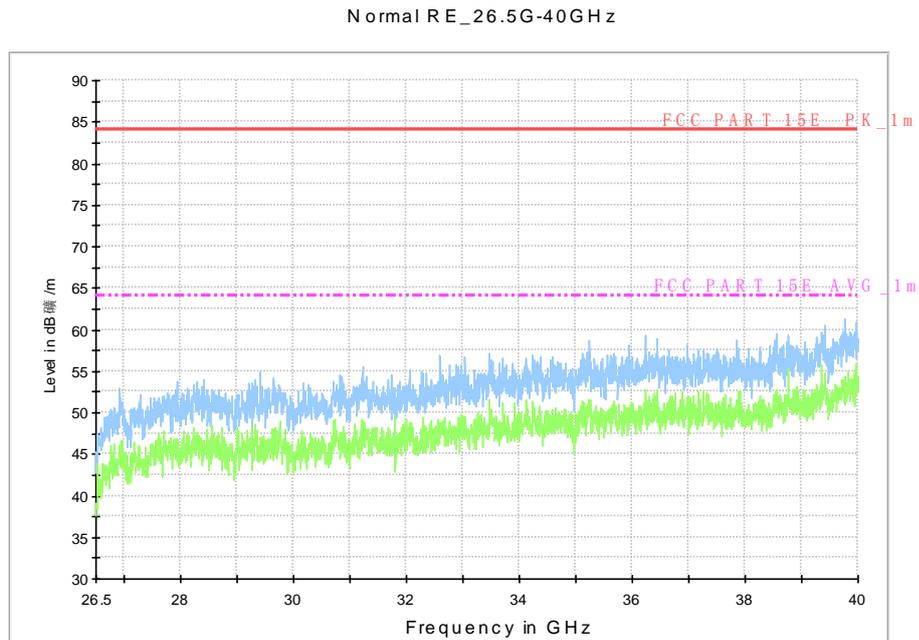


Fig. 63 Radiated Spurious Emission (802.11a, U-NII 1, 26.5 GHz-40 GHz)

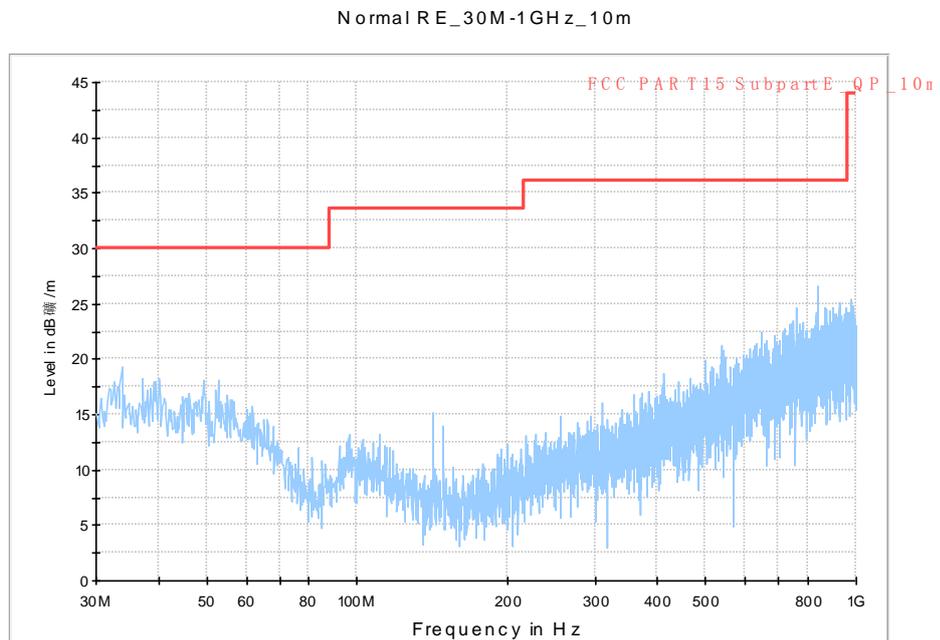


Fig. 64 Radiated Spurious Emission (802.11a, ch52, 30 MHz-1 GHz)

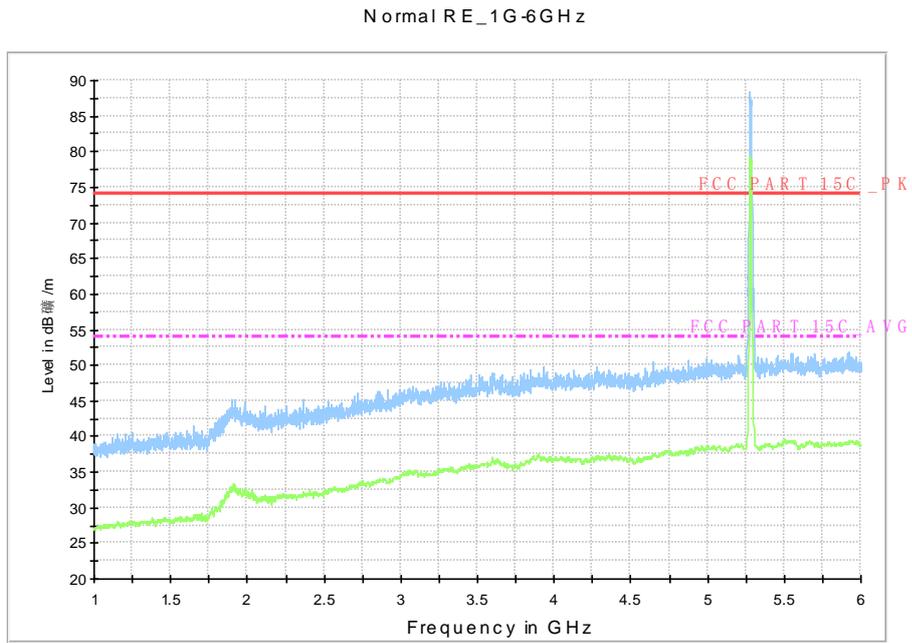


Fig. 65 Radiated Spurious Emission (802.11a, ch52, 1 GHz-6 GHz)

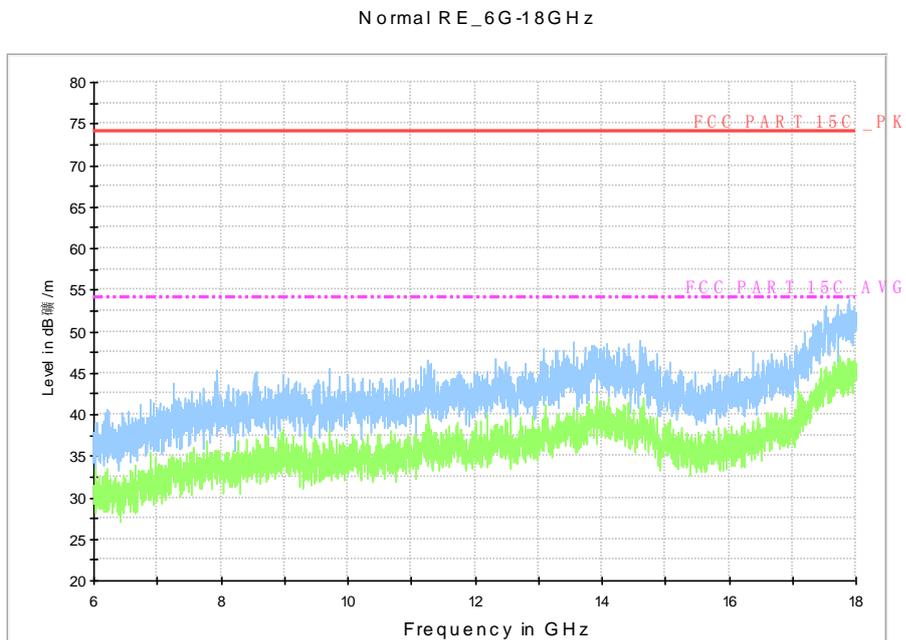


Fig. 66 Radiated Spurious Emission (802.11a, ch52, 6 GHz-18 GHz)

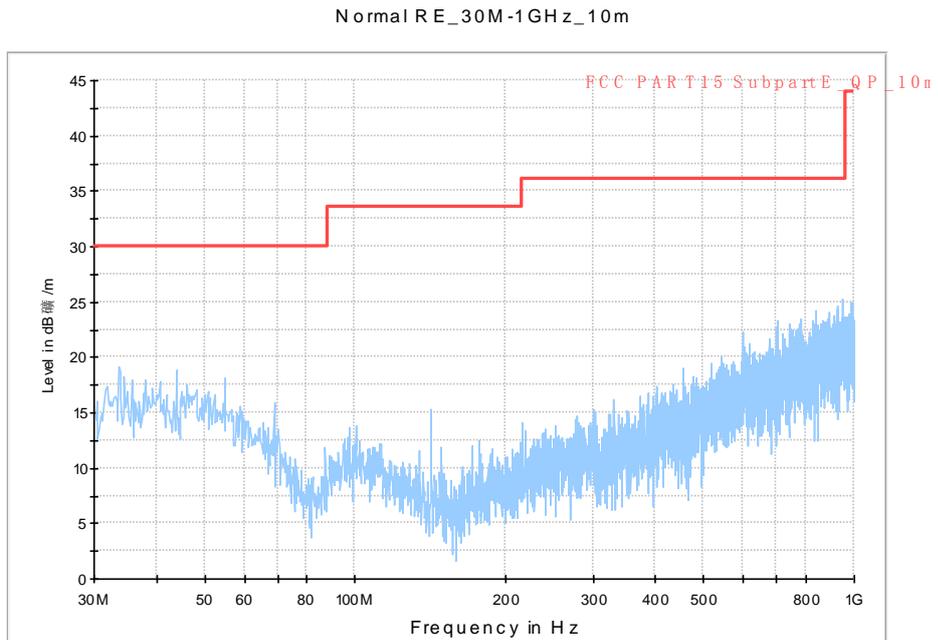


Fig. 67 Radiated Spurious Emission (802.11a, ch56, 30 MHz-1 GHz)

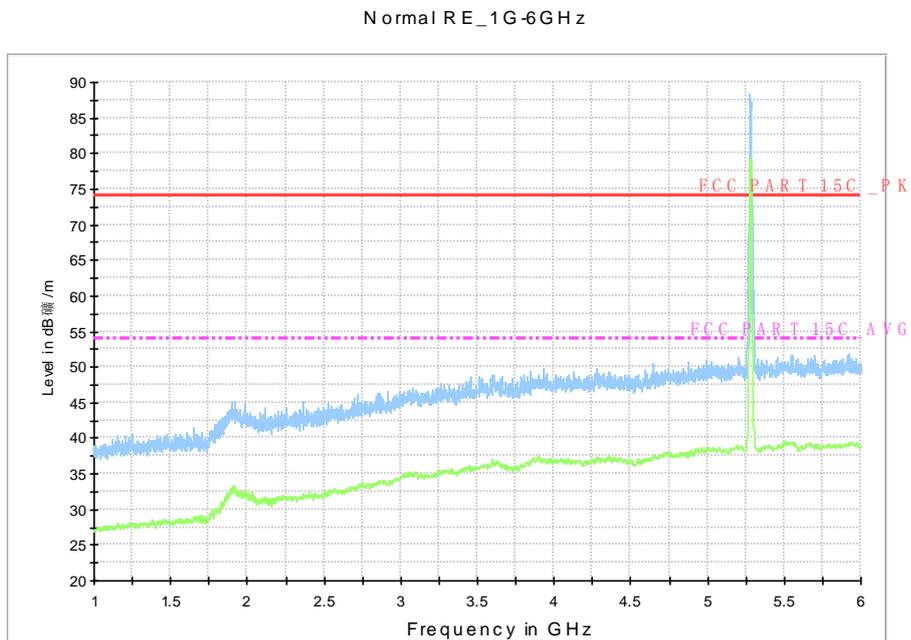


Fig. 68 Radiated Spurious Emission (802.11a, ch56, 1 GHz-6 GHz)

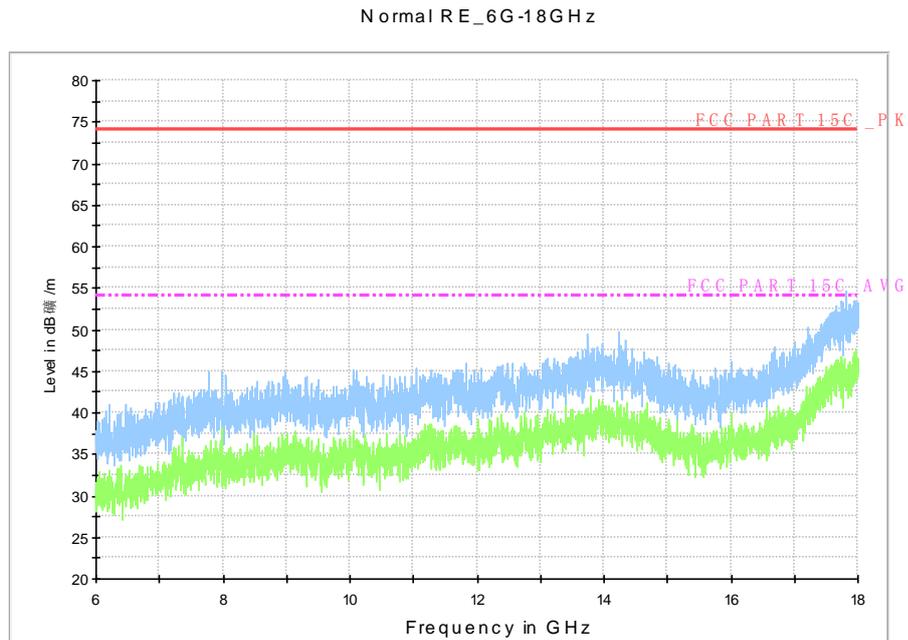


Fig. 69 Radiated Spurious Emission (802.11a, ch56, 6 GHz-18 GHz)

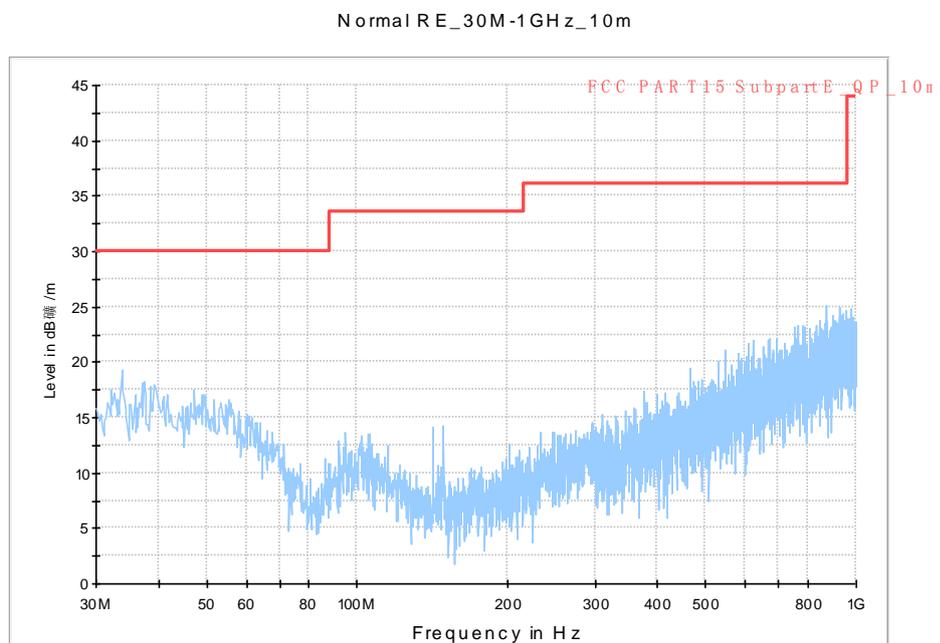


Fig. 70 Radiated Spurious Emission (802.11a, ch64, 30 MHz-1 GHz)

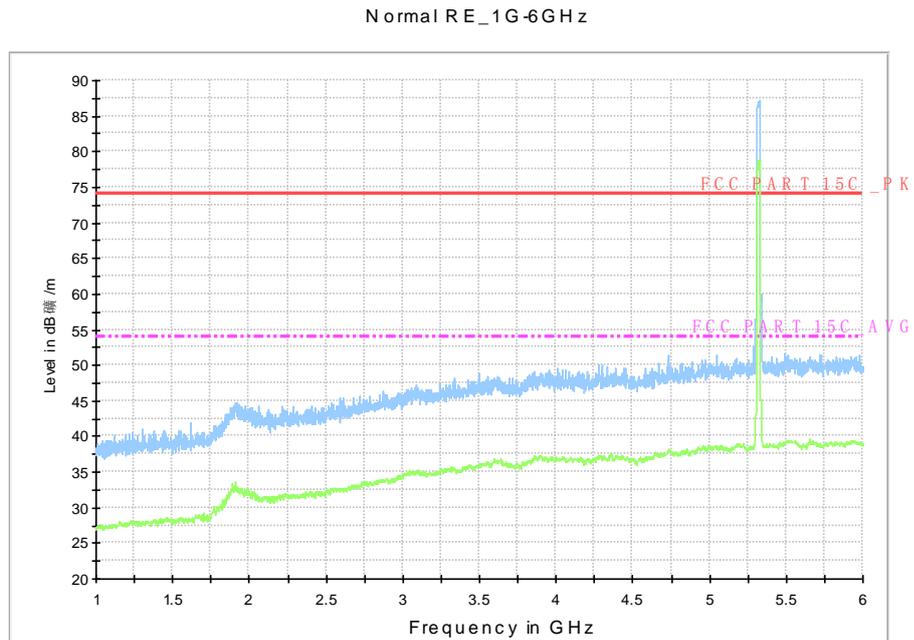


Fig. 71 Radiated Spurious Emission (802.11a, ch64, 1 GHz-6 GHz)

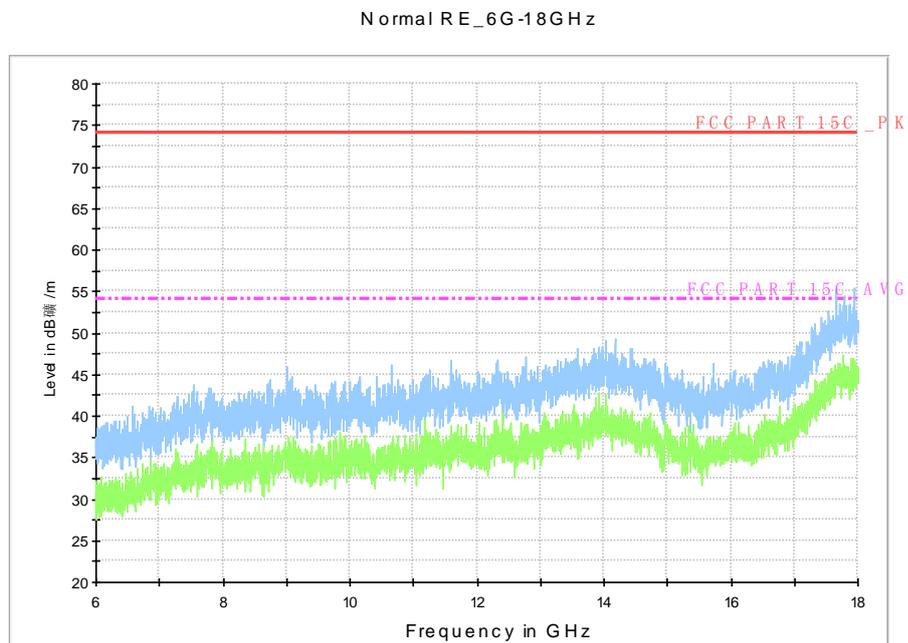


Fig. 72 Radiated Spurious Emission (802.11a, ch64, 6 GHz-18 GHz)

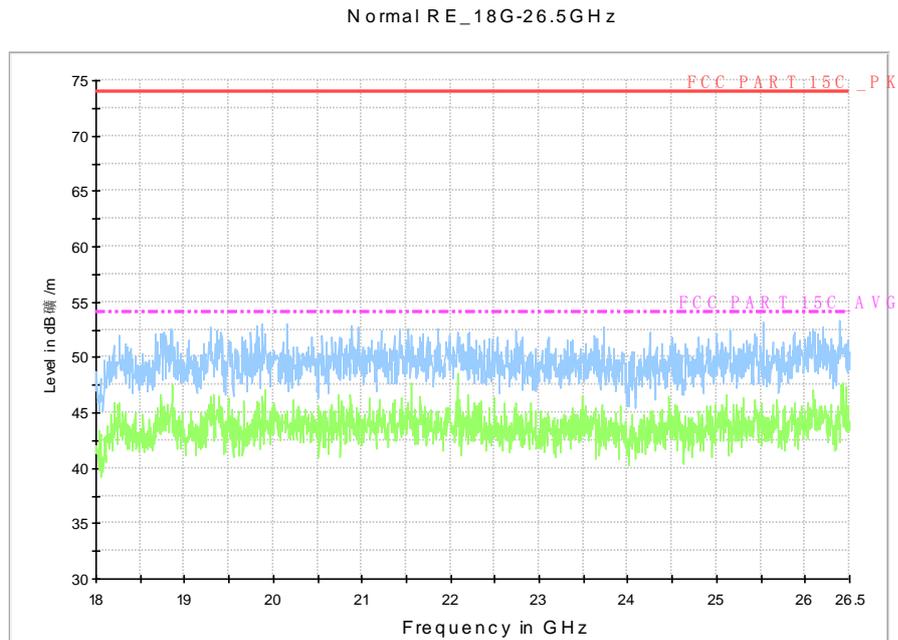


Fig. 73 Radiated Spurious Emission (802.11a, U-NII 2, 18 GHz-26.5 GHz)

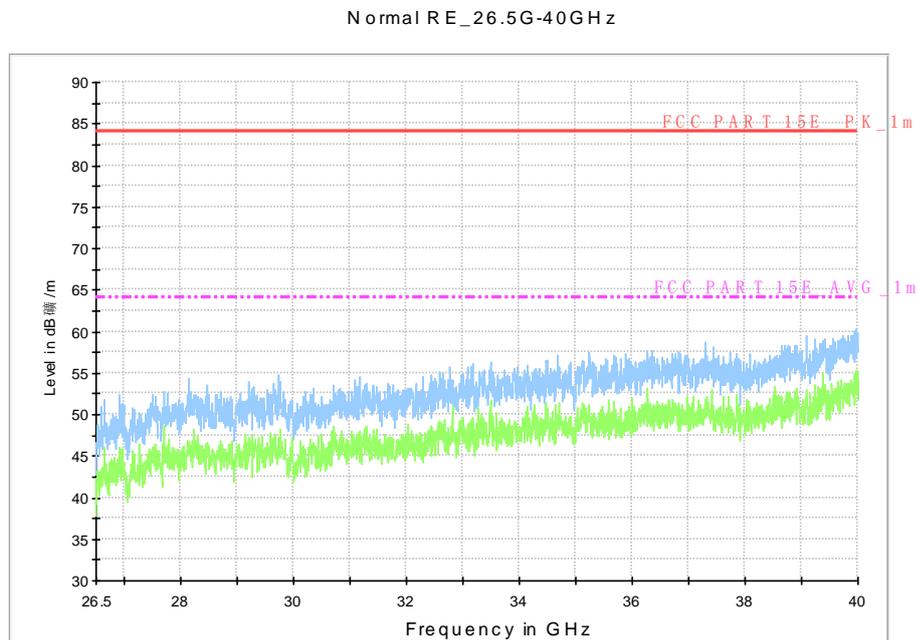


Fig. 74 Radiated Spurious Emission (802.11a, U-NII 2, 26.5 GHz-40 GHz)

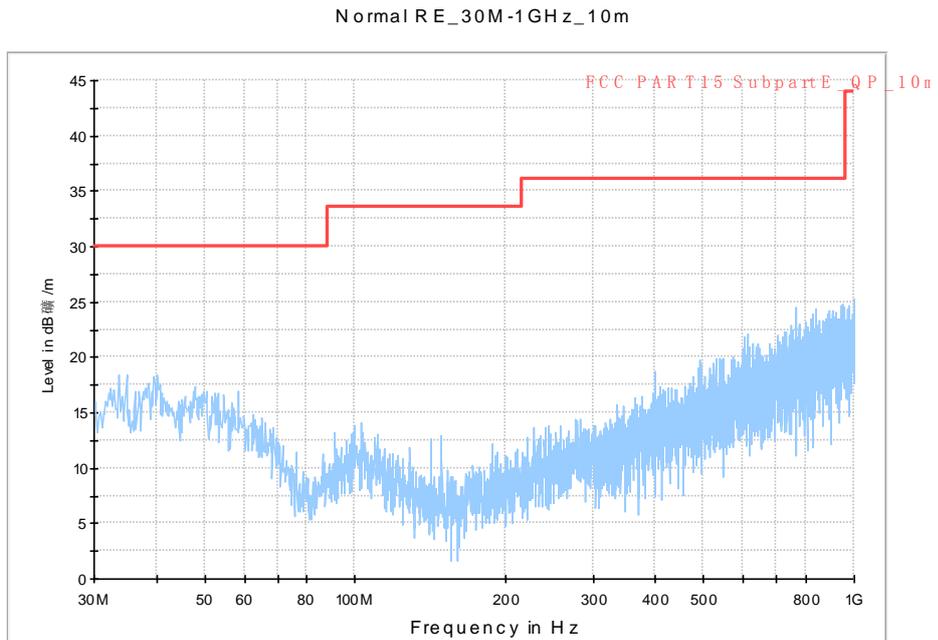


Fig. 75 Radiated Spurious Emission (802.11a, ch100, 30 MHz-1 GHz)

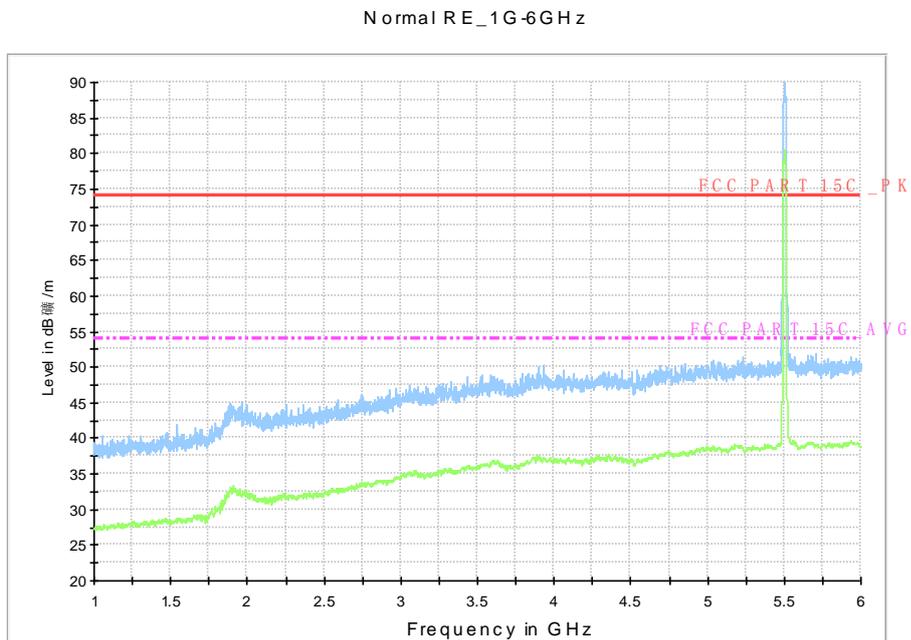


Fig. 76 Radiated Spurious Emission (802.11a, ch100, 1 GHz-6 GHz)

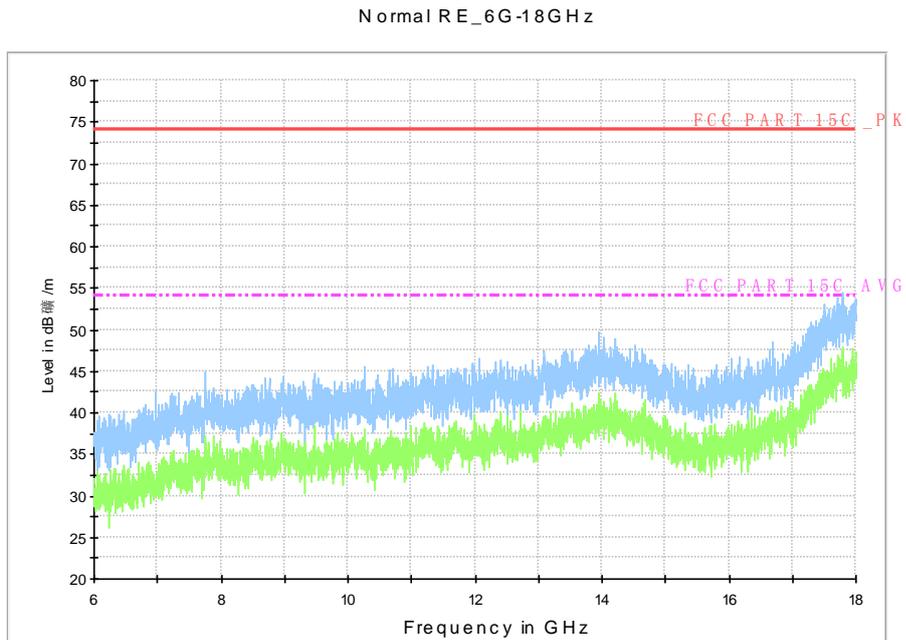


Fig. 77 Radiated Spurious Emission (802.11a, ch100, 6 GHz-18 GHz)

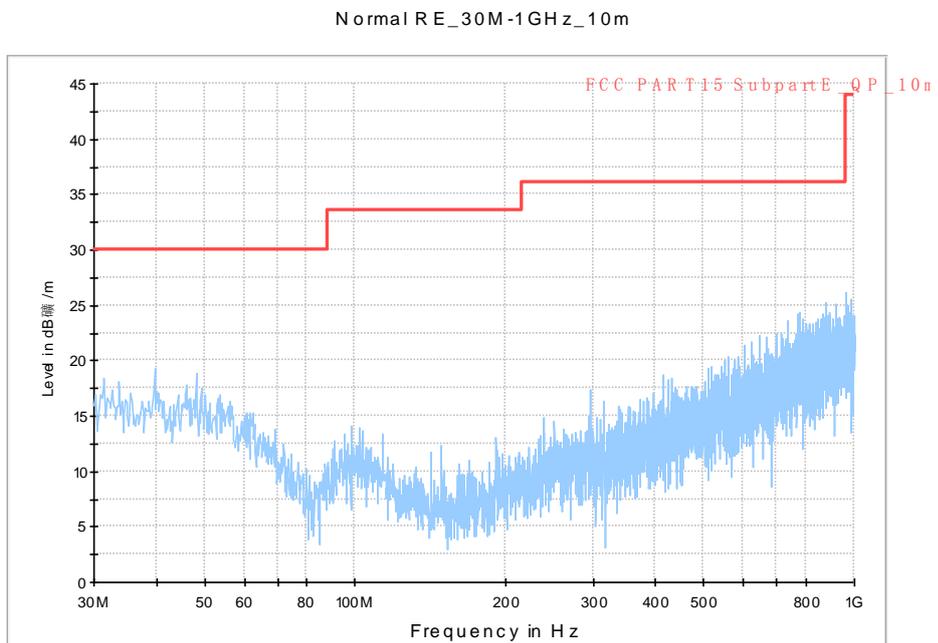


Fig. 78 Radiated Spurious Emission (802.11a, ch120, 30 MHz-1 GHz)

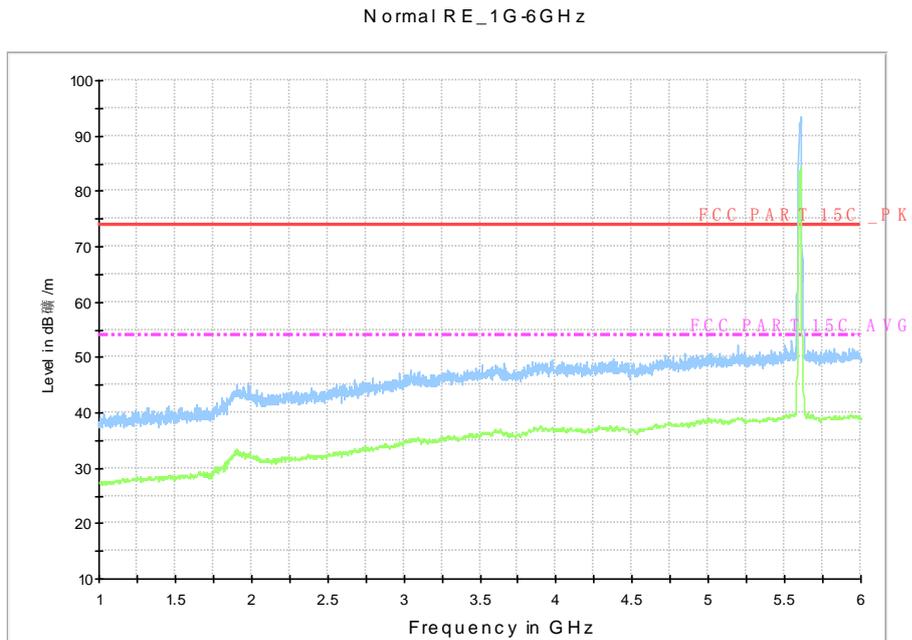


Fig. 79 Radiated Spurious Emission (802.11a, ch120, 1 GHz-6 GHz)

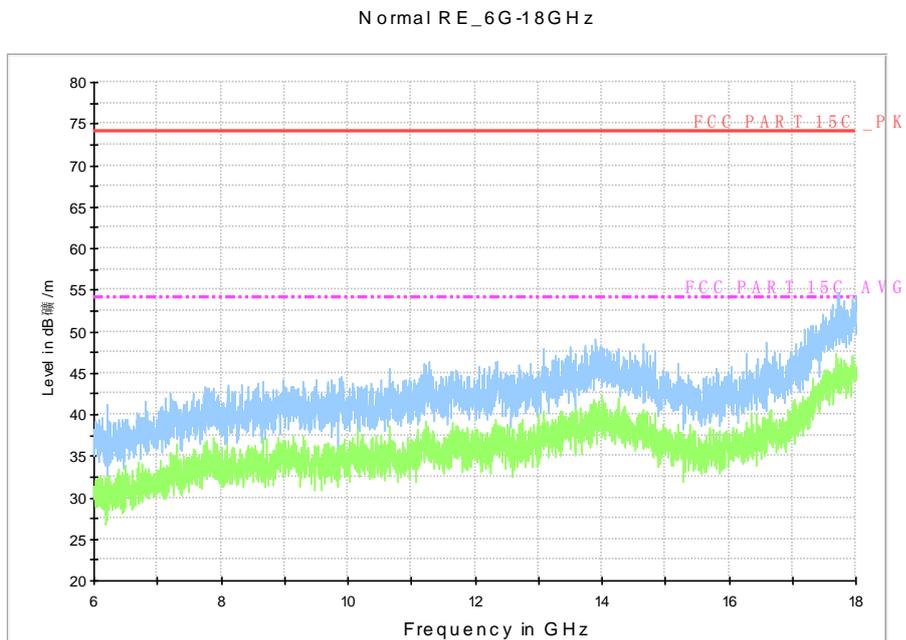


Fig. 80 Radiated Spurious Emission (802.11a, ch120, 6 GHz-18 GHz)

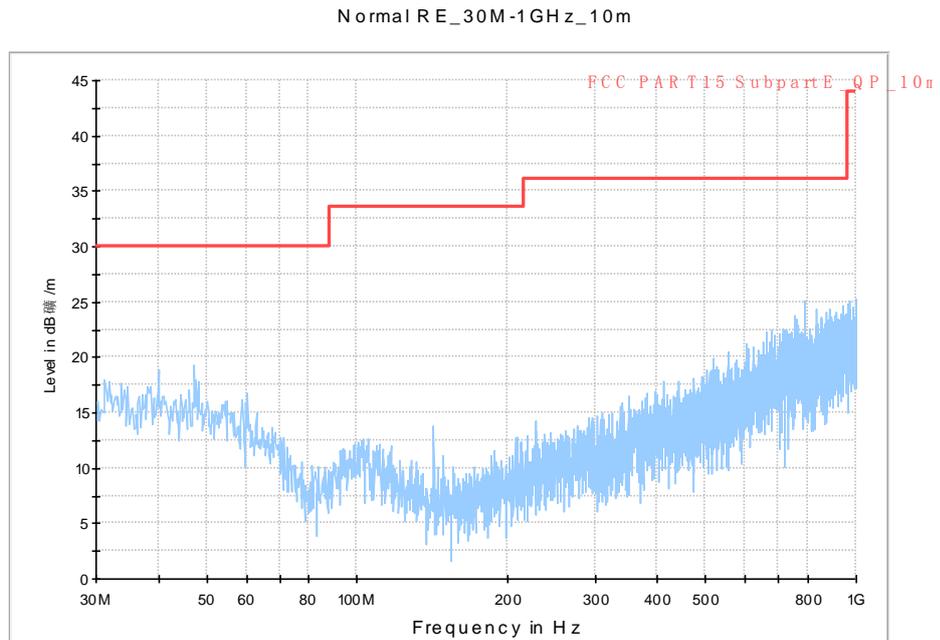


Fig. 81 Radiated Spurious Emission (802.11a, ch140, 30 MHz-1 GHz)

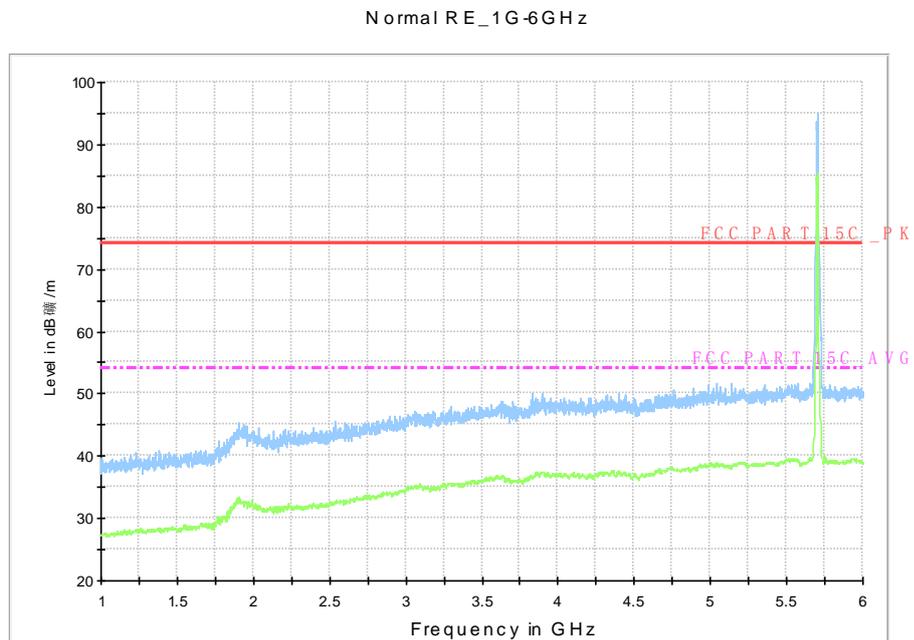


Fig. 82 Radiated Spurious Emission (802.11a, ch140, 1 GHz-6 GHz)

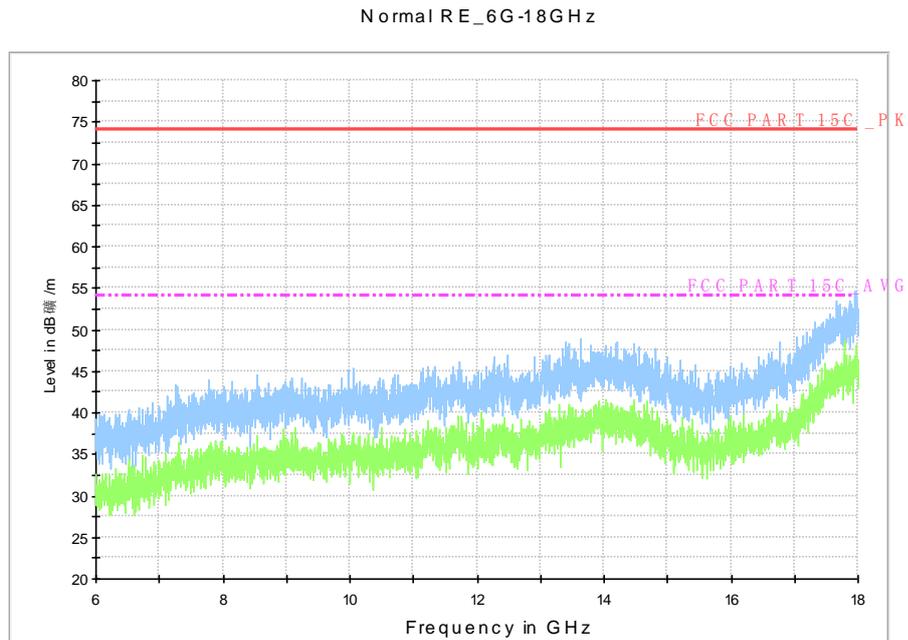


Fig. 83 Radiated Spurious Emission (802.11a, ch140, 6 GHz-18 GHz)

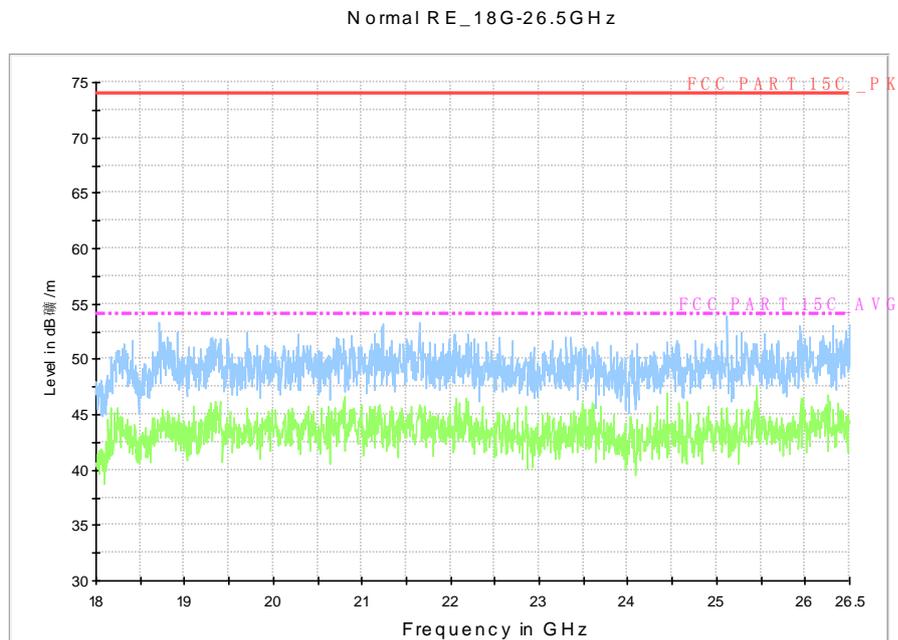


Fig. 84 Radiated Spurious Emission (802.11a, U-NII 3, 18 GHz-26.5 GHz)

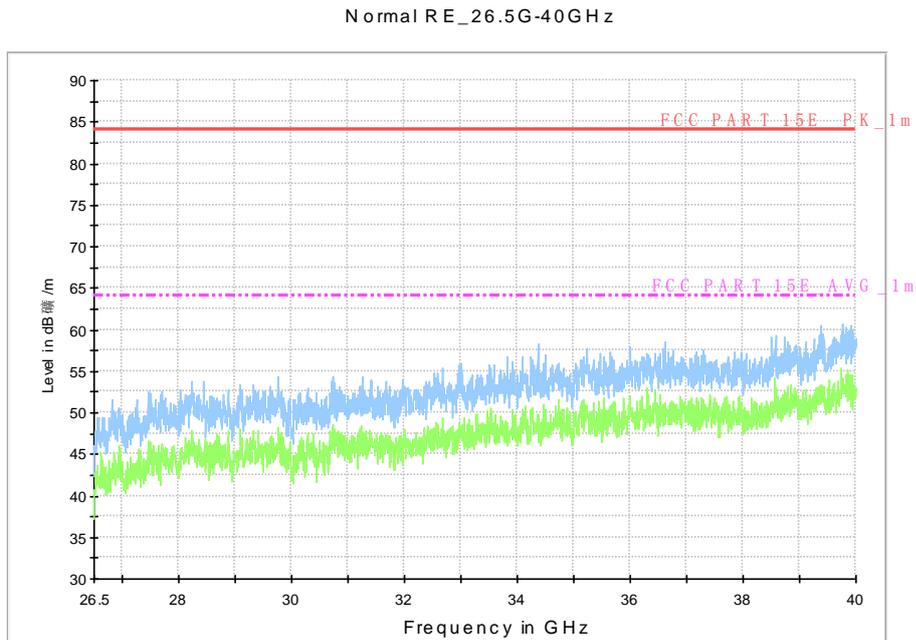


Fig. 85 Radiated Spurious Emission (802.11a, U-NII 3, 26.5 GHz-40 GHz)

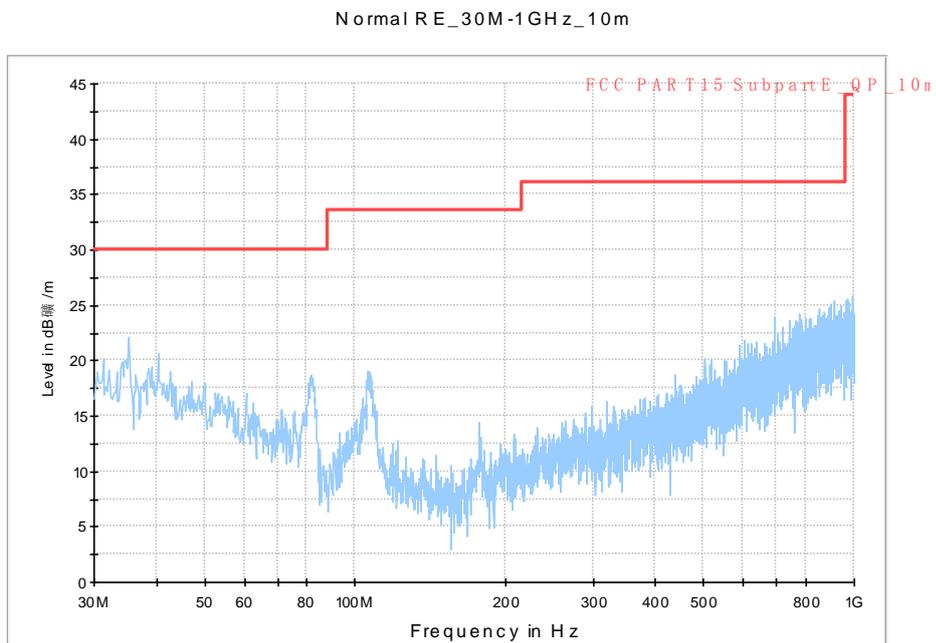


Fig. 86 Radiated Spurious Emission (802.11n-HT20, ch36, 30 MHz-1 GHz)

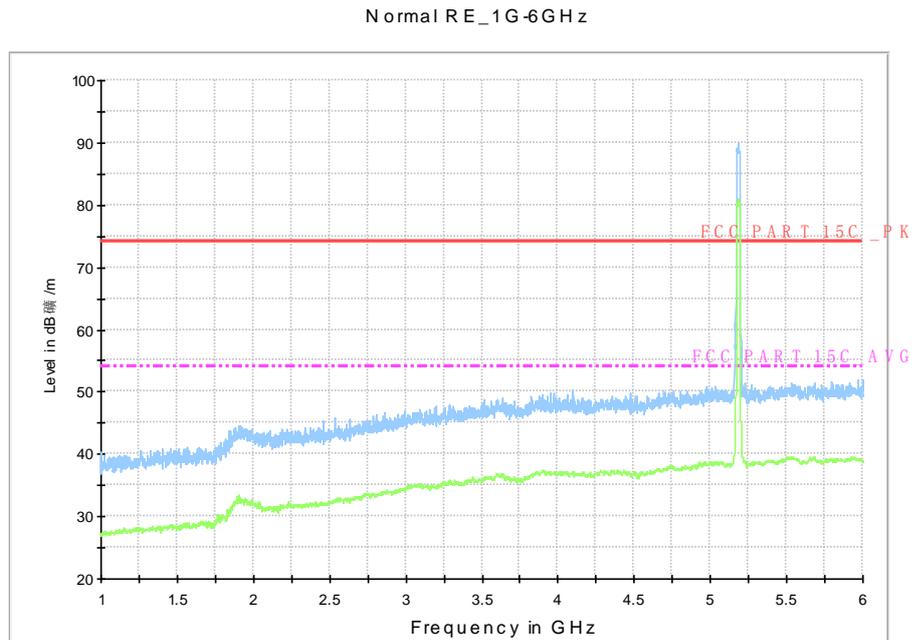


Fig. 87 Radiated Spurious Emission (802.11n-HT20, ch36, 1 GHz-6 GHz)

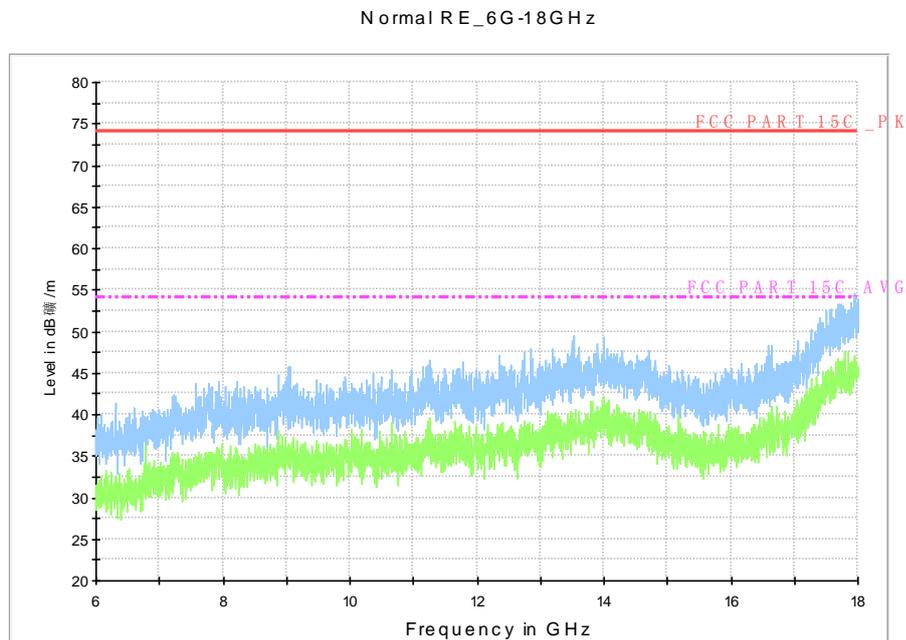


Fig. 88 Radiated Spurious Emission (802.11n-HT20, ch36, 6 GHz-18 GHz)

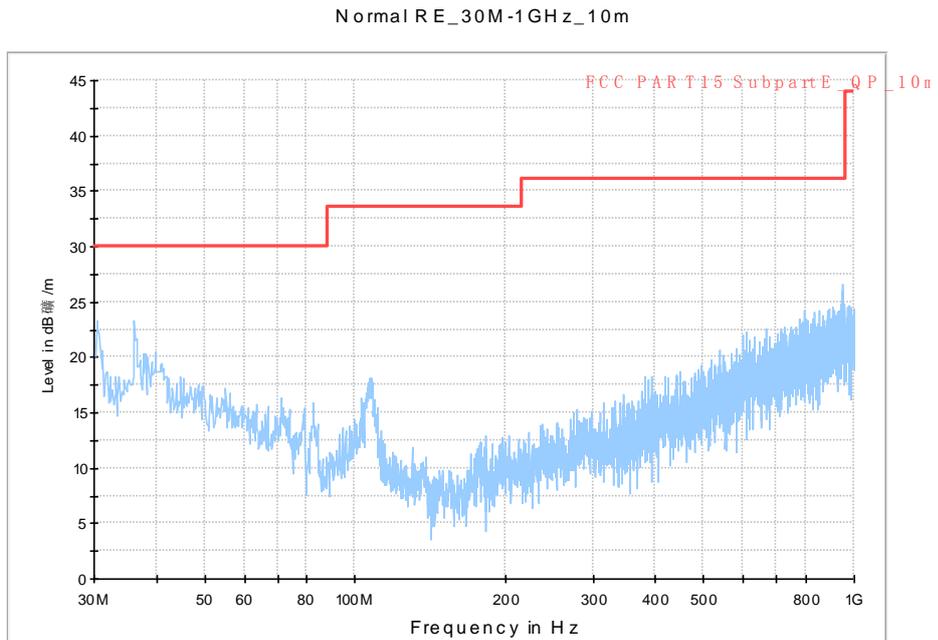


Fig. 89 Radiated Spurious Emission (802.11n-HT20, ch40, 30 MHz-1 GHz)

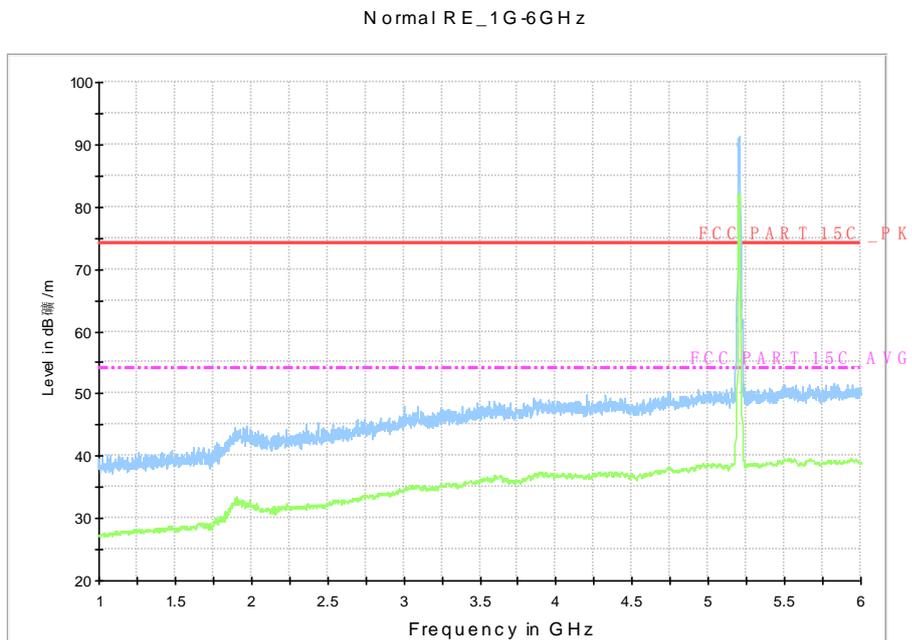


Fig. 90 Radiated Spurious Emission (802.11n-HT20, ch40, 1 GHz-6 GHz)

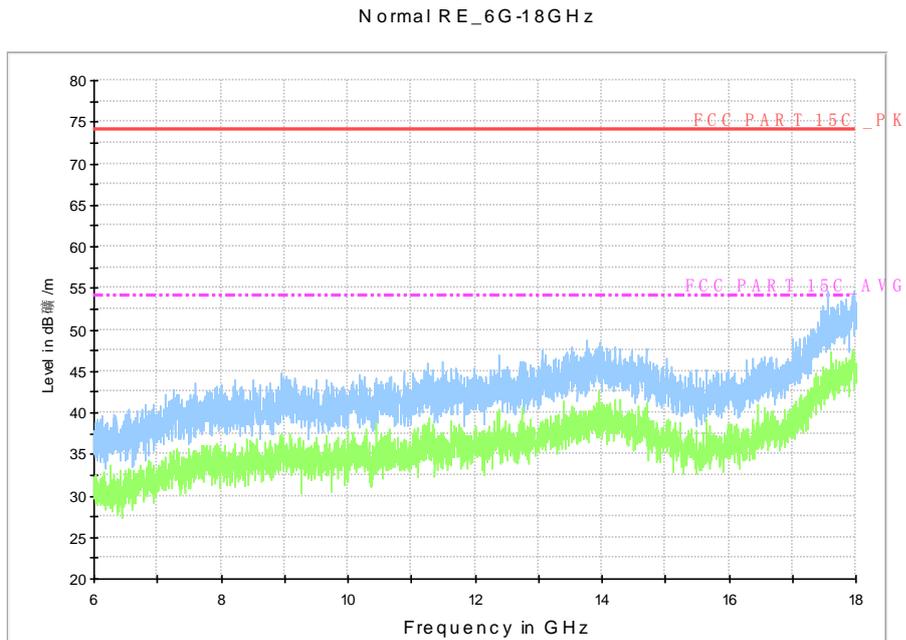


Fig. 91 Radiated Spurious Emission (802.11n-HT20, ch40, 6 GHz-18 GHz)

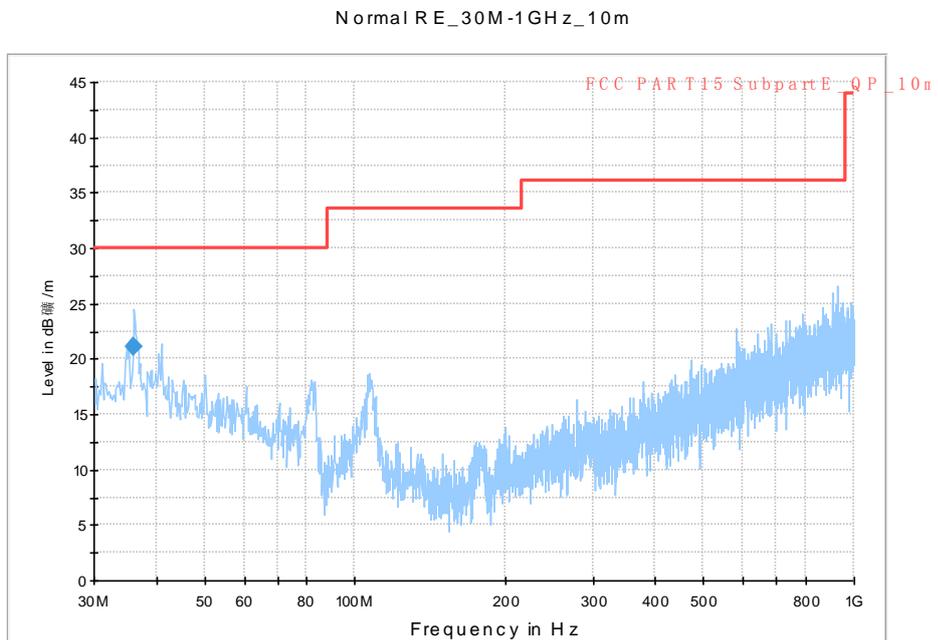


Fig. 92 Radiated Spurious Emission (802.11n-HT20, ch48, 30 MHz-1 GHz)

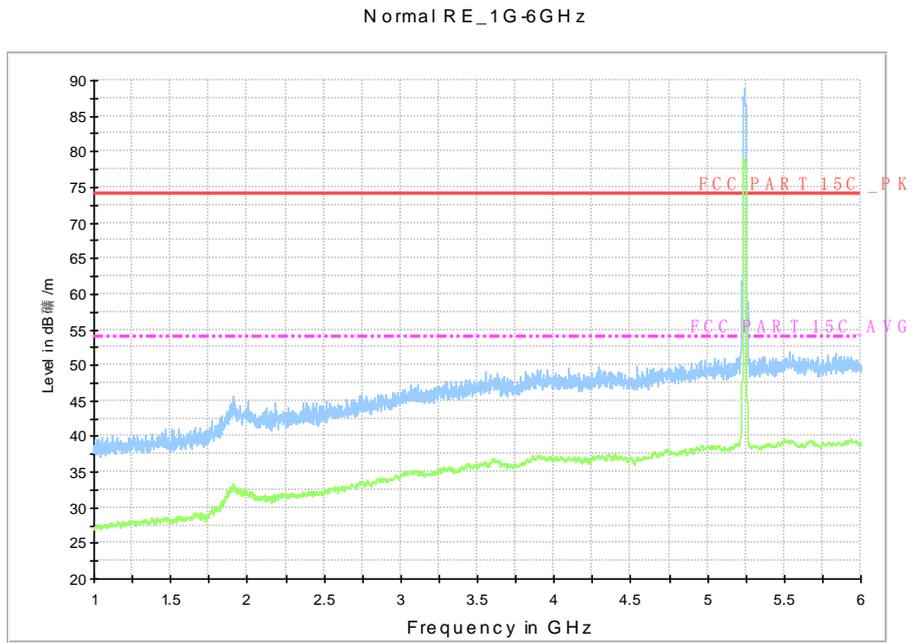


Fig. 93 Radiated Spurious Emission (802.11n-HT20, ch48, 1 GHz-6 GHz)

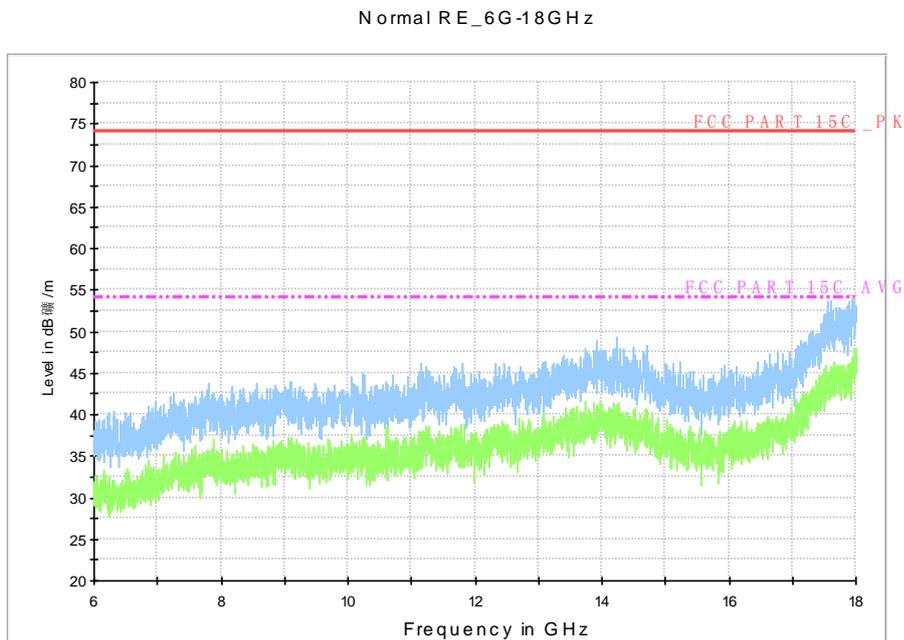


Fig. 94 Radiated Spurious Emission (802.11n-HT20, ch48, 6 GHz-18 GHz)

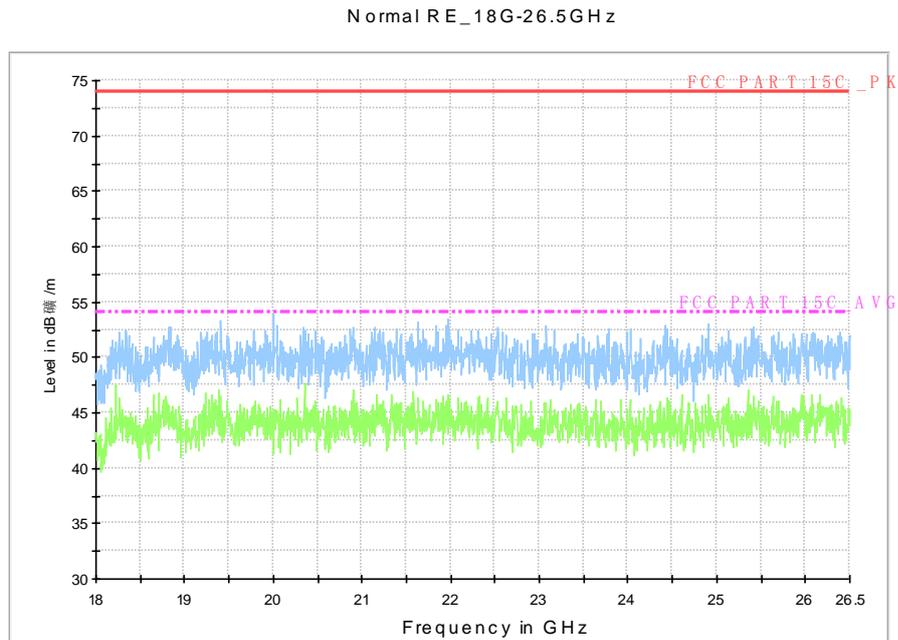


Fig. 95 Radiated Spurious Emission (802.11n-HT20, U-NII 1, 18 GHz-26.5 GHz)

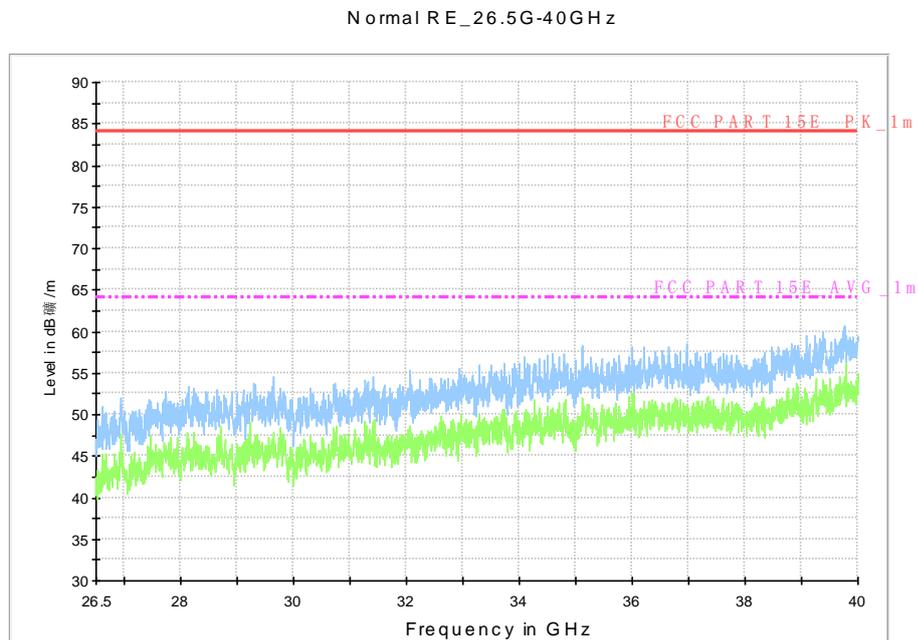


Fig. 96 Radiated Spurious Emission (802.11n-HT20, U-NII 1, 26.5 GHz-40 GHz)

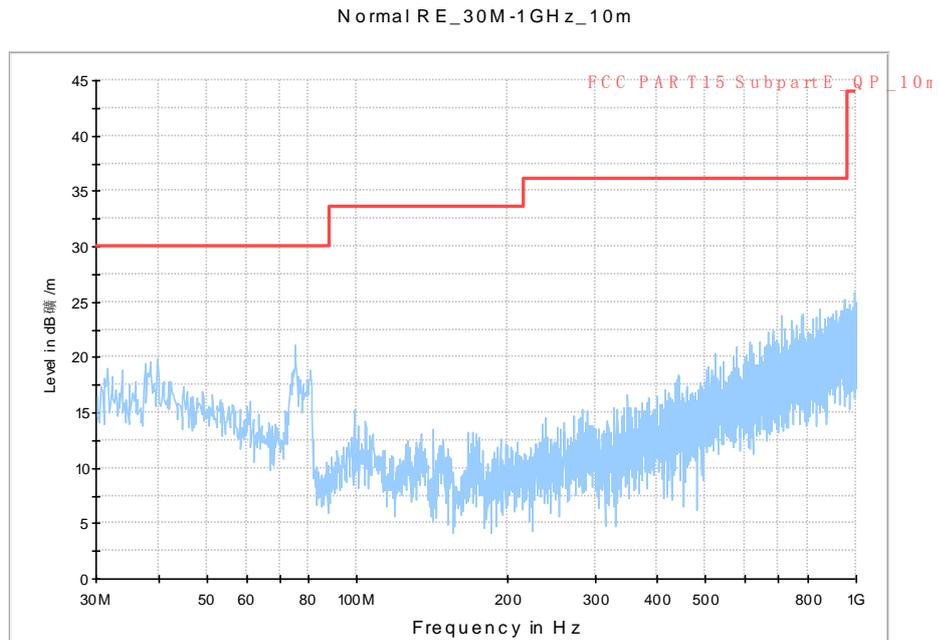


Fig. 97 Radiated Spurious Emission (802.11n-HT20, ch52, 30 MHz-1 GHz)

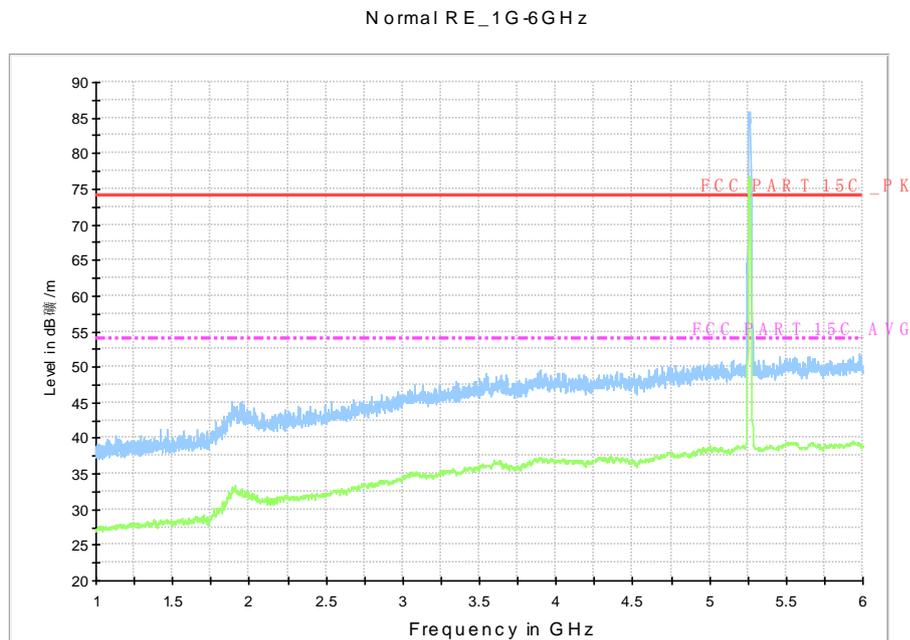


Fig. 98 Radiated Spurious Emission (802.11n-HT20, ch52, 1 GHz-6 GHz)

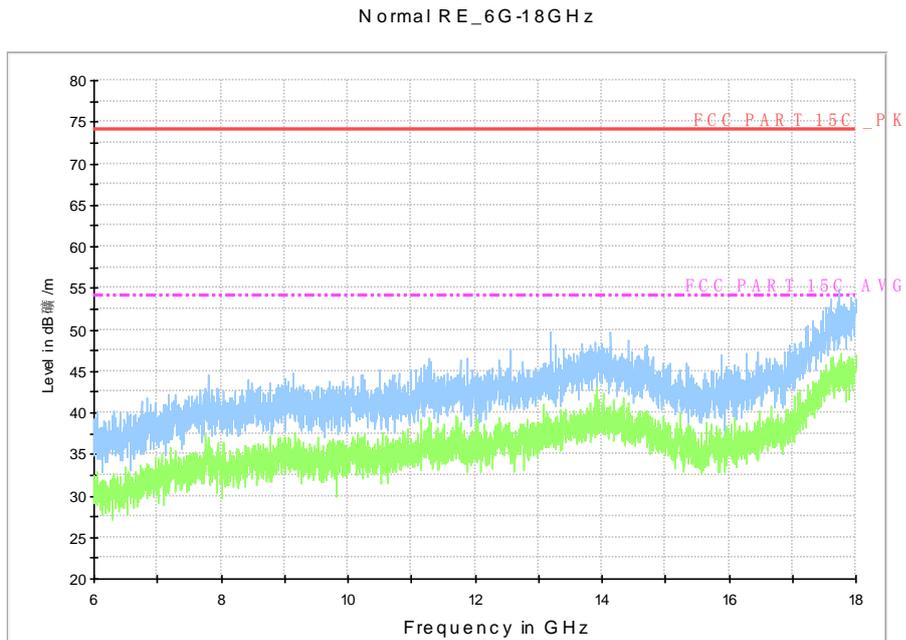


Fig. 99 Radiated Spurious Emission (802.11n-HT20, ch52, 6 GHz-18 GHz)

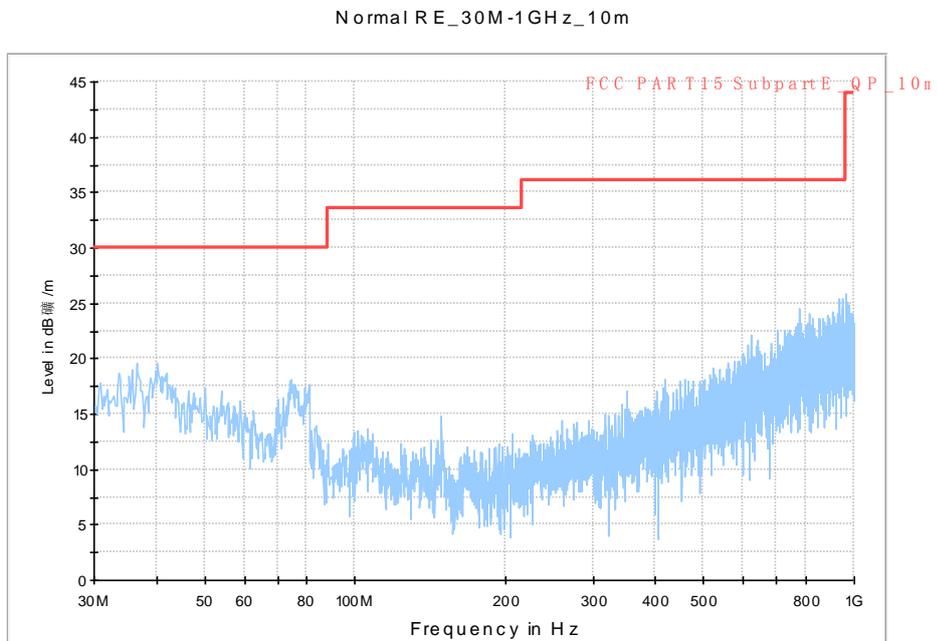


Fig. 100 Radiated Spurious Emission (802.11n-HT20 ch56, 30 MHz-1 GHz)

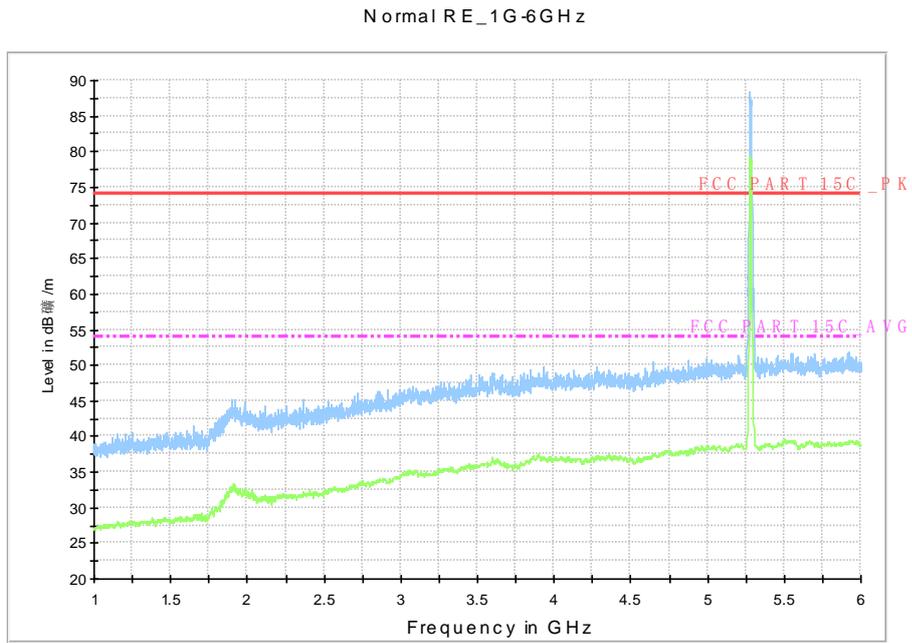


Fig. 101 Radiated Spurious Emission (802.11n-HT20, ch56, 1 GHz-6 GHz)

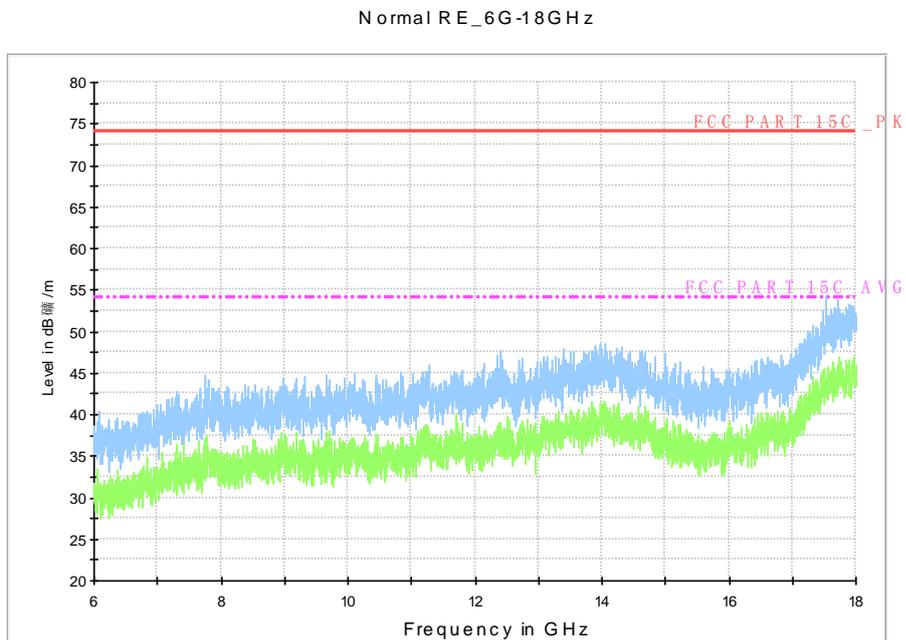


Fig. 102 Radiated Spurious Emission (802.11n-HT20, ch56, 6 GHz-18 GHz)

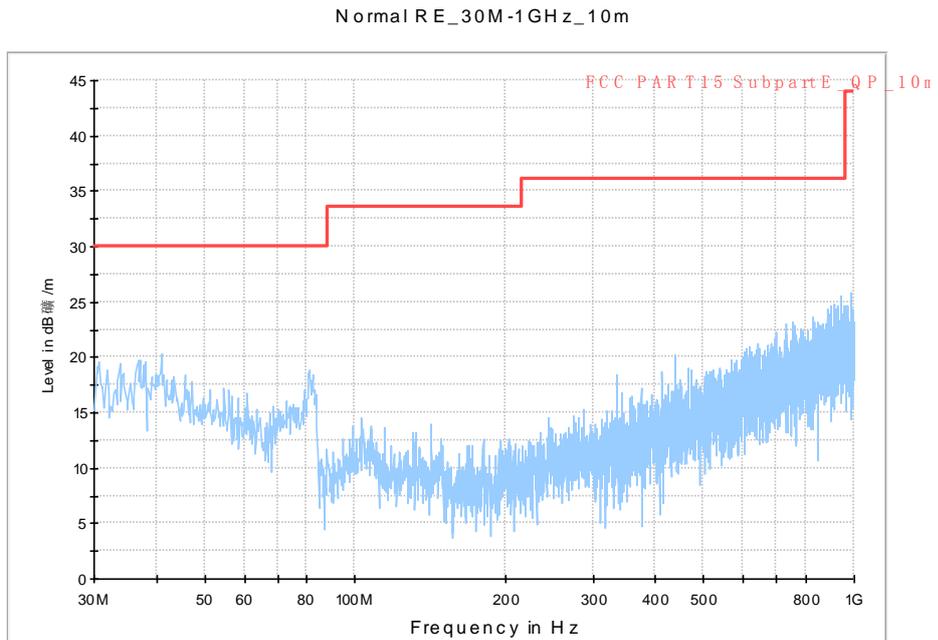


Fig. 103 Radiated Spurious Emission (802.11n-HT20, ch64, 30 MHz-1 GHz)

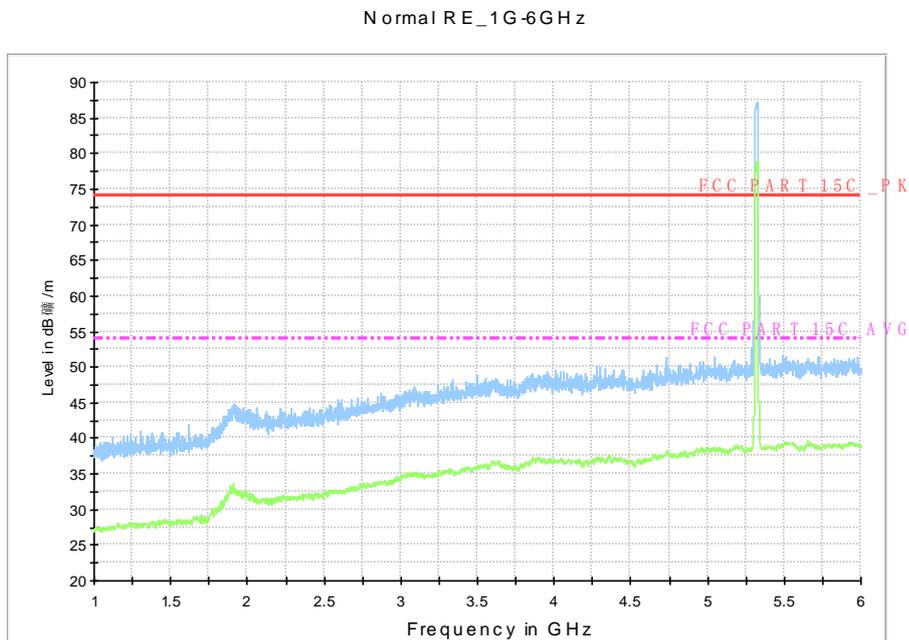


Fig. 104 Radiated Spurious Emission (802.11n-HT20, ch64, 1 GHz-6 GHz)

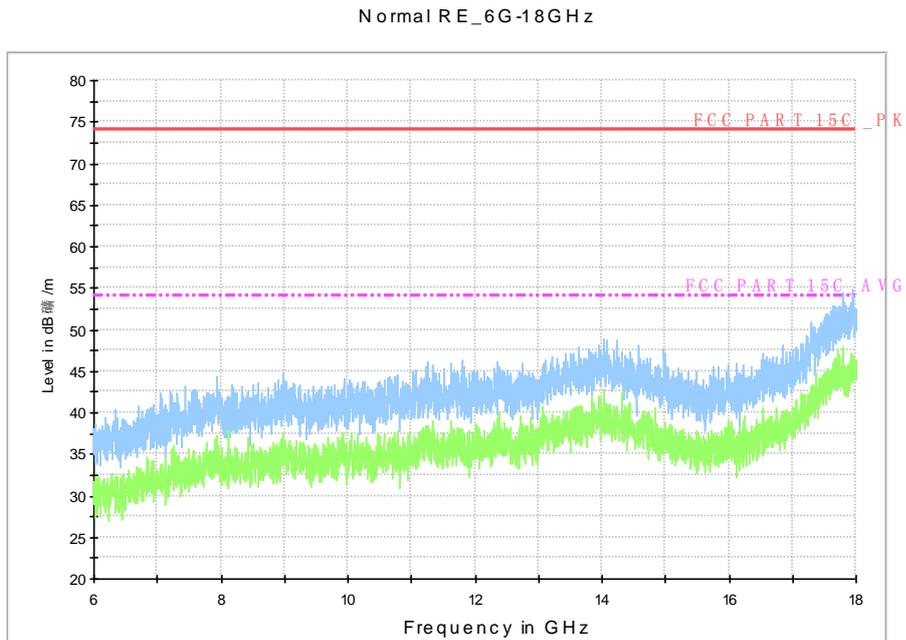


Fig. 105 Radiated Spurious Emission (802.11n-HT20, ch64, 6 GHz-18 GHz)

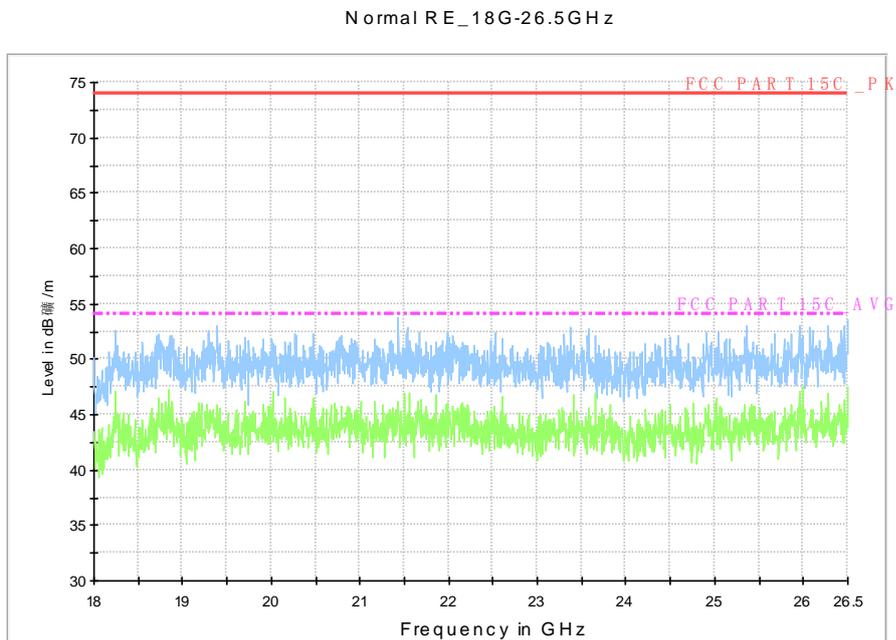


Fig. 106 Radiated Spurious Emission (802.11n-HT20, U-NII 2, 18 GHz-26.5 GHz)

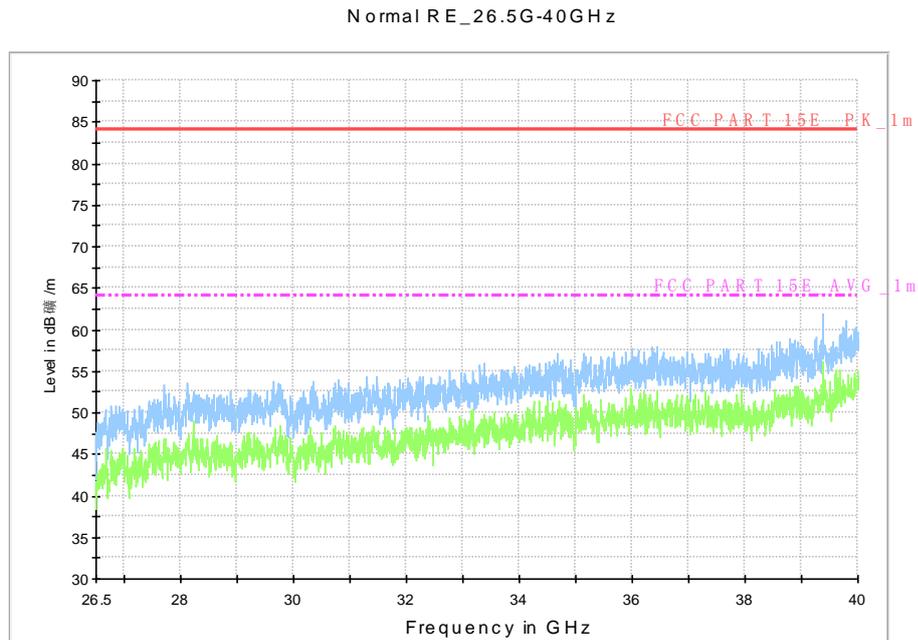


Fig. 107 Radiated Spurious Emission (802.11n-HT20, U-NII 2, 26.5 GHz-40 GHz)

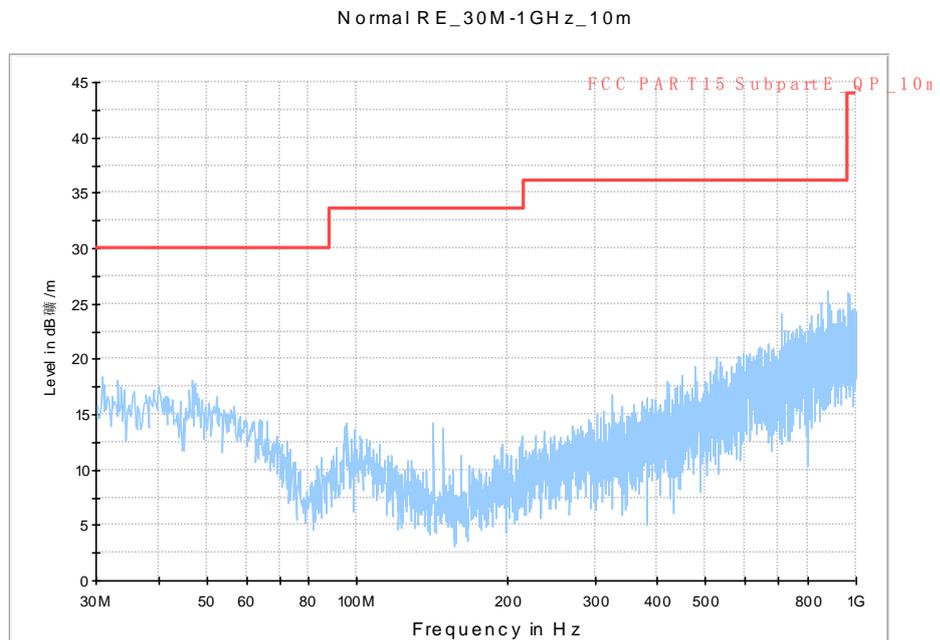


Fig. 108 Radiated Spurious Emission (802.11n-HT20, ch100, 30 MHz-1 GHz)

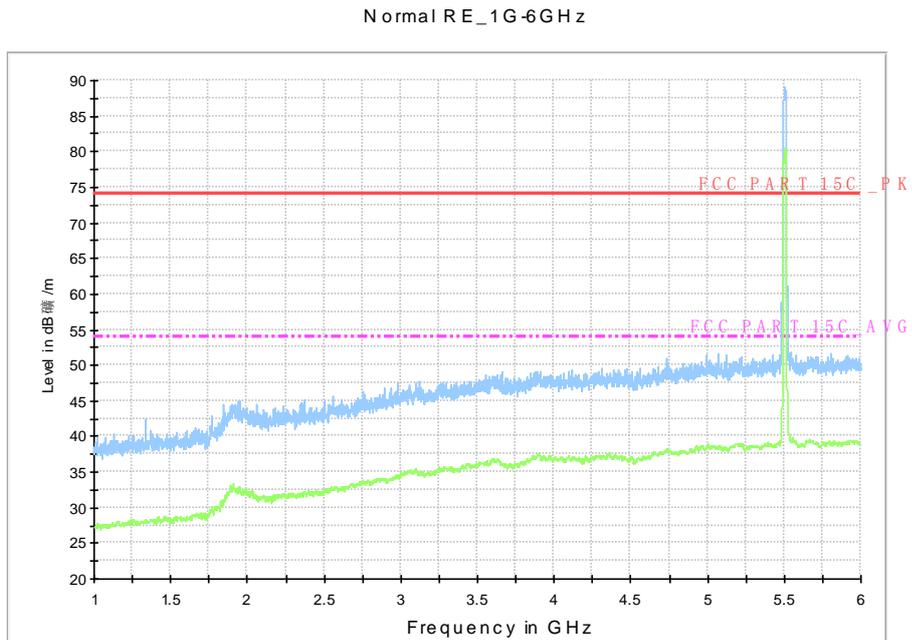


Fig. 109 Radiated Spurious Emission (802.11n-HT20, ch100, 1 GHz-6 GHz)

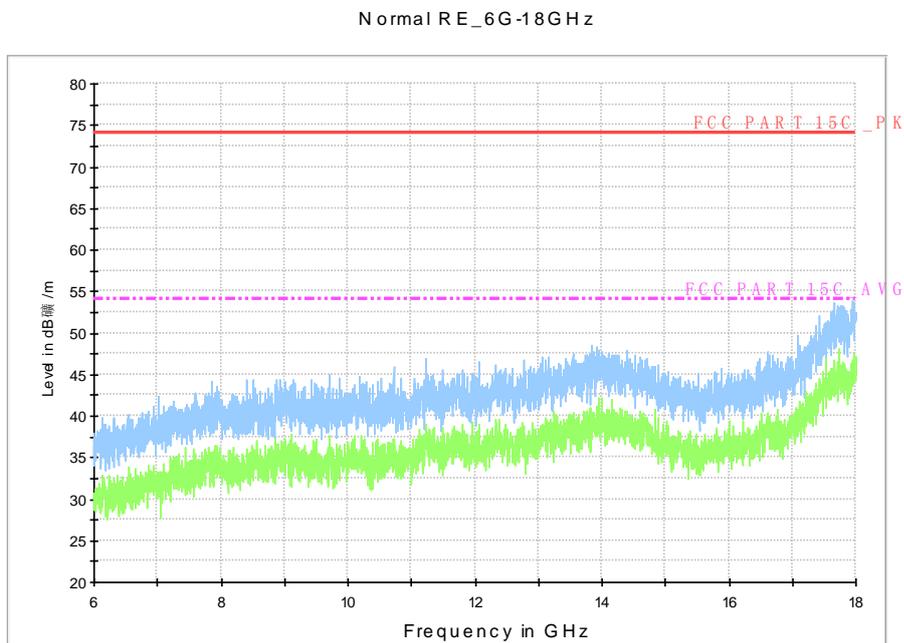


Fig. 110 Radiated Spurious Emission (802.11n-HT20, ch100, 6 GHz-18 GHz)

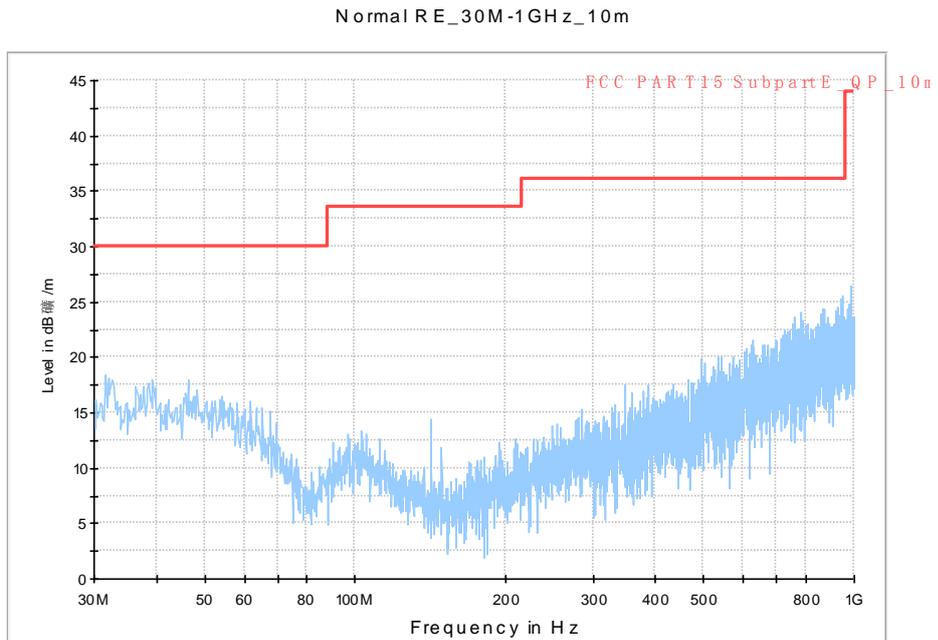


Fig. 111 Radiated Spurious Emission (802.11n-HT20, ch120, 30 MHz-1 GHz)

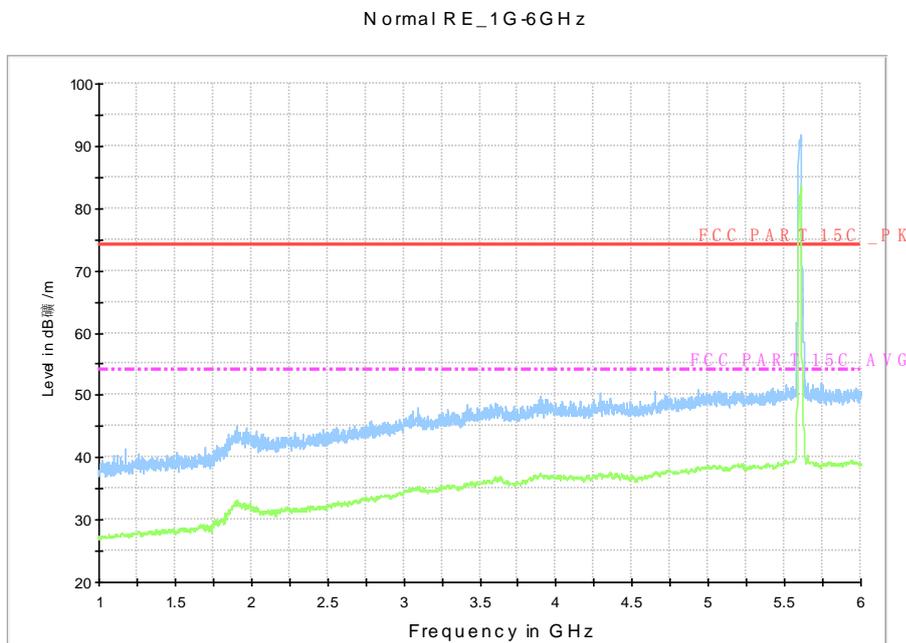


Fig. 112 Radiated Spurious Emission (802.11n-HT20, ch120, 1 GHz-6 GHz)

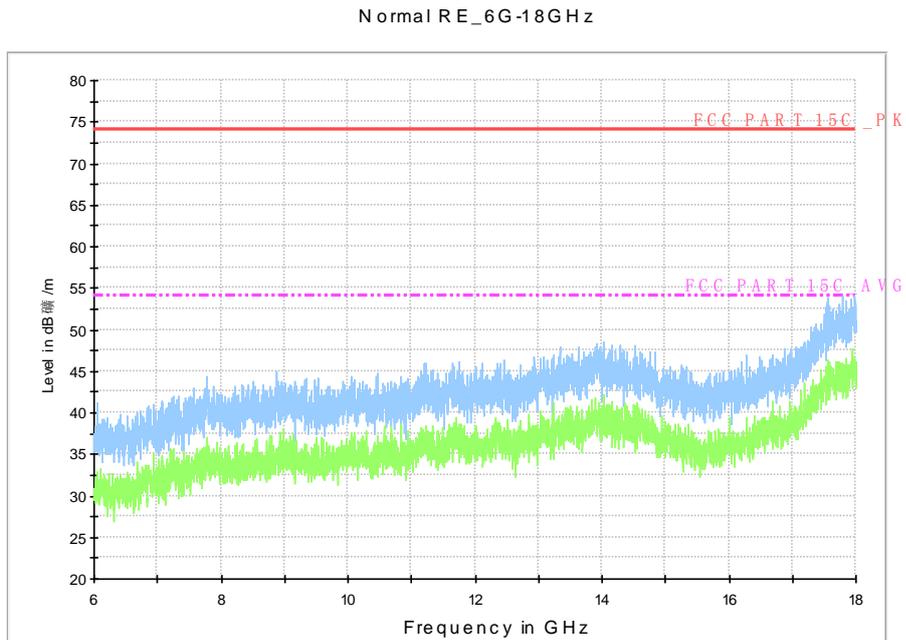


Fig. 113 Radiated Spurious Emission (802.11n-HT20, ch120, 6 GHz-18 GHz)

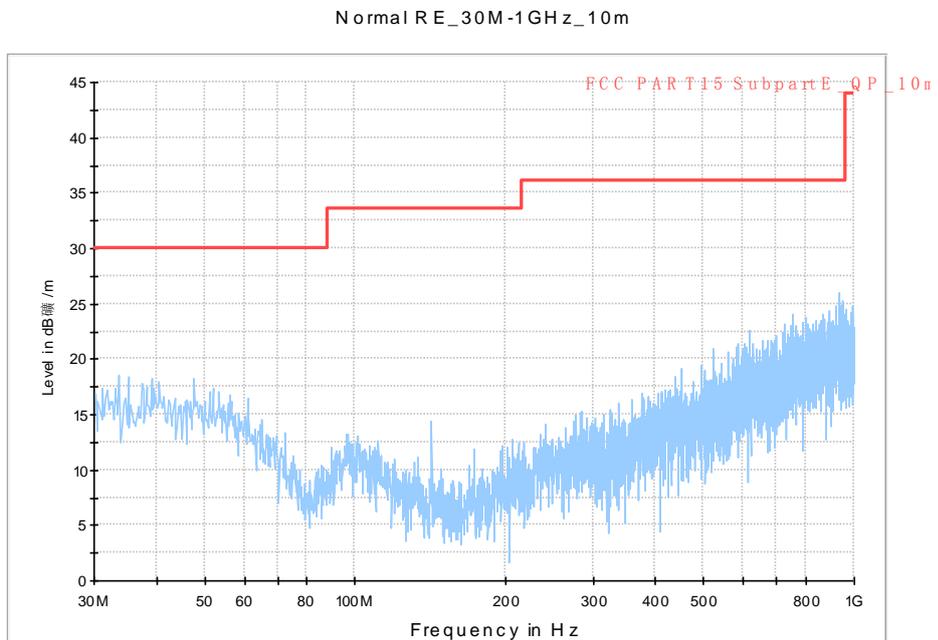


Fig. 114 Radiated Spurious Emission (802.11n-HT20, ch140, 30 MHz-1 GHz)

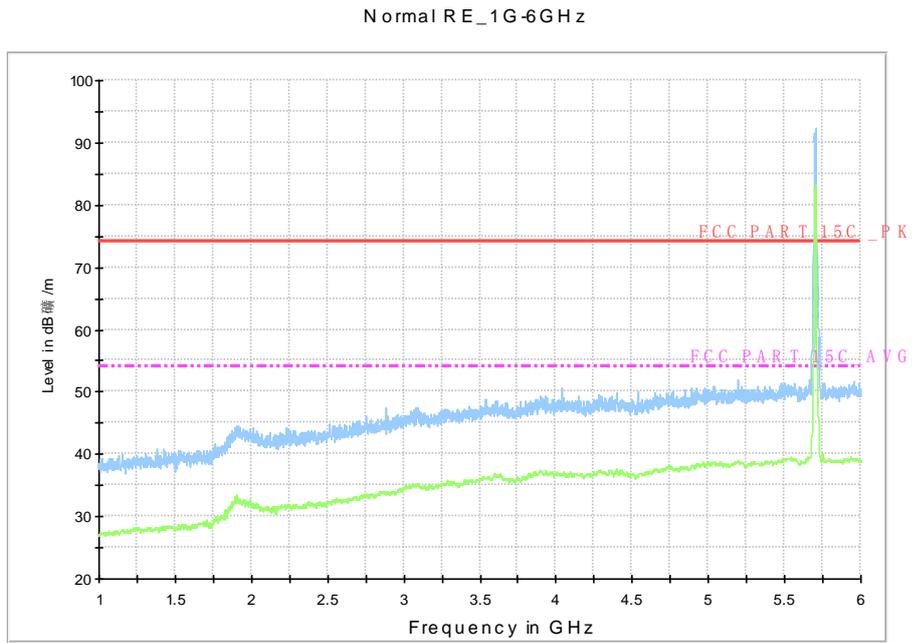


Fig. 115 Radiated Spurious Emission (802.11n-HT20, ch140, 1 GHz-6 GHz)

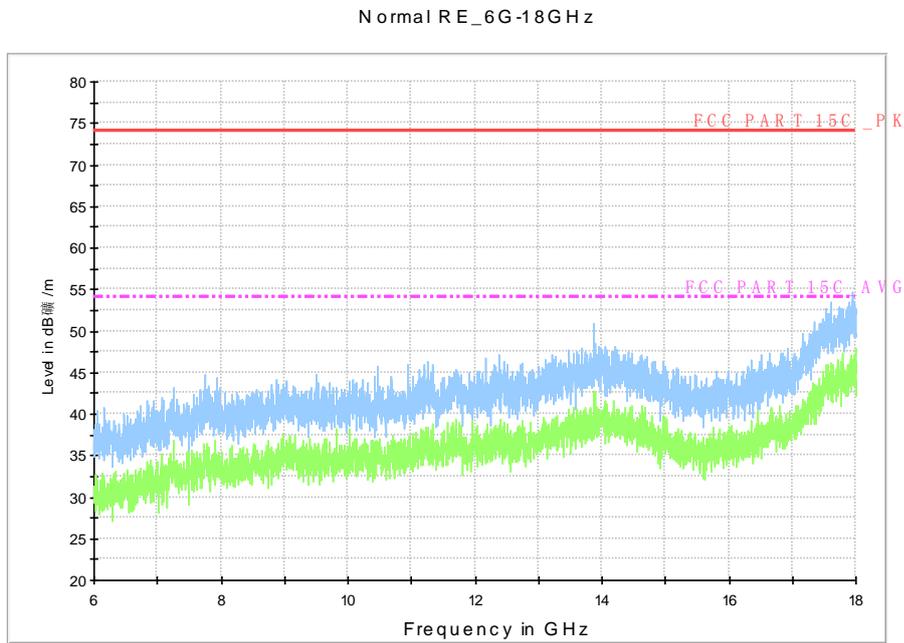


Fig. 116 Radiated Spurious Emission (802.11n-HT20, ch140, 6 GHz-18 GHz)

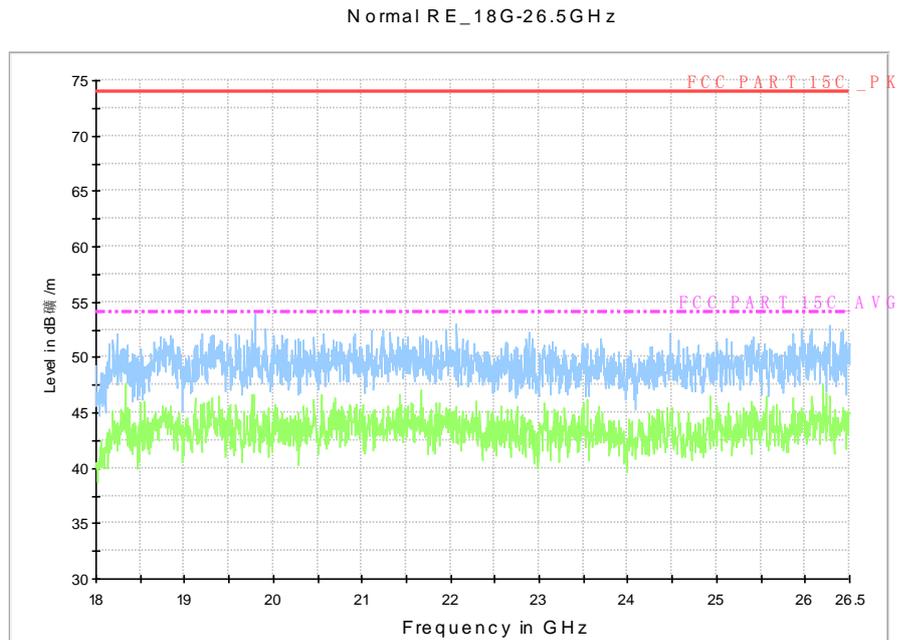


Fig. 117 Radiated Spurious Emission (802.11n-HT20, U-NII 3, 18 GHz-26.5 GHz)

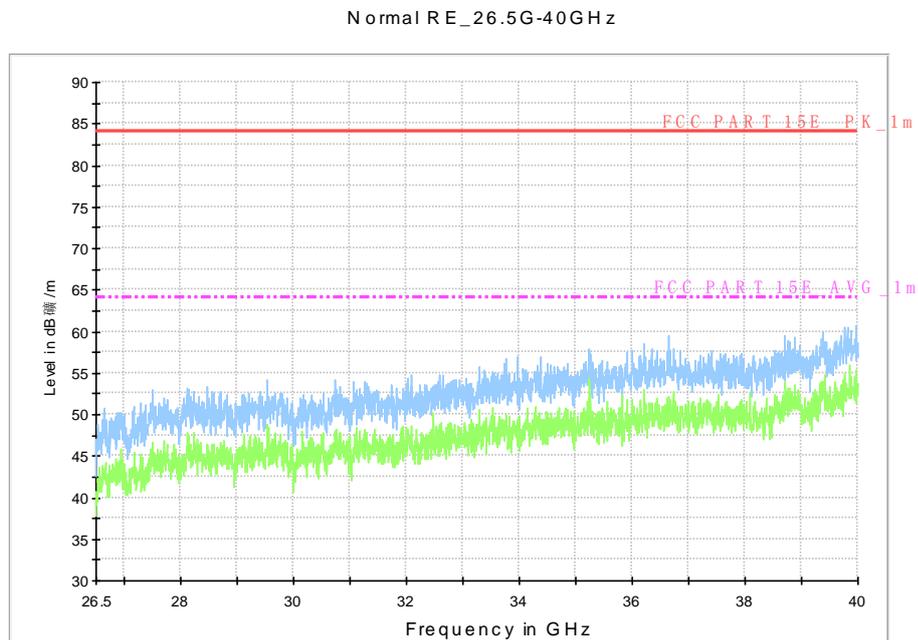


Fig. 118 Radiated Spurious Emission (802.11n-HT20, U-NII 3, 26.5 GHz-40 GHz)

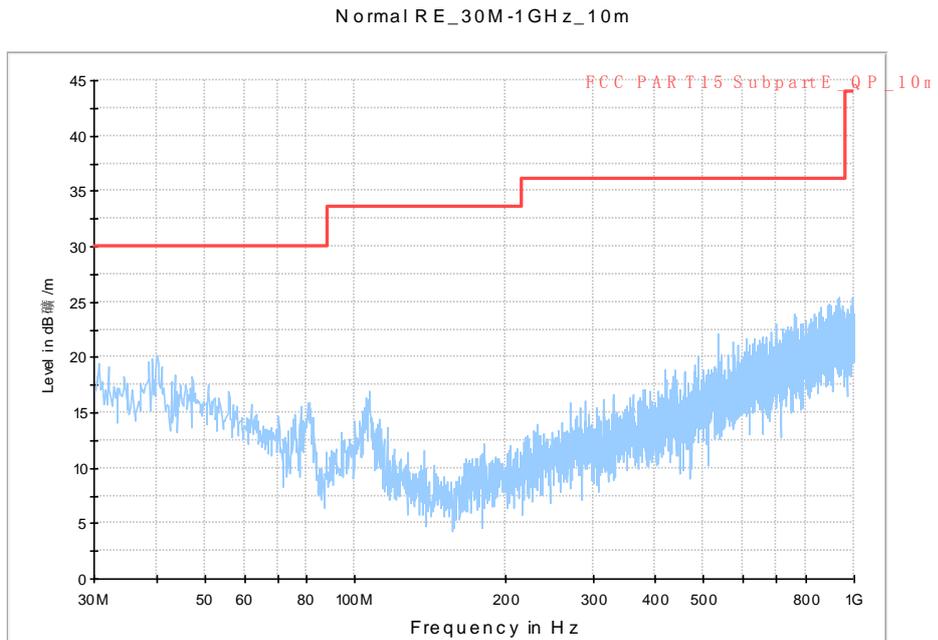


Fig. 119 Radiated Spurious Emission (802.11n-HT40, ch38, 30 MHz-1 GHz)

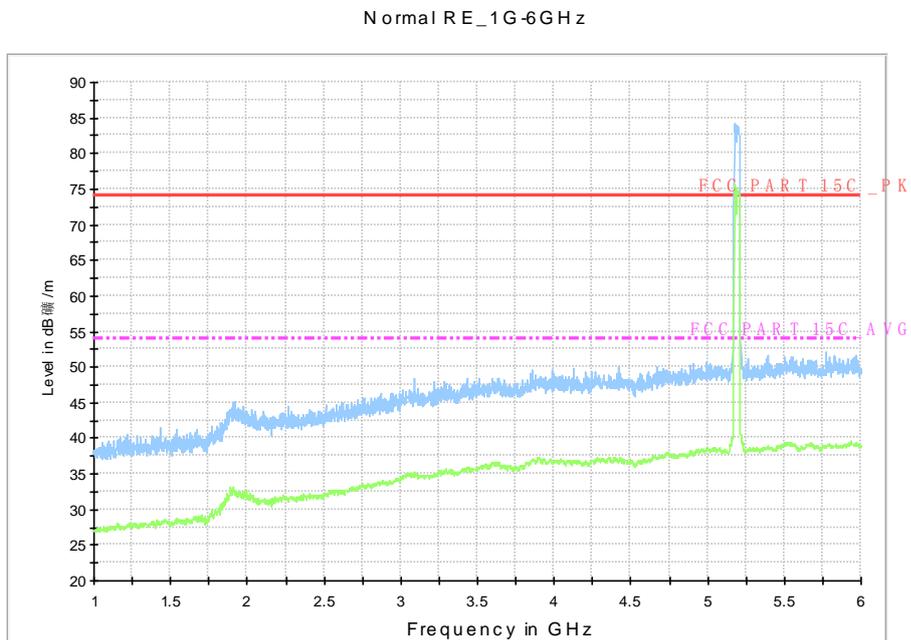


Fig. 120 Radiated Spurious Emission (802.11n-HT40, ch38, 1 GHz-6 GHz)

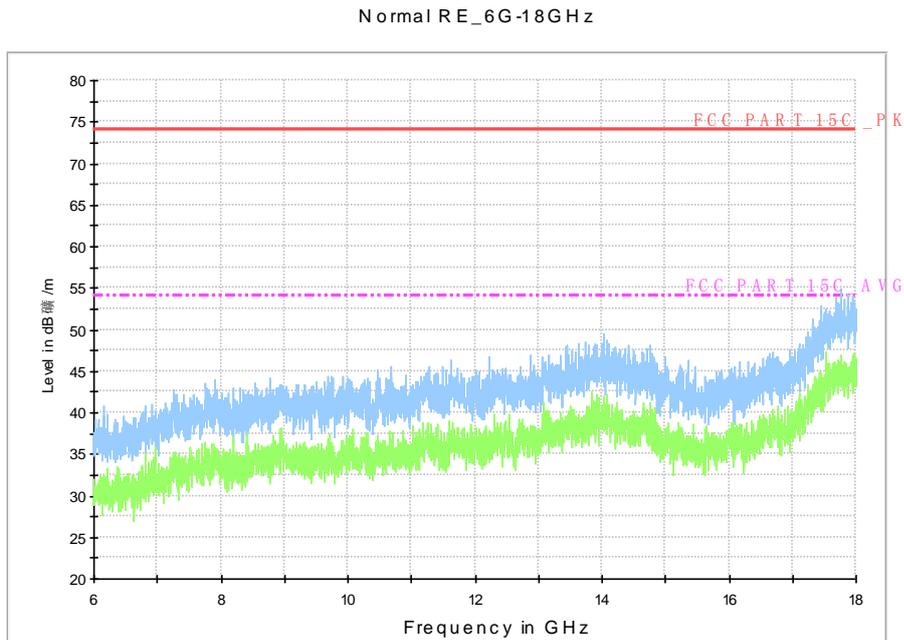


Fig. 121 Radiated Spurious Emission (802.11n-HT40, ch38, 6 GHz-18 GHz)

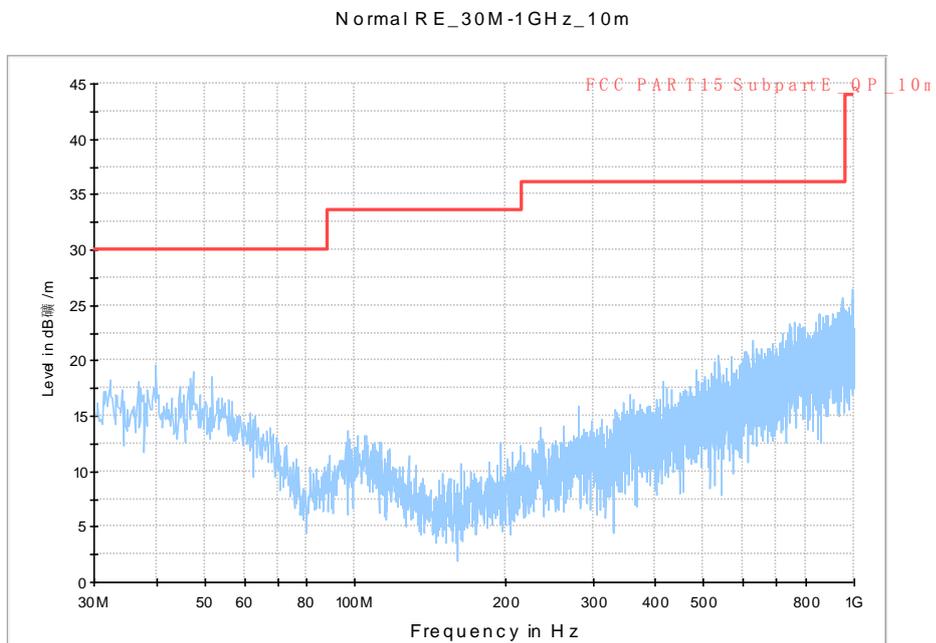


Fig. 122 Radiated Spurious Emission (802.11n-HT40, ch46, 30 MHz-1 GHz)

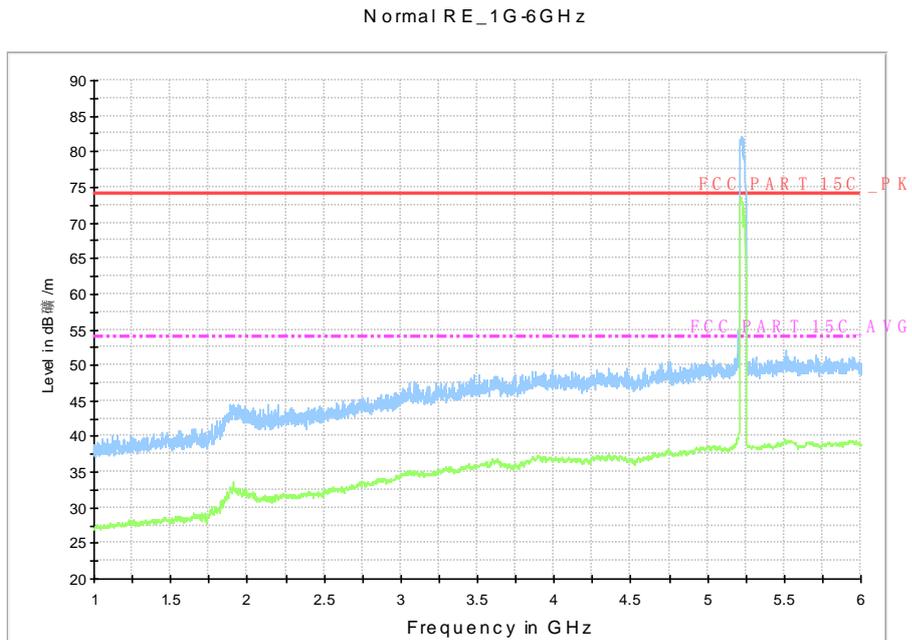


Fig. 123 Radiated Spurious Emission (802.11n-HT40, ch46, 1 GHz-6 GHz)

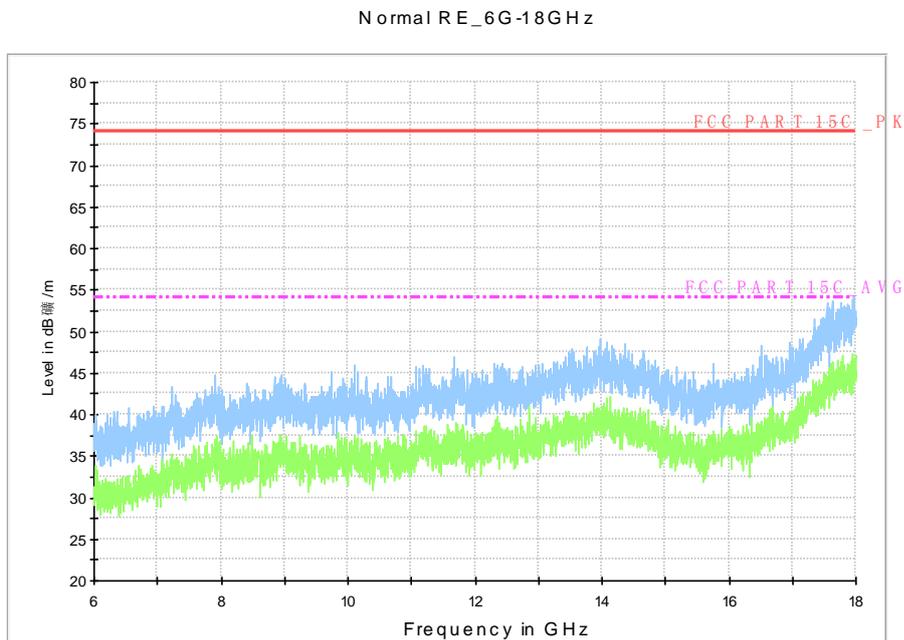


Fig. 124 Radiated Spurious Emission (802.11n-HT40, ch46, 6 GHz-18 GHz)

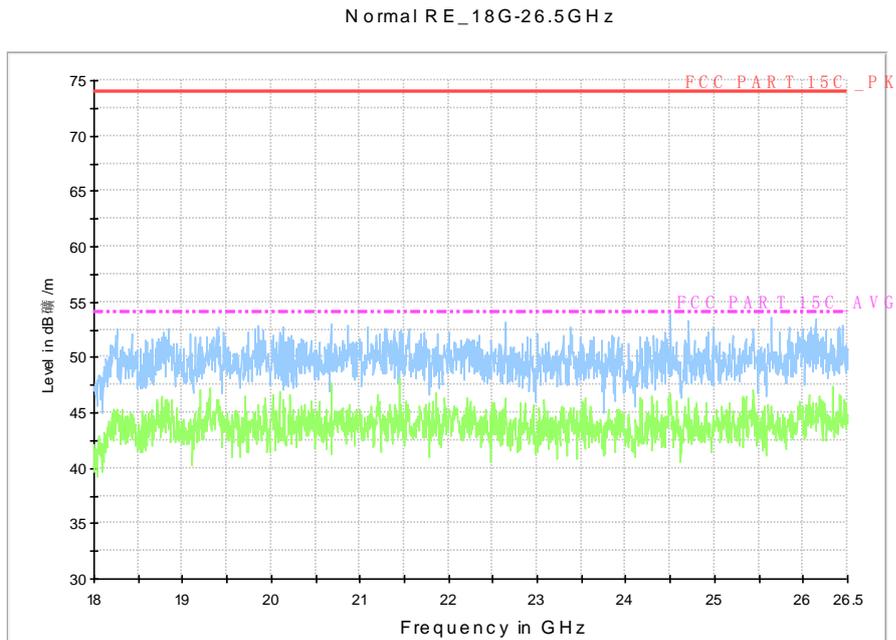


Fig. 125 Radiated Spurious Emission (802.11n-HT40, U-NII 1, 18 GHz-26.5 GHz)

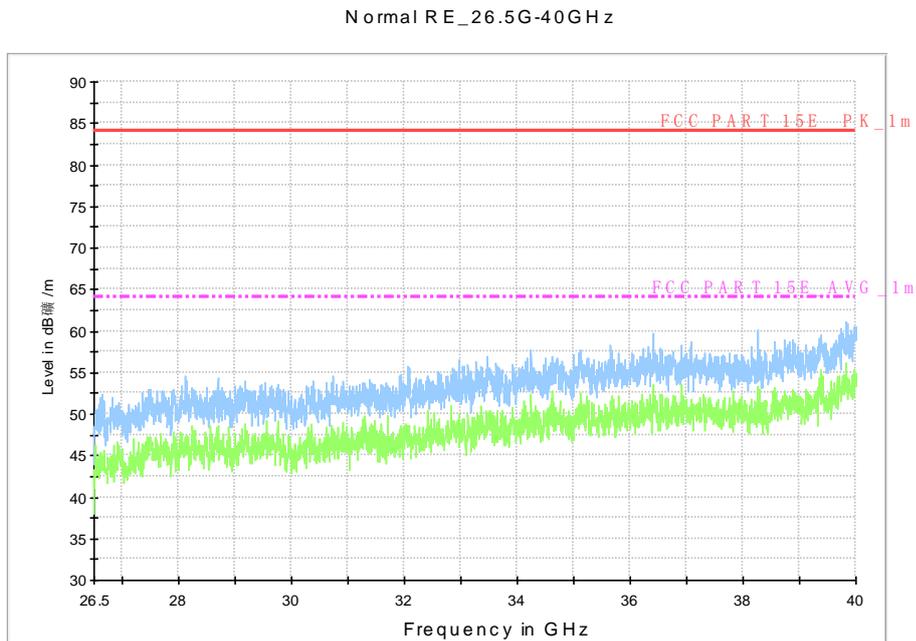


Fig. 126 Radiated Spurious Emission (802.11n-HT40, U-NII 1, 26.5 GHz-40 GHz)

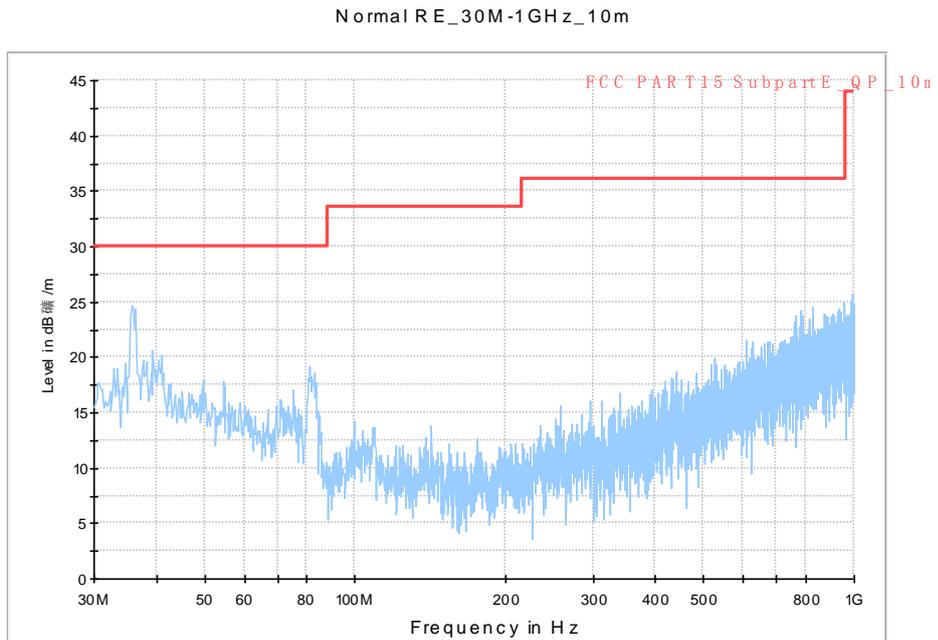


Fig. 127 Radiated Spurious Emission (802.11n-HT40, ch54, 30 MHz-1 GHz)

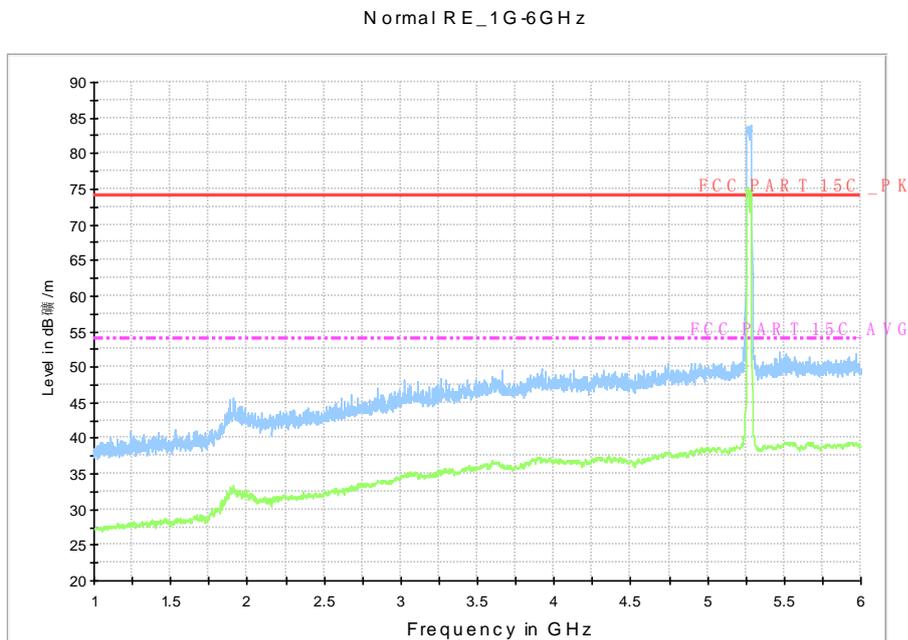


Fig. 128 Radiated Spurious Emission (802.11n-HT40, ch54, 1 GHz-6 GHz)

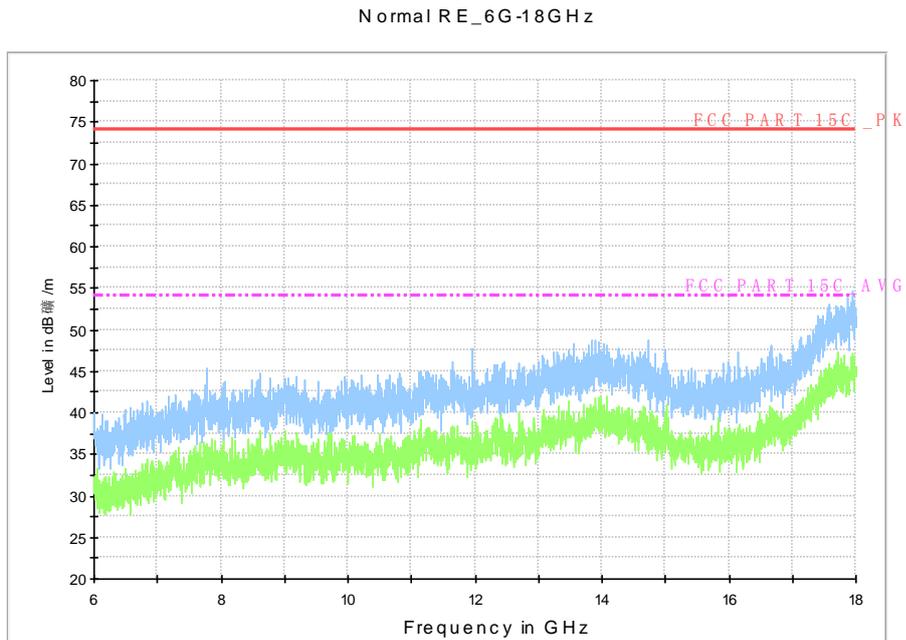


Fig. 129 Radiated Spurious Emission (802.11n-HT40, ch54, 6 GHz-18 GHz)

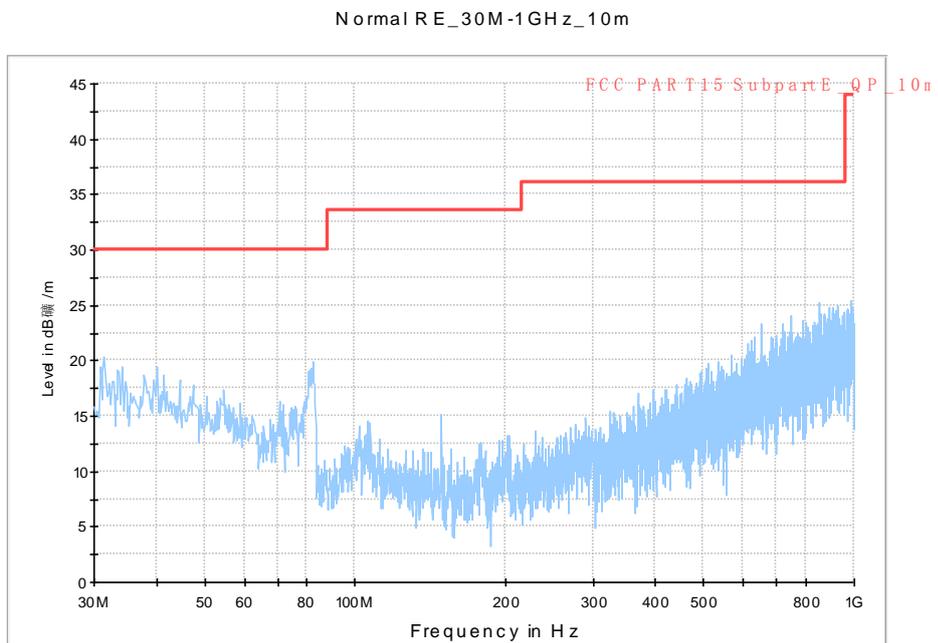


Fig. 130 Radiated Spurious Emission (802.11n-HT40, ch62, 30 MHz-1 GHz)

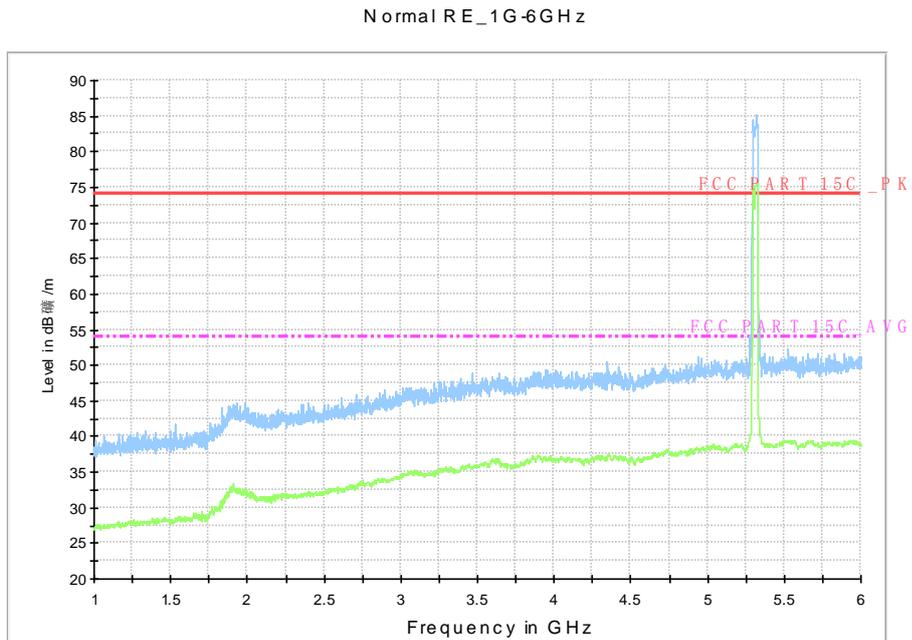


Fig. 131 Radiated Spurious Emission (802.11n-HT40, ch62, 1 GHz-6 GHz)

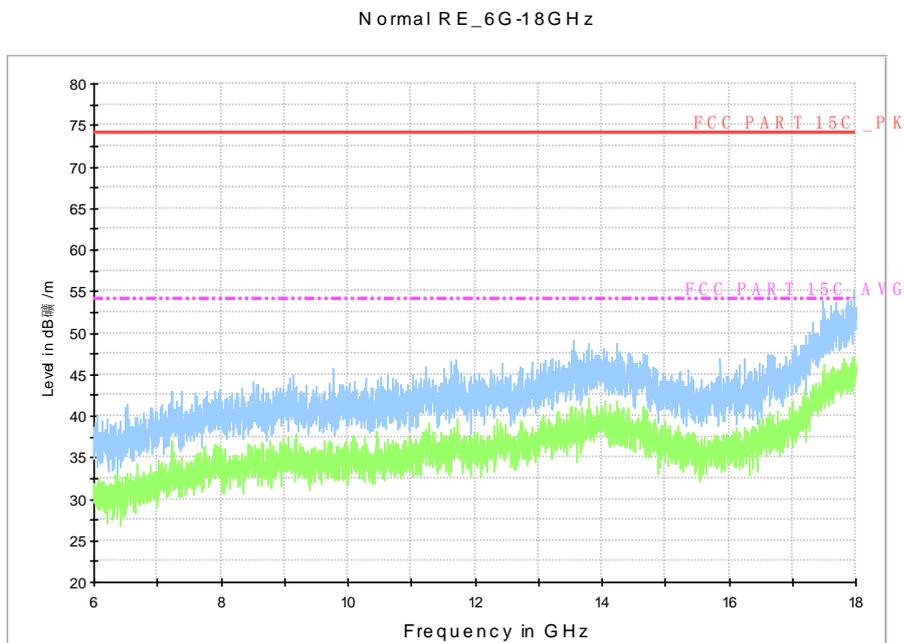


Fig. 132 Radiated Spurious Emission (802.11n-HT40, ch62, 6 GHz-18 GHz)

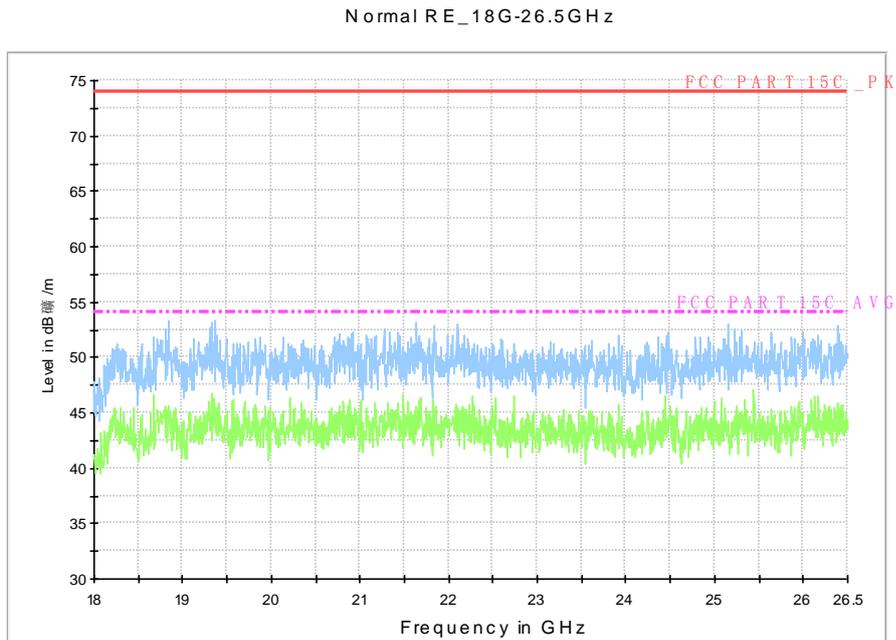


Fig. 133 Radiated Spurious Emission (802.11n-HT40, U-NII 2, 18 GHz-26.5 GHz)

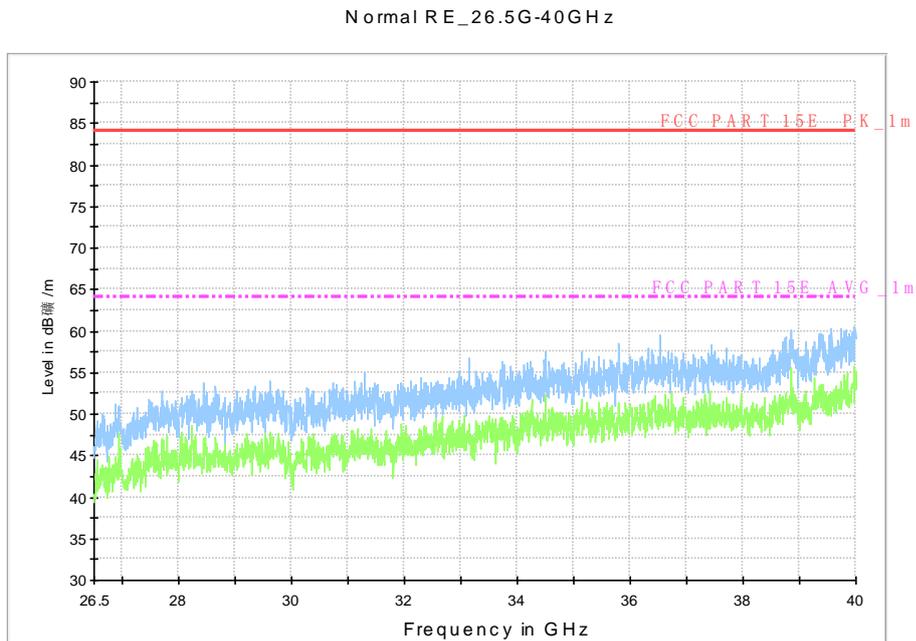


Fig. 134 Radiated Spurious Emission (802.11n-HT40, U-NII 2, 26.5 GHz-40 GHz)

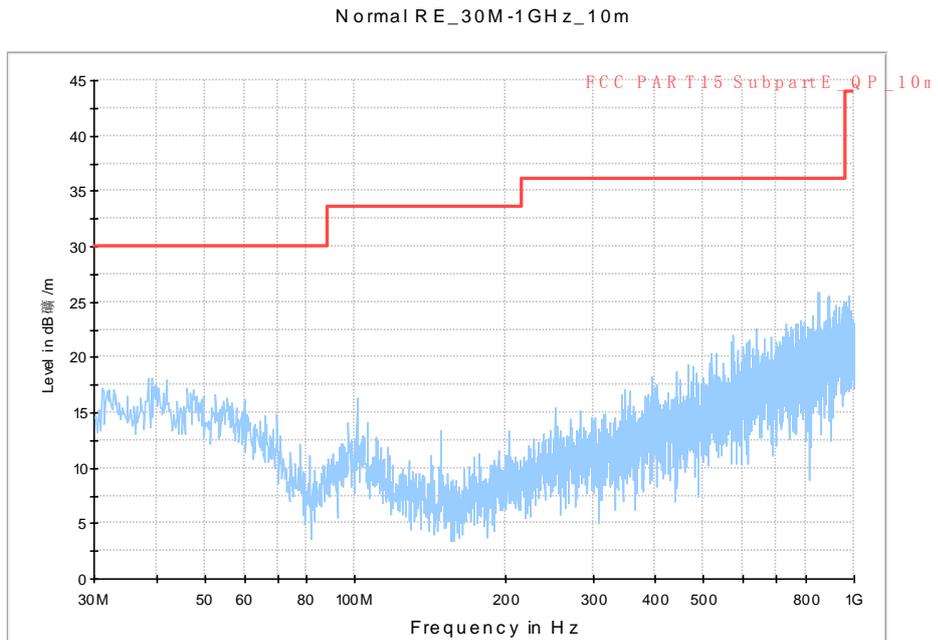


Fig. 135 Radiated Spurious Emission (802.11n-HT40, ch102, 30 MHz-1 GHz)

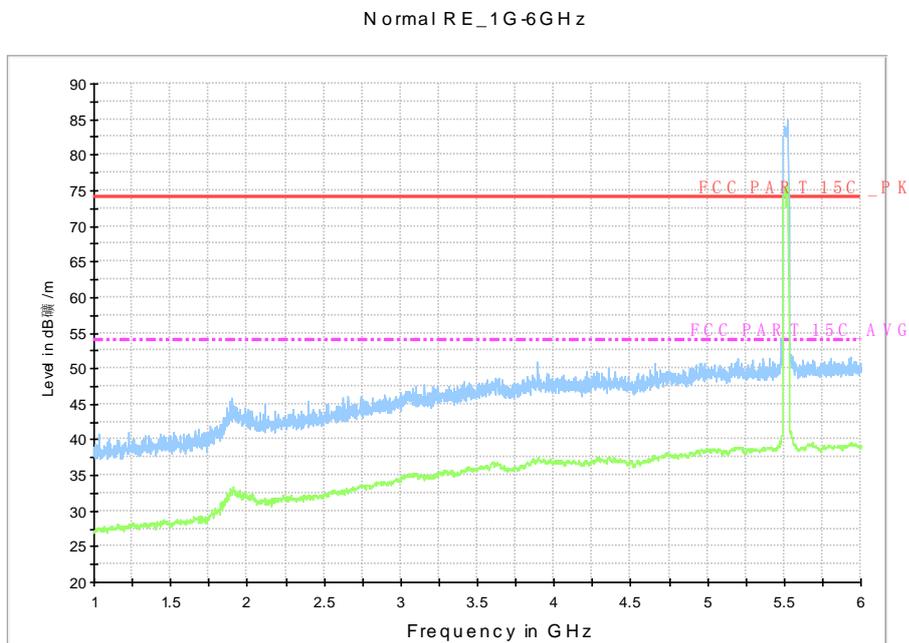


Fig. 136 Radiated Spurious Emission (802.11n-HT40, ch102, 1 GHz-6 GHz)

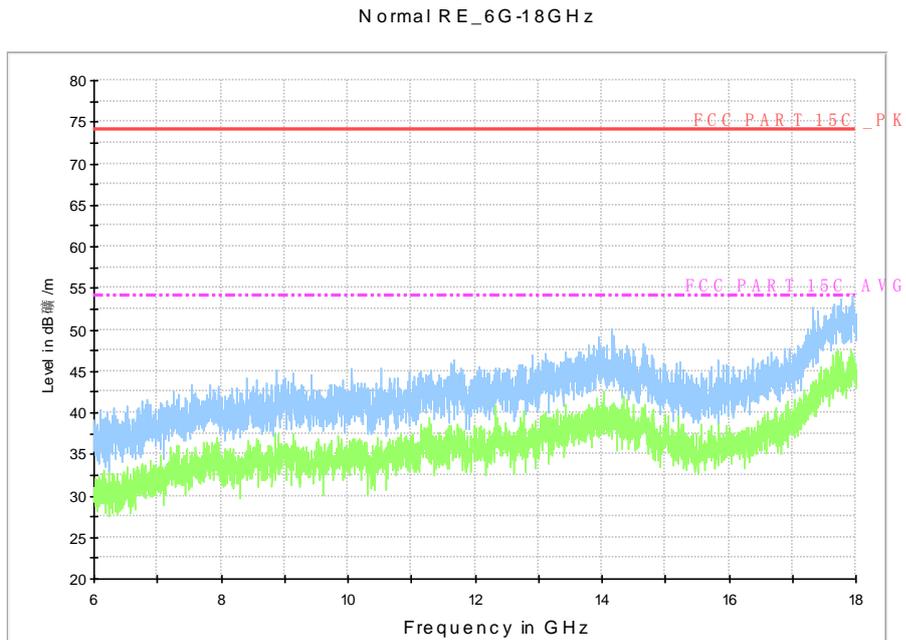


Fig. 137 Radiated Spurious Emission (802.11n-HT40, ch102, 6 GHz-18 GHz)

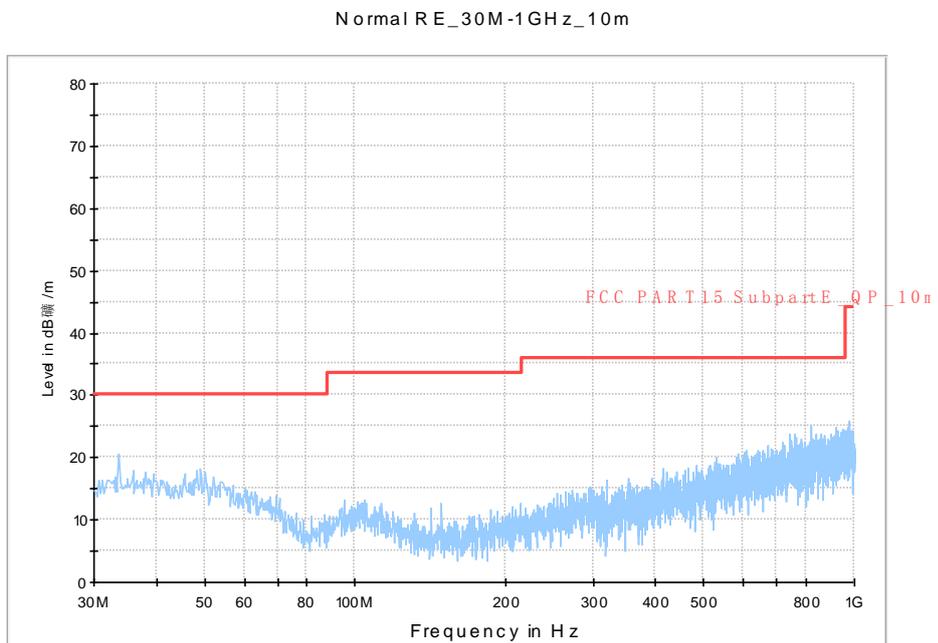


Fig. 138 Radiated Spurious Emission (802.11n-HT40, ch118, 30 MHz-1 GHz)

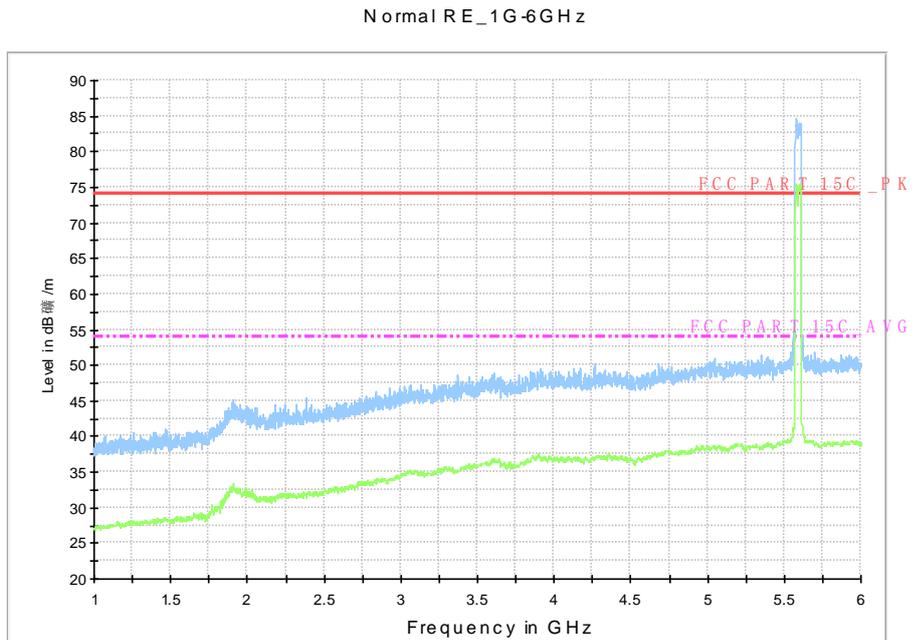


Fig. 139 Radiated Spurious Emission (802.11n-HT40, ch118, 1 GHz-6 GHz)

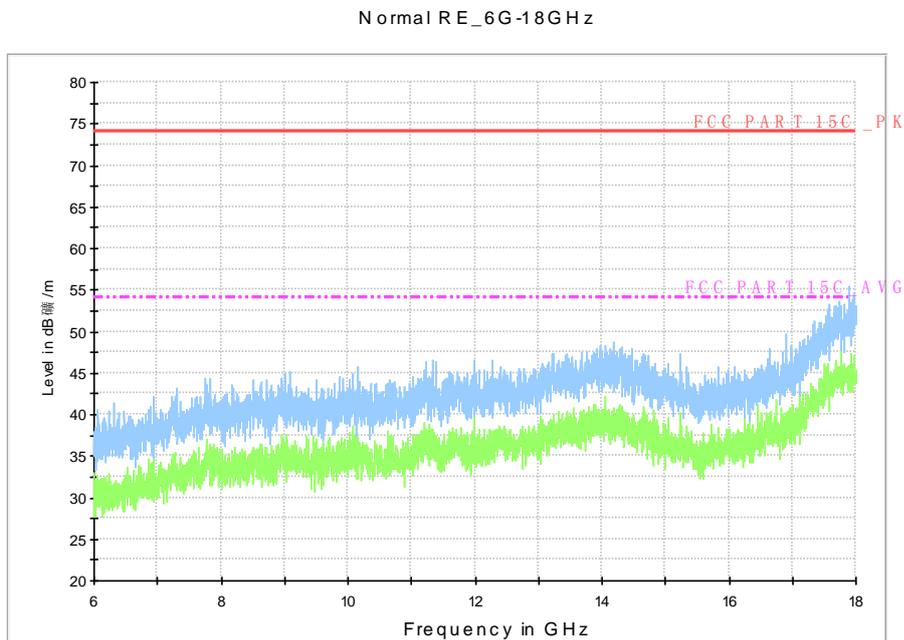


Fig. 140 Radiated Spurious Emission (802.11n-HT40, ch118, 6 GHz-18 GHz)

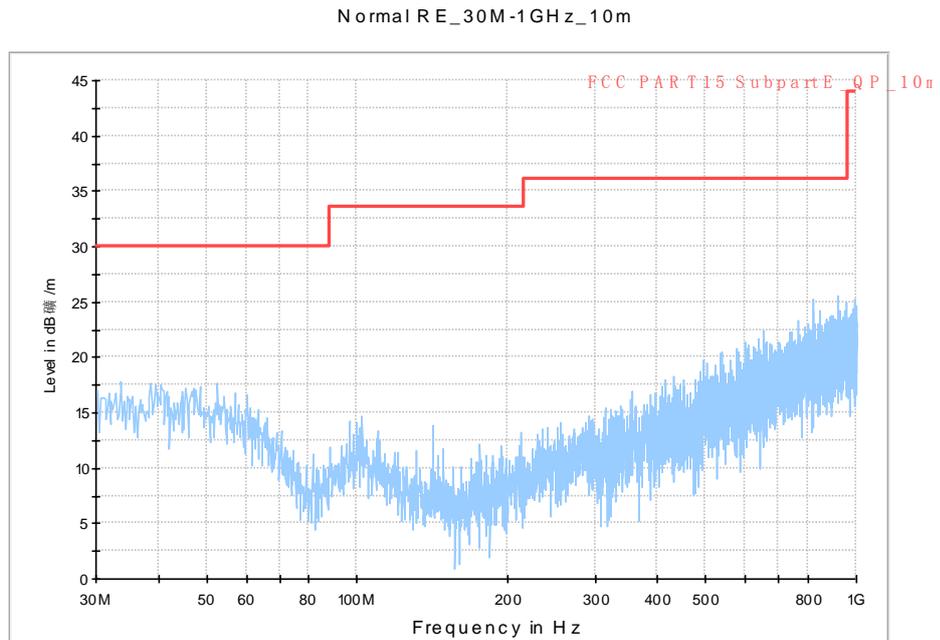


Fig. 141 Radiated Spurious Emission (802.11n-HT40, ch134, 30 MHz-1 GHz)

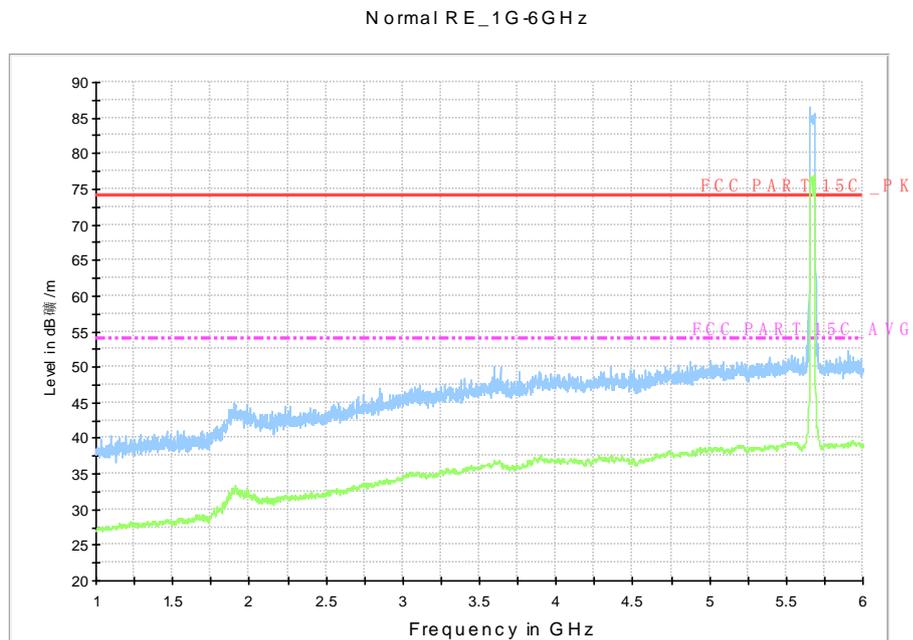


Fig. 142 Radiated Spurious Emission (802.11n-HT40, ch134, 1 GHz-6 GHz)

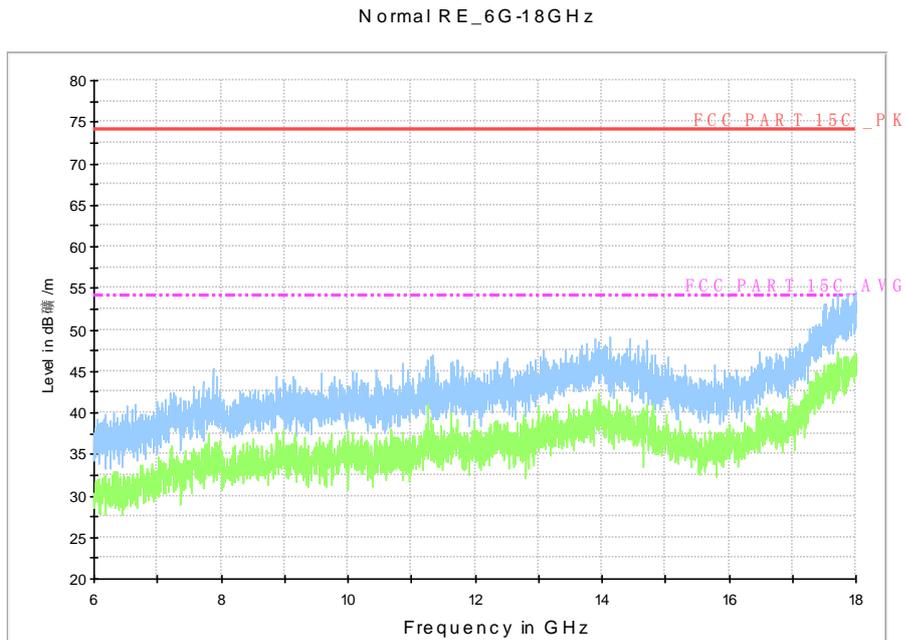


Fig. 143 Radiated Spurious Emission (802.11n-HT40, ch134, 6 GHz-18 GHz)

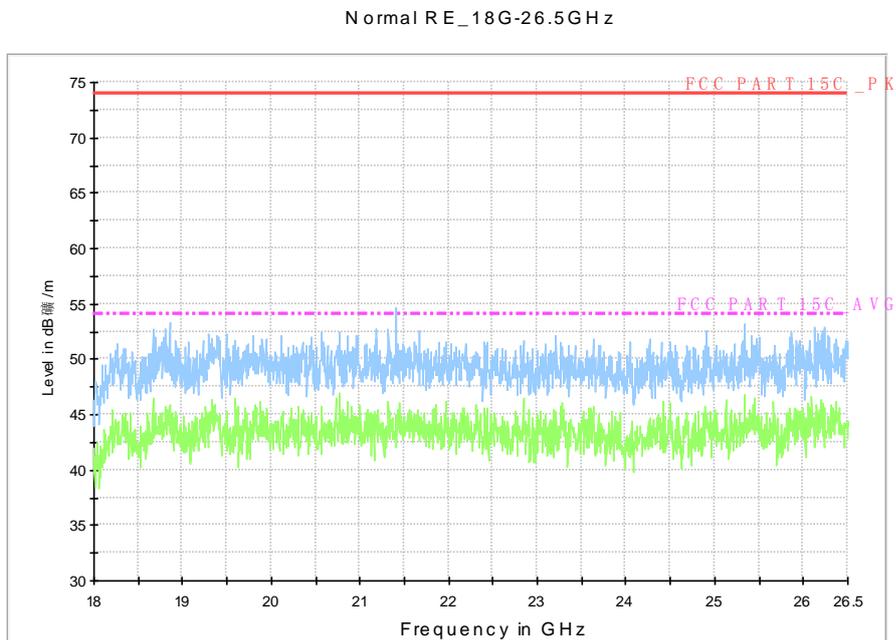


Fig. 144 Radiated Spurious Emission (802.11n-HT40, U-NII 3, 18 GHz-26.5 GHz)

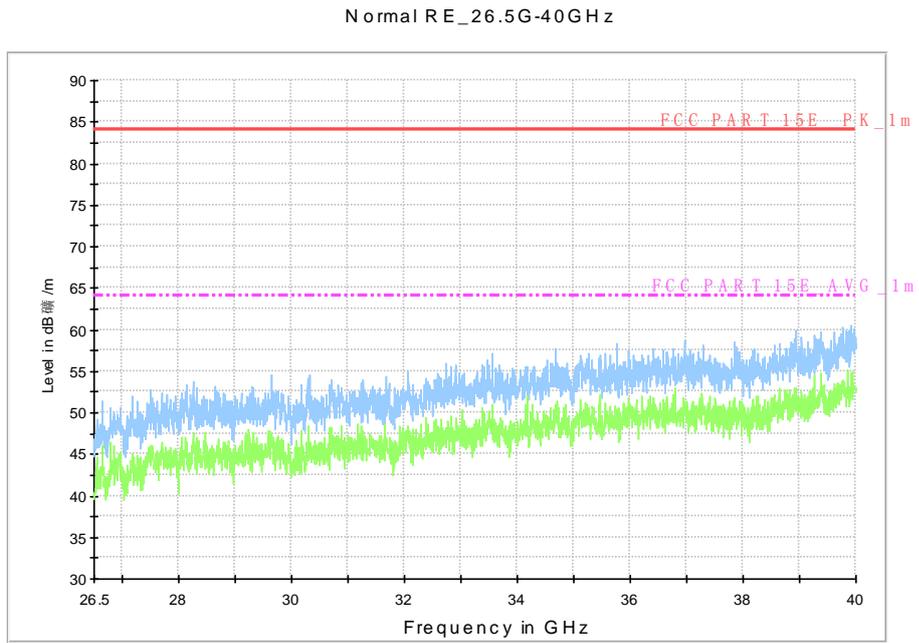


Fig. 145 Radiated Spurious Emission (802.11n-HT40, U-NII 3, 26.5 GHz-40 GHz)

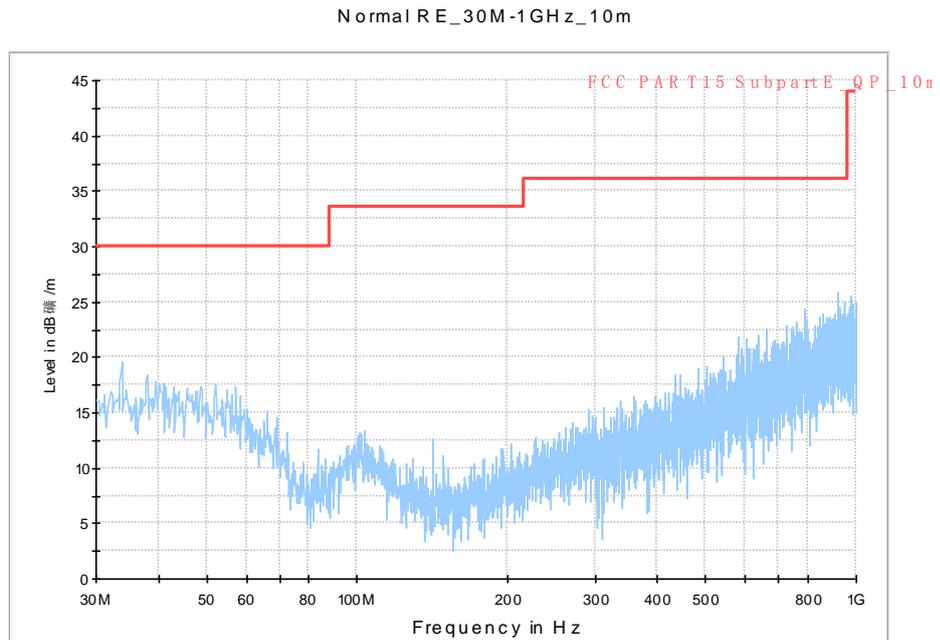


Fig. 146 Radiated Spurious Emission (802.11ac-HT80, ch42, 30 MHz-1 GHz)

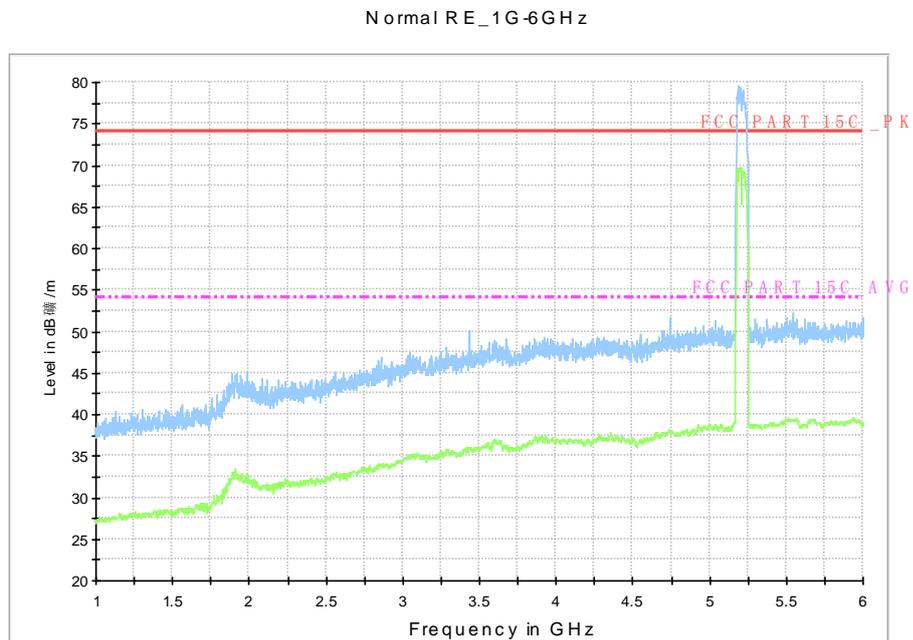


Fig. 147 Radiated Spurious Emission (802.11ac-HT80, ch42, 1 GHz-6 GHz)

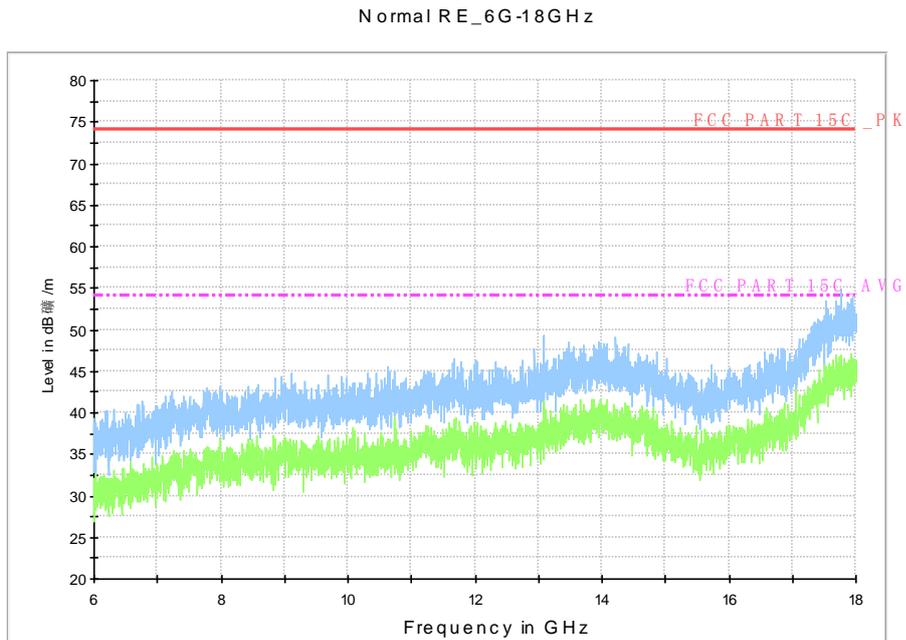


Fig. 148 Radiated Spurious Emission (802.11ac-HT80, ch42, 6 GHz-18 GHz)

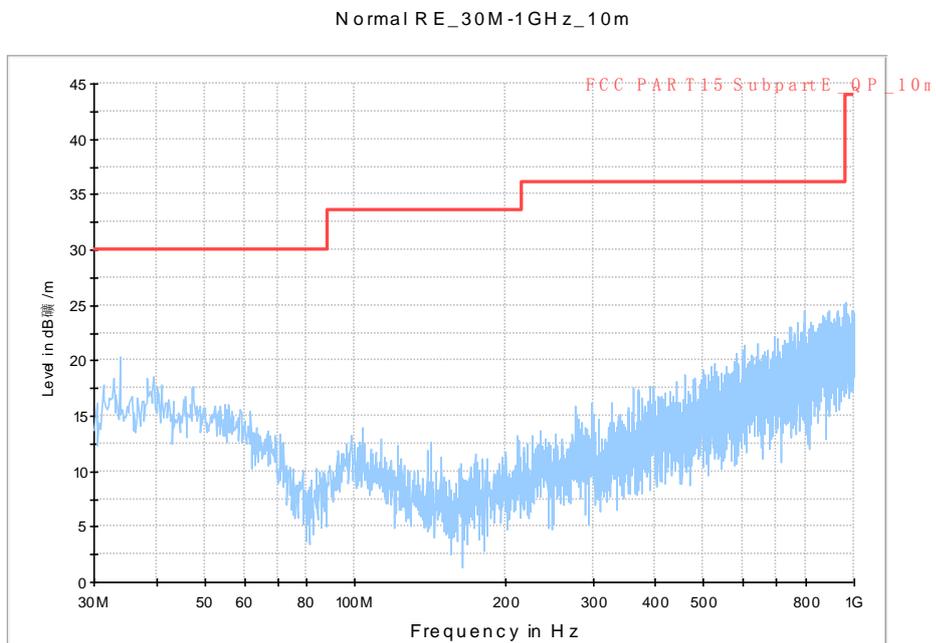


Fig. 149 Radiated Spurious Emission (802.11ac-HT80, ch58, 30 MHz-1 GHz)

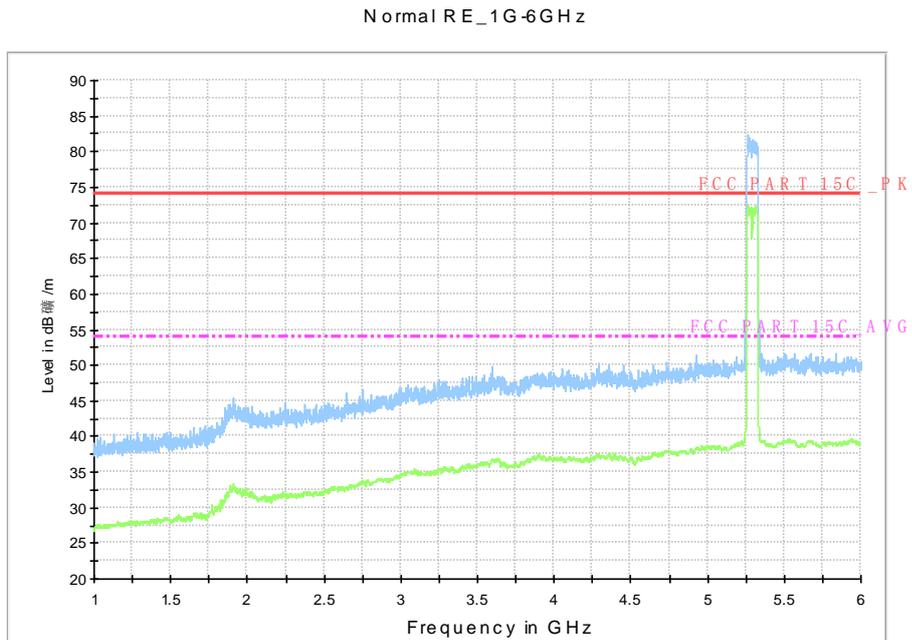


Fig. 150 Radiated Spurious Emission (802.11ac-HT80, ch58, 1 GHz-6 GHz)

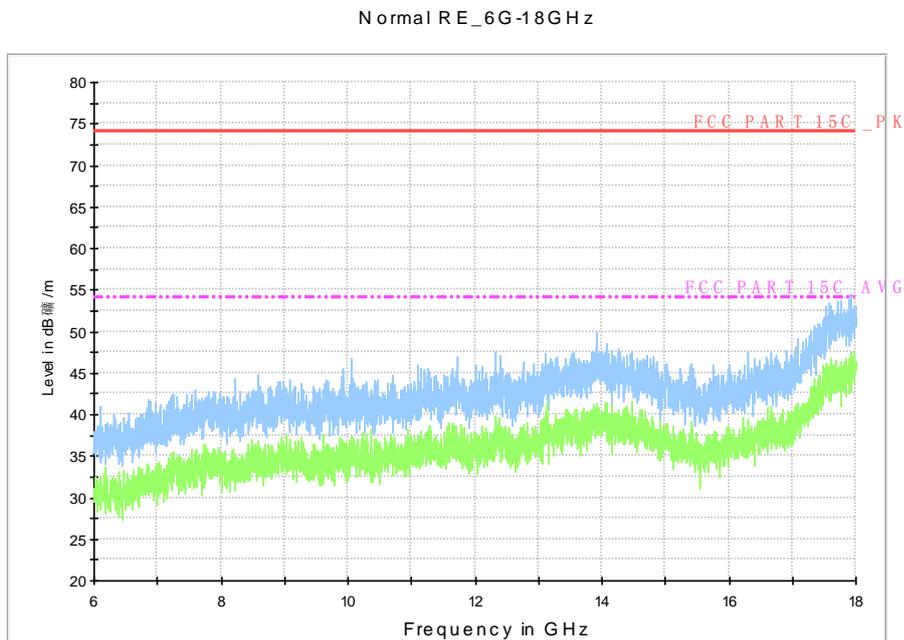


Fig. 151 Radiated Spurious Emission (802.11ac-HT80, ch58, 6 GHz-18 GHz)

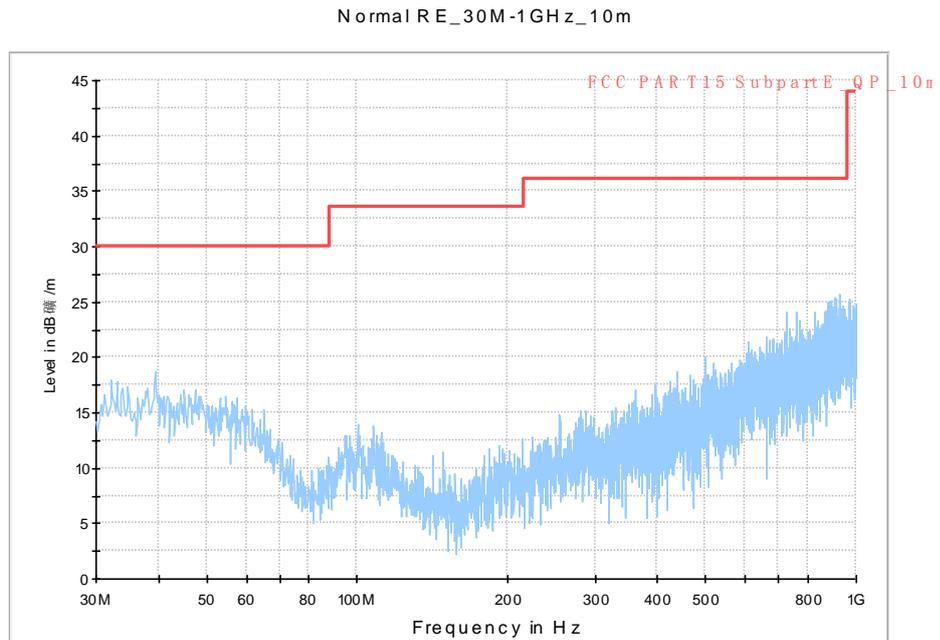


Fig. 152 Radiated Spurious Emission (802.11ac-HT80, ch106, 30 MHz-1 GHz)

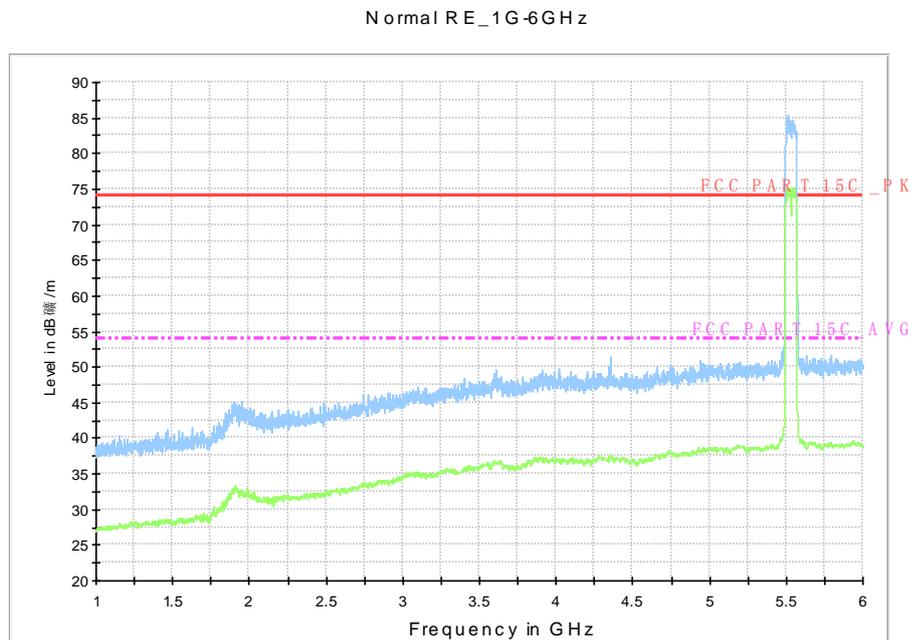


Fig. 153 Radiated Spurious Emission (802.11ac-HT80, ch106, 1 GHz-6 GHz)

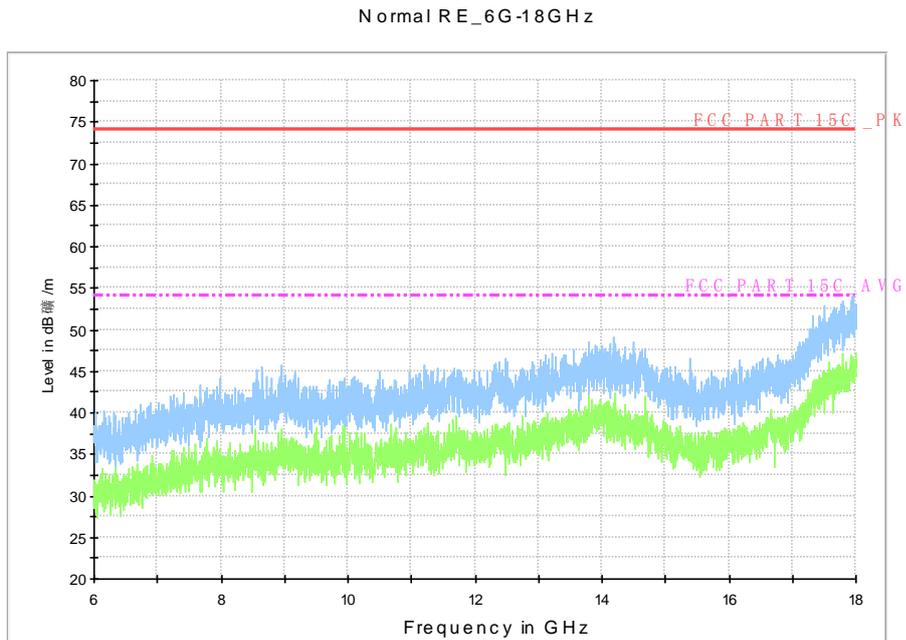


Fig. 154 Radiated Spurious Emission (802.11ac-HT80, ch106, 6 GHz-18 GHz)

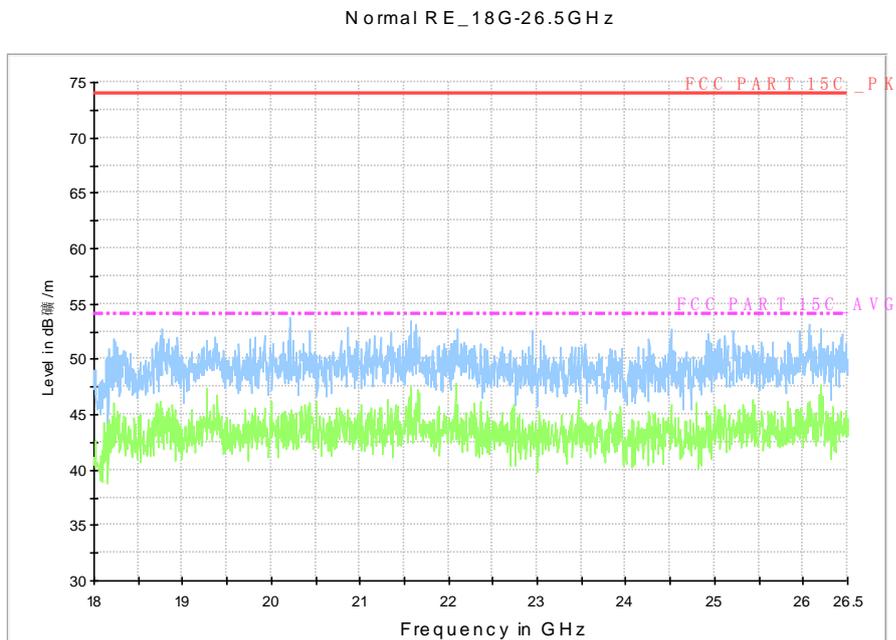


Fig. 155 Radiated Spurious Emission (802.11ac-HT80, 18 GHz-26.5 GHz)

Normal RE_26.5G-40GHz

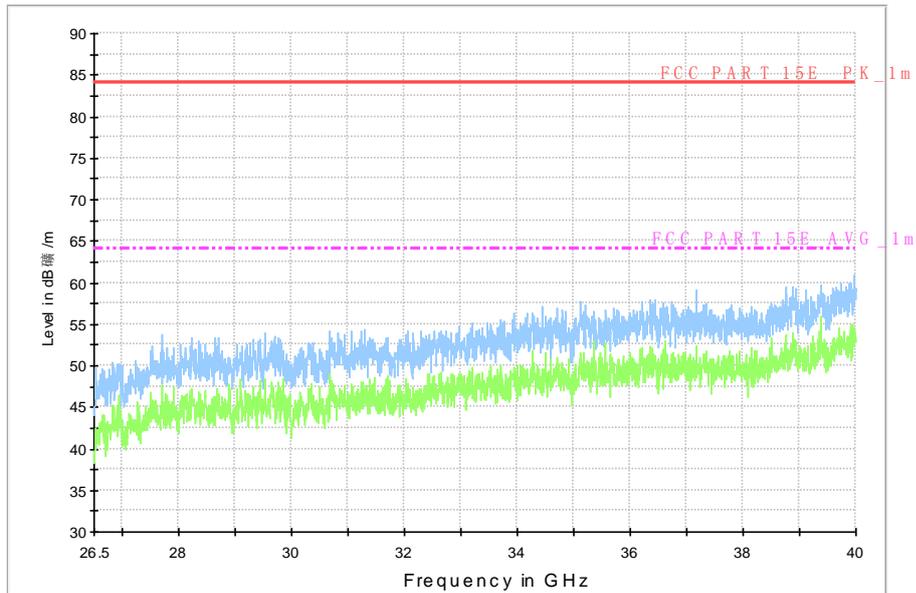


Fig. 156 Radiated Spurious Emission (802.11ac-HT80, 26.5 GHz-40 GHz)

A.7. Spurious Emissions Radiated < 30MHz

Measurement Limit(15.209, 9kHz-30MHz):

Frequency (MHz)	Field strength($\mu\text{V}/\text{m}$)	Measurement distance(m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30

The measurement is made according to KDB 789033

Note: The measurement distance during the test is 3m. The limit used in plots is recalculated based on the extrapolation factor of 40 dB/decade.

Measurement uncertainty:

Expanded measurement uncertainty for this test item is $U = 2.6\text{dB}$, $k=2$.

Measurement Results:

Mode	Frequency Range	Test Results	Conclusion
802.11a	9 kHz ~30 MHz	Fig.157	P

Conclusion: PASS

Test graphs as below:

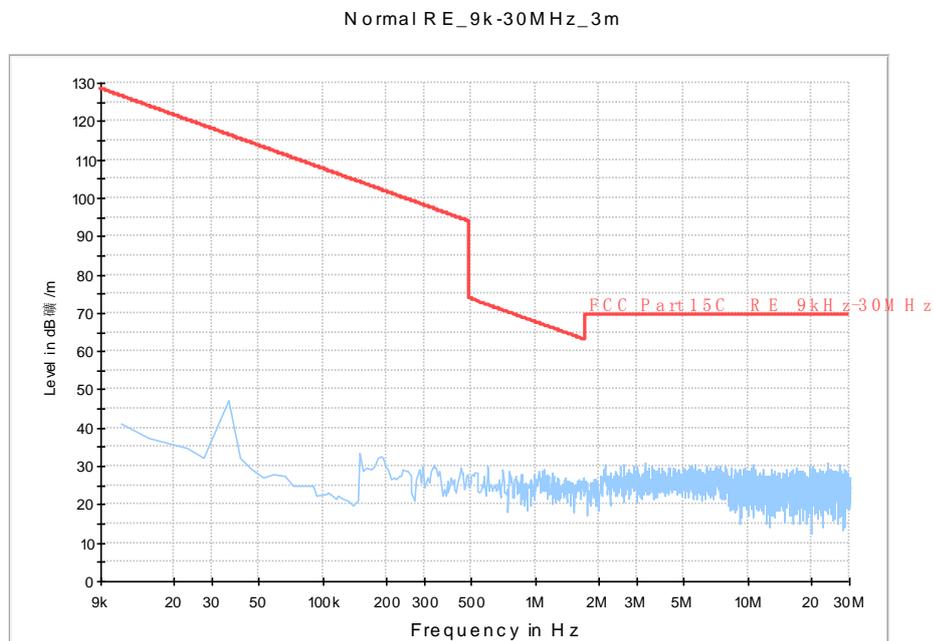


Fig. 157 Radiated Spurious Emission (802.11a, ch40, 9 kHz ~30 MHz)

A.8. Conducted Emission (150kHz- 30MHz)

Test Condition:

Voltage (V)	Frequency (Hz)
110	60

Measurement uncertainty:

Expanded measurement uncertainty for this test item is U =3.2dB, k=2.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	66 to 56	Fig. 158	Fig. 159	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger		
		11a mode	Idle	
0.15 to 0.5	56 to 46	Fig.158	Fig.159	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Conclusion: PASS

Test graphs as below:

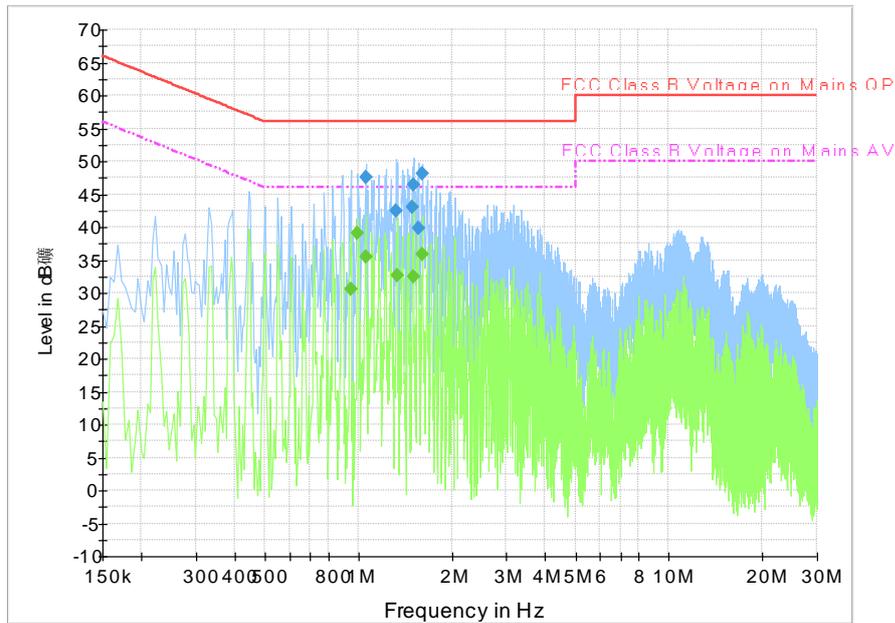


Fig. 158 Conducted Emission(802.11a, Ch40, TX)

Measurement Result:

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
1.054500	47.6	GND	L1	9.7	8.4	56.0
1.320000	42.5	GND	L1	9.7	13.5	56.0
1.486500	43.1	GND	N	9.7	12.9	56.0
1.500000	46.4	GND	L1	9.7	9.6	56.0
1.558500	39.8	GND	L1	9.7	16.2	56.0
1.608000	48.2	GND	L1	9.7	7.8	56.0

Measurement Result:

Frequency (MHz)	Average (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.946500	30.5	GND	L1	9.7	15.5	46.0
0.996000	39.1	GND	L1	9.7	6.9	46.0
1.054500	35.5	GND	L1	9.7	10.5	46.0
1.333500	32.6	GND	L1	9.7	13.4	46.0
1.500000	32.5	GND	L1	9.7	13.5	46.0
1.608000	35.9	GND	L1	9.7	10.1	46.0

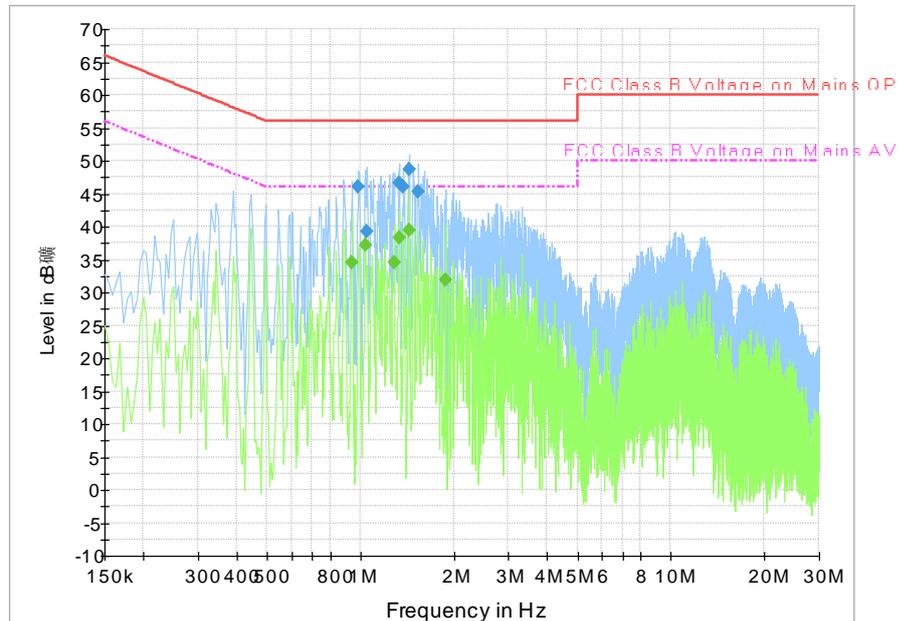


Fig. 159 Conducted Emission(802.11a, IDLE)

Measurement Result:

Frequency (MHz)	QuasiPeak (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.987000	46.0	GND	L1	9.7	10.0	56.0
1.050000	39.2	GND	L1	9.7	16.8	56.0
1.329000	46.7	GND	L1	9.7	9.3	56.0
1.378500	46.0	GND	L1	9.7	10.0	56.0
1.432500	48.6	GND	L1	9.7	7.4	56.0
1.540500	45.3	GND	L1	9.7	10.7	56.0

Measurement Result:

Frequency (MHz)	Average (dB μ V)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.942000	34.5	GND	L1	9.7	11.5	46.0
1.036500	37.1	GND	L1	9.7	8.9	46.0
1.284000	34.6	GND	L1	9.7	11.4	46.0
1.329000	38.3	GND	L1	9.7	7.7	46.0
1.432500	39.4	GND	L1	9.7	6.6	46.0
1.878000	32.0	GND	L1	9.7	14.0	46.0

A.9. Peak Excursion

Measurement Limit:

Standard	Limit (dB)
FCC 47 CFR Part 15.407	13

The measurement is made according to KDB 789033, the method SA-1 is used for PPSD measurement.

Measurement Uncertainty:

Measurement Uncertainty	0.75 dB
-------------------------	---------

Measurement Result:

11a mode

Type	Peak Excursion					
	5180MHz (Ch36)		5200MHz (Ch40)		5240MHz (Ch48)	
Peak (dBm)	Fig.160	11.53	Fig.161	11.49	Fig.162	11.25
Average(dBm)	Fig.163	2.29	Fig.164	2.95	Fig.165	2.63
Result (dB)	9.24		8.54		8.62	

Type	Test Result (dBm)					
	5260MHz (Ch52)		5280 MHz (Ch56)		5320 MHz (Ch64)	
Peak (dBm)	Fig.166	12.08	Fig.167	11.70	Fig.168	10.99
Average(dBm)	Fig.169	3.94	Fig.170	3.35	Fig.171	2.80
Result (dB)	8.14		8.35		8.19	

Type	Test Result (dBm)					
	5500MHz (Ch100)		5600MHz (Ch120)		5700MHz (Ch140)	
Peak (dBm)	Fig.172	11.22	Fig.173	10.80	Fig.174	10.74
Average(dBm)	Fig.175	2.23	Fig.176	2.36	Fig.177	2.04
Result (dB)	8.99		8.44		8.70	

11n-HT20 mode

Type	Peak Excursion					
	5180MHz (Ch36)		5200MHz (Ch40)		5240MHz (Ch48)	
Peak (dBm)	Fig.178	11.01	Fig.179	11.56	Fig.180	10.96
Average(dBm)	Fig.181	2.52	Fig.182	2.82	Fig.183	2.33
Result (dB)	8.49		8.74		8.63	

Type	Test Result (dBm)					
	5260MHz (Ch52)		5280 MHz (Ch56)		5320 MHz (Ch64)	
Peak (dBm)	Fig.184	12.63	Fig.185	11.70	Fig.186	11.55
Average(dBm)	Fig.187	3.97	Fig.188	3.13	Fig.189	3.00
Result (dB)	8.66		8.57		8.55	

Type	Test Result (dBm)					
	5500MHz (Ch100)		5600MHz (Ch120)		5700MHz (Ch140)	
Peak (dBm)	Fig.190	11.74	Fig.191	12.11	Fig.192	10.98
Average(dBm)	Fig.193	2.58	Fig.194	2.68	Fig.195	2.06
Result (dB)	9.16		9.43		8.92	

11n-HT40 mode

Type	Peak Excursion							
	5190MHz (Ch38)		5230MHz (Ch46)		5270MHz (Ch54)		5310 MHz (Ch62)	
Peak (dBm)	Fig.196	5.57	Fig.197	4.88	Fig.198	5.94	Fig.199	4.28
Average(dBm)	Fig.200	-4.20	Fig.201	-3.80	Fig.202	-3.29	Fig.203	-4.82
Result (dB)	9.77		8.68		9.23		9.10	

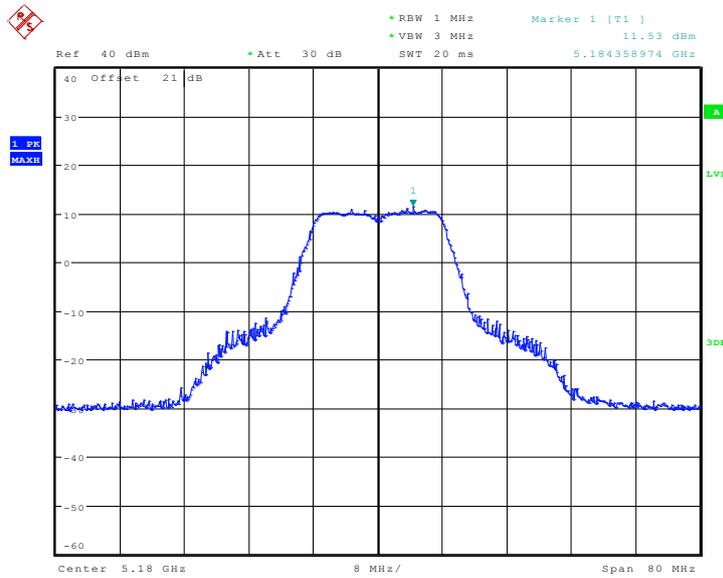
Type	Test Result (dBm)					
	5510MHz (Ch102)		5590MHz (Ch118)		5670MHz (Ch134)	
Peak (dBm)	Fig.204	4.73	Fig.205	5.48	Fig.206	4.45
Average(dBm)	Fig.207	-4.23	Fig.208	-3.59	Fig.209	-3.90
Result (dB)	8.96		9.07		8.35	

11ac-HT80 mode

Type	Test Result (dBm)					
	5210MHz (Ch42)		5290MHz (Ch58)		5530MHz (Ch106)	
Peak (dBm)	Fig.210	-1.35	Fig.211	0.38	Fig.212	-0.62
Average(dBm)	Fig.213	-8.90	Fig.214	-7.39	Fig.215	-8.38
Result (dB)	7.55		7.77		7.76	

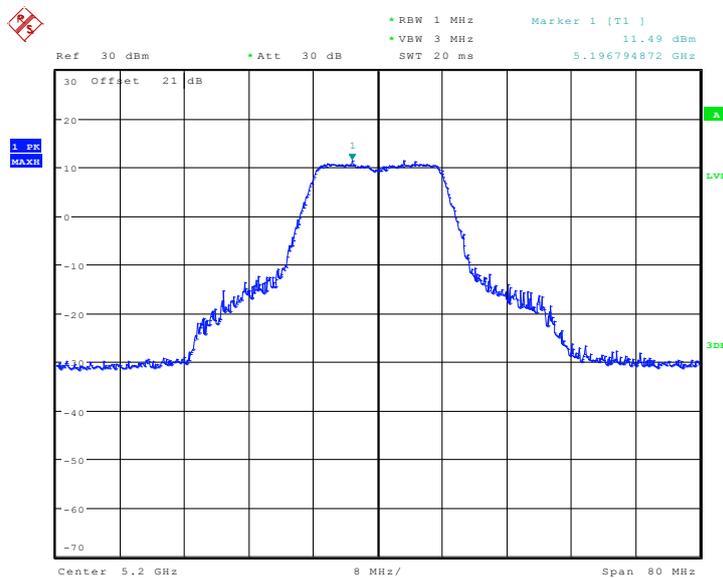
Conclusion: PASS

Test graphs as below:



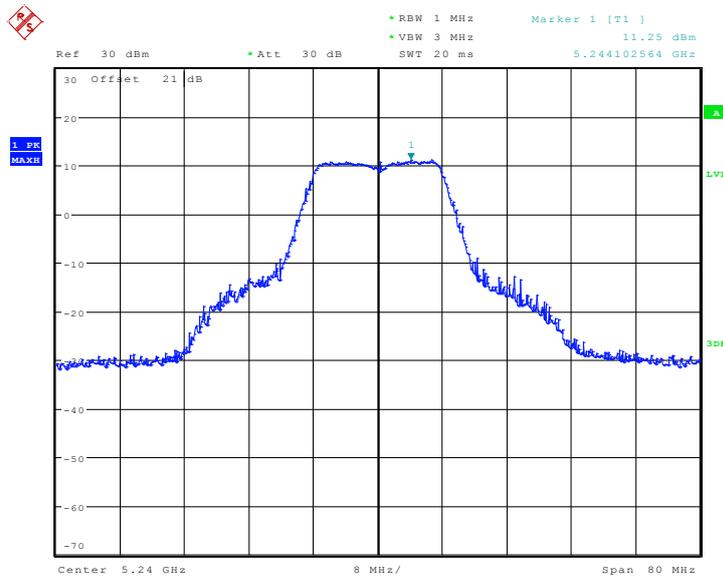
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Fig. 160 Peak Excursions (802.11a, ch36, peak)



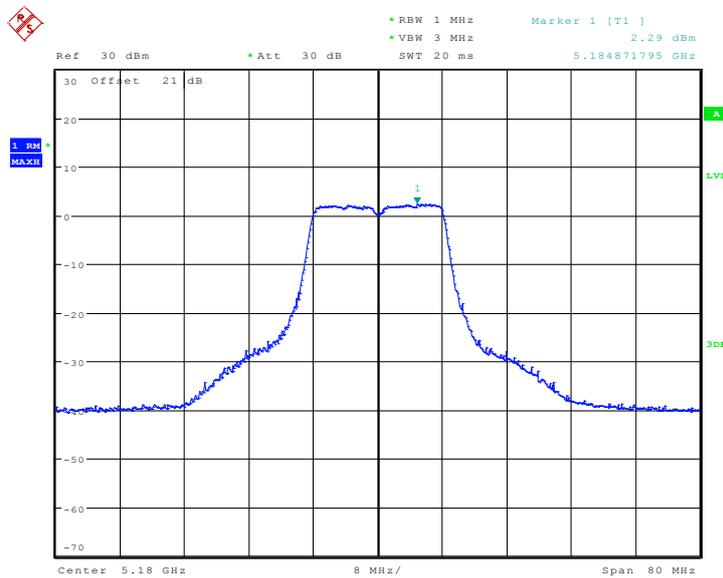
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Fig. 161 Peak Excursions (802.11a, ch40, peak)



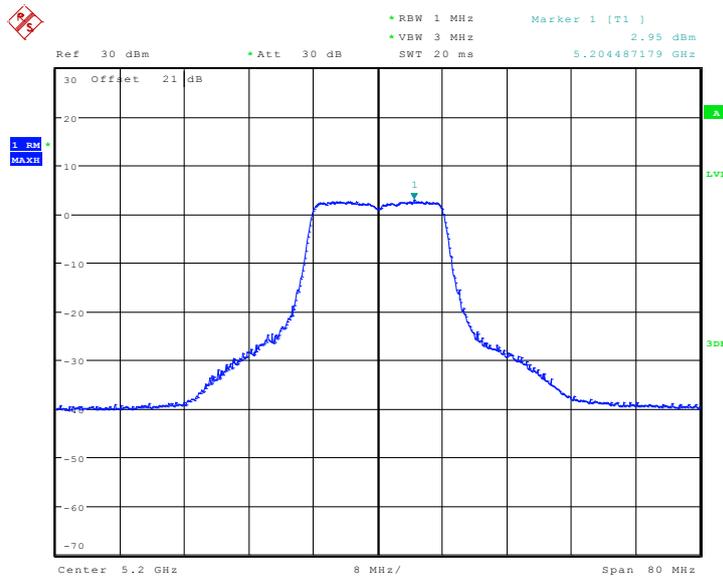
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Fig. 162 Peak Excursions (802.11a, ch48, peak)



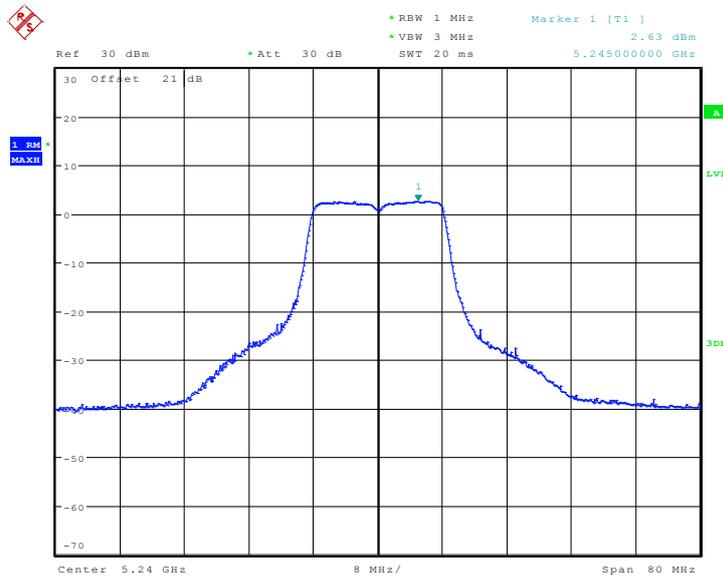
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Fig. 163 Peak Excursions (802.11a, ch36, average)



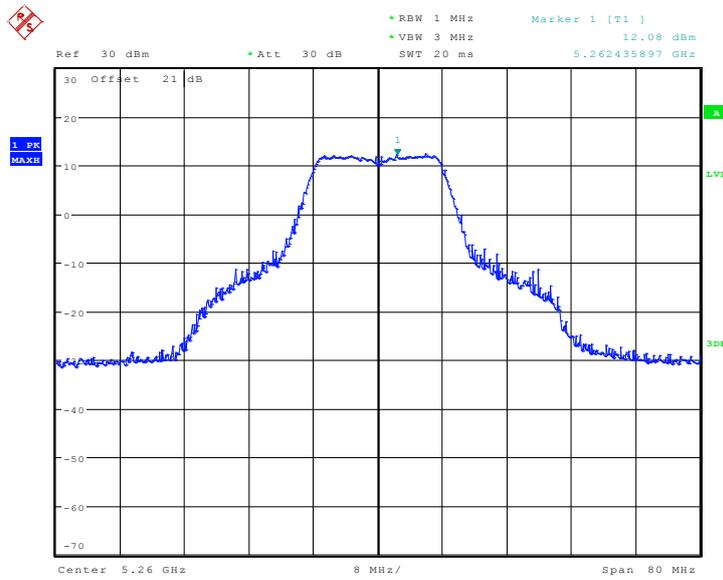
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Fig. 164 Peak Excursions (802.11a, ch40, average)



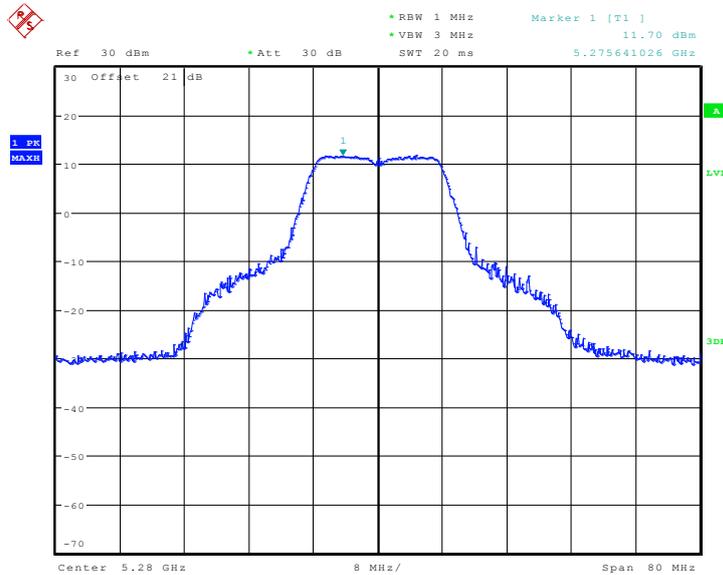
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Fig. 165 Peak Excursions (802.11a, ch48, average)



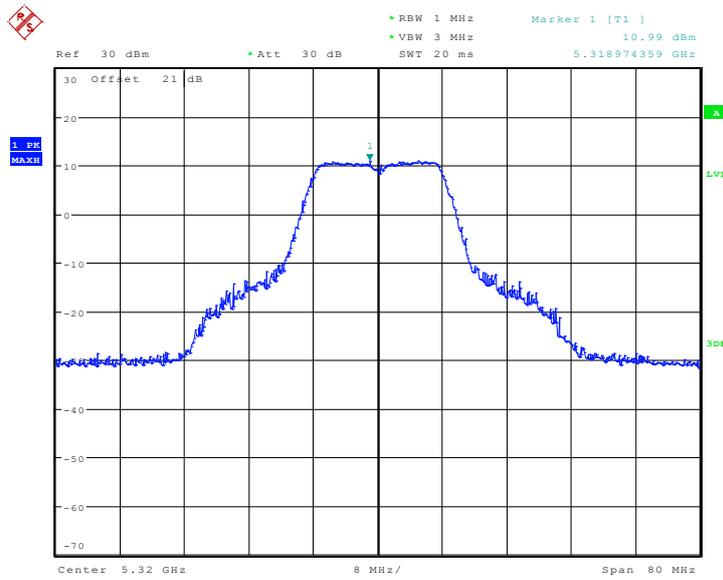
Date: 6.NOV.2013 09:10:37

Fig. 166 Peak Excursions (802.11a, ch52, peak)



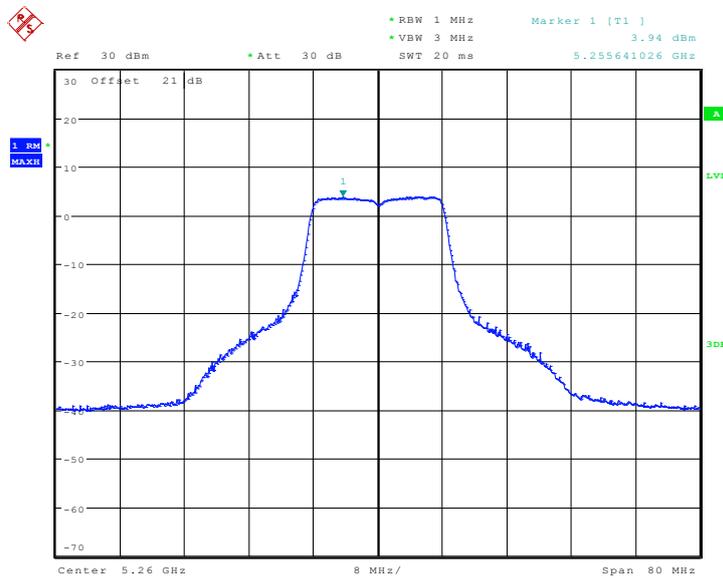
Date: 6.NOV.2013 09:11:16

Fig. 167 Peak Excursions (802.11a, ch56, peak)



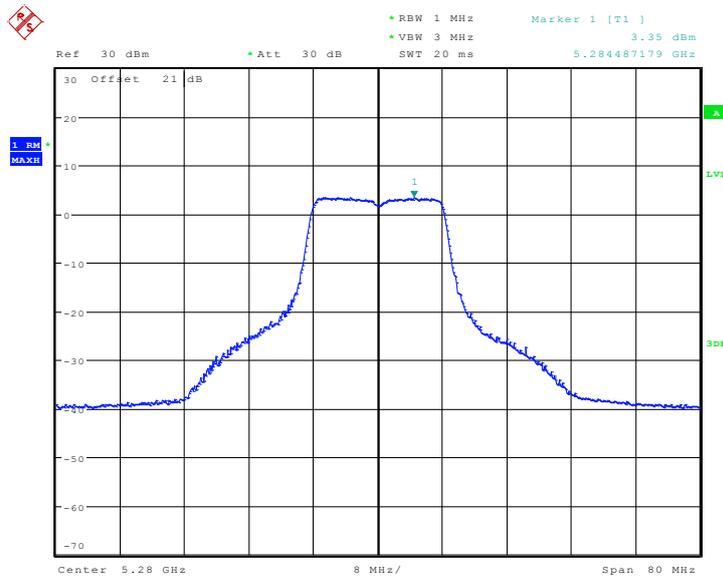
Date: 6.NOV.2013 09:12:24

Fig. 168 Peak Excursions (802.11a, ch64, peak)



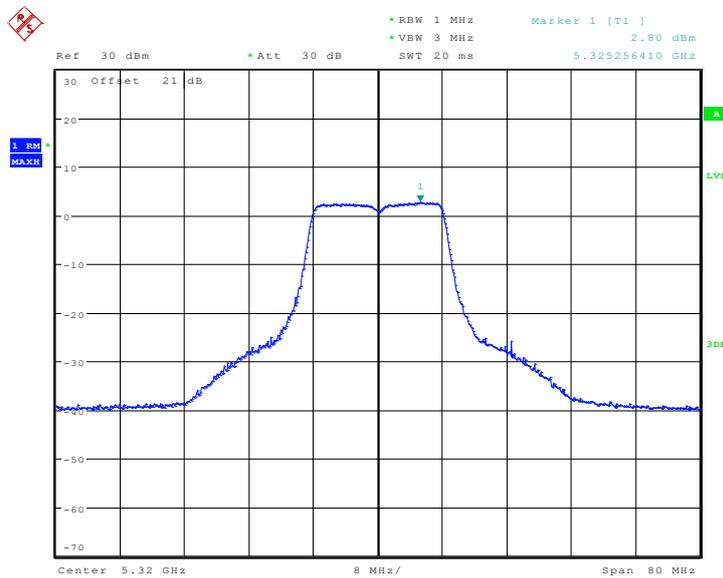
Date: 6.NOV.2013 09:10:20

Fig. 169 Peak Excursions (802.11a, ch52, average)



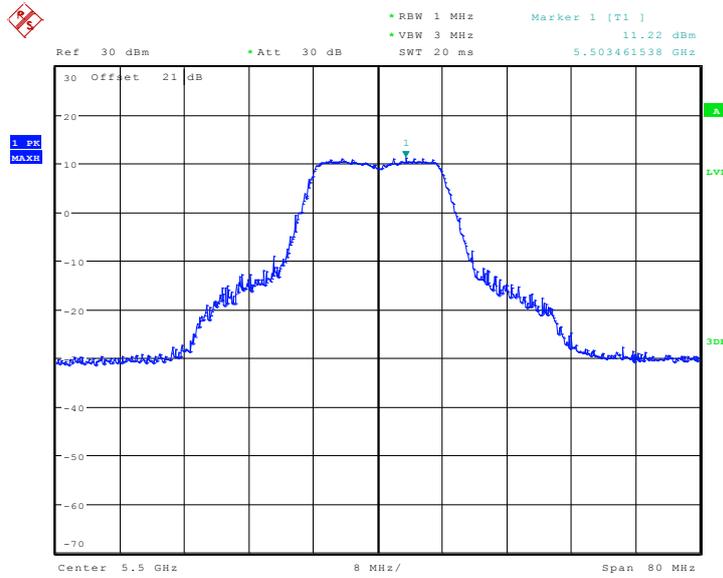
Date: 6.NOV.2013 09:11:37

Fig. 170 Peak Excursions (802.11a, ch56, average)



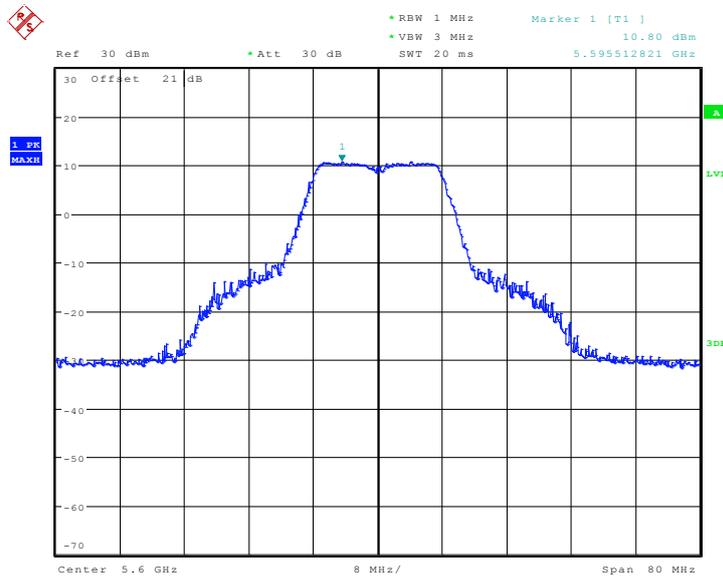
Date: 6.NOV.2013 09:12:09

Fig. 171 Peak Excursions (802.11a, ch64, average)



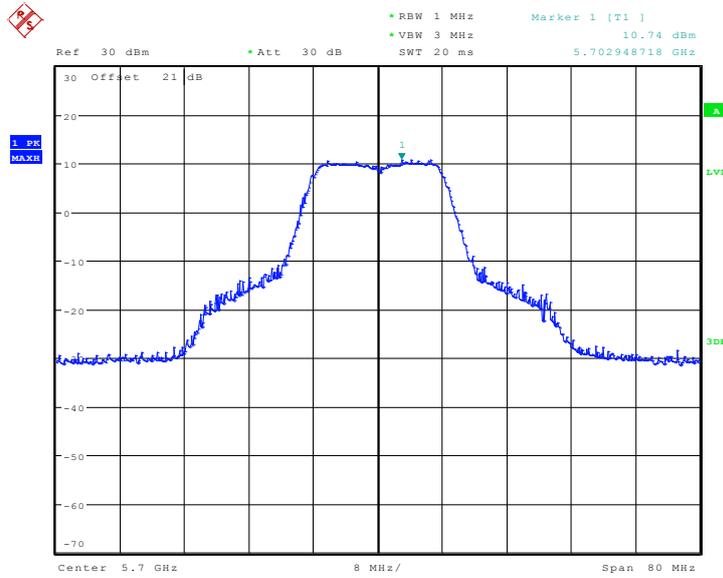
Date: 6.NOV.2013 09:13:10

Fig. 172 Peak Excursions (802.11a, ch100, peak)



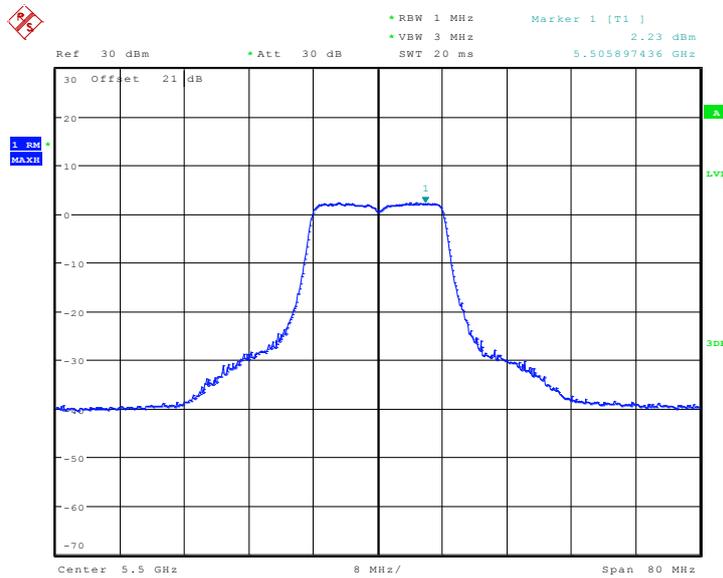
Date: 6.NOV.2013 09:14:21

Fig. 173 Peak Excursions (802.11a, ch120, peak)



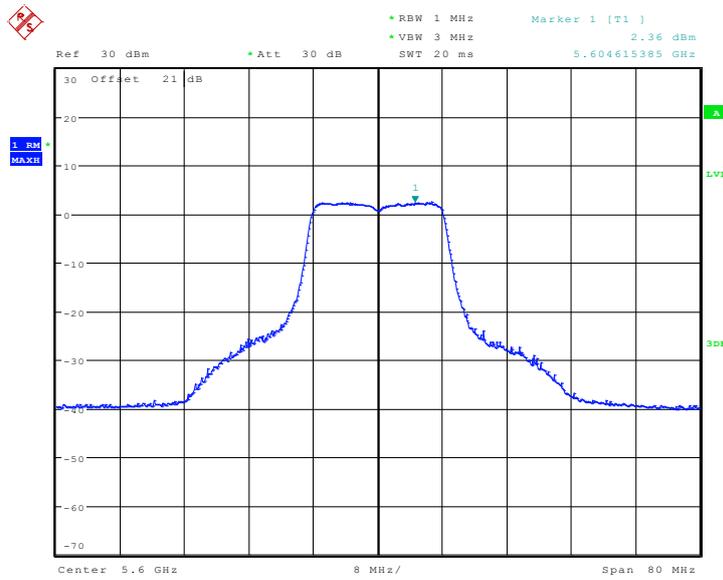
Date: 6.NOV.2013 09:15:08

Fig. 174 Peak Excursions (802.11a, ch140, peak)



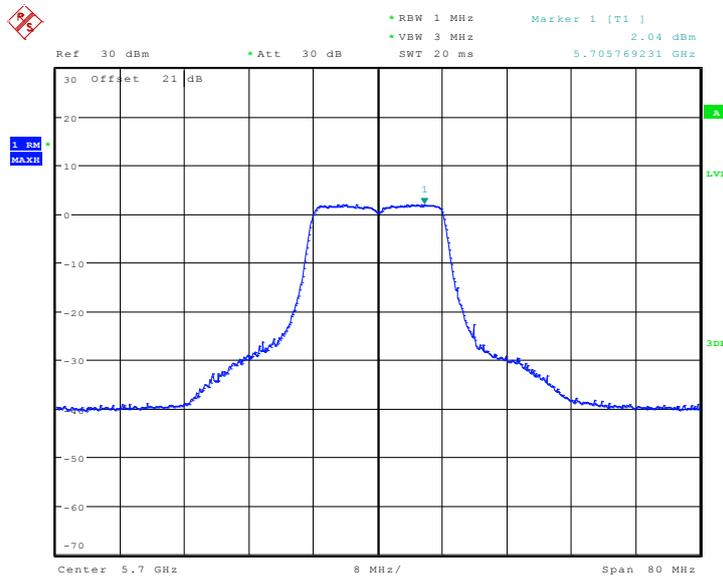
Date: 6.NOV.2013 09:13:27

Fig. 175 Peak Excursions (802.11a, ch100, average)



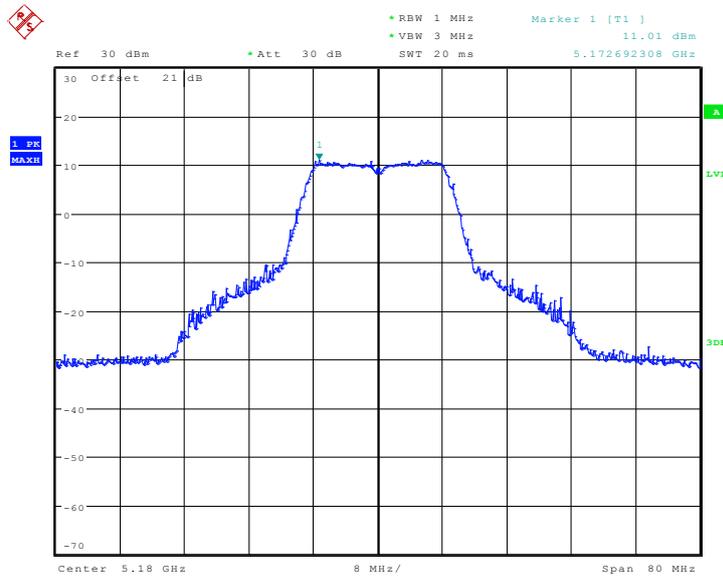
Date: 6.NOV.2013 09:13:56

Fig. 176 Peak Excursions (802.11a, ch120, average)



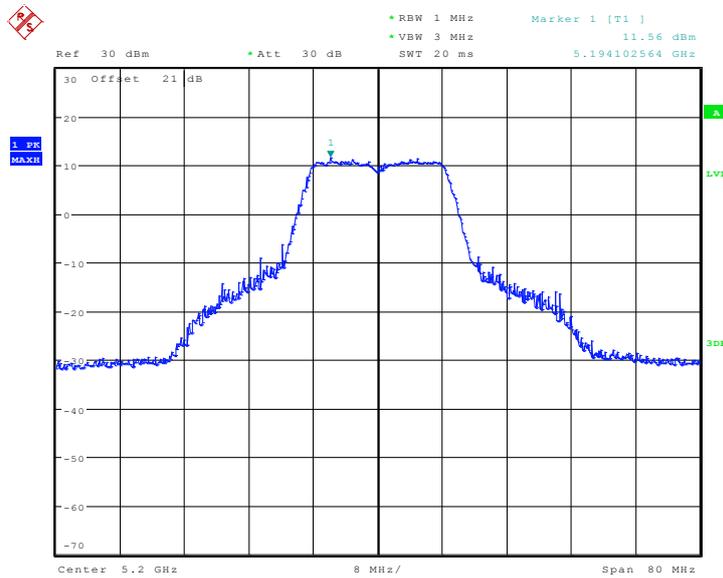
Date: 6.NOV.2013 09:15:26

Fig. 177 Peak Excursions (802.11a, ch140, average)



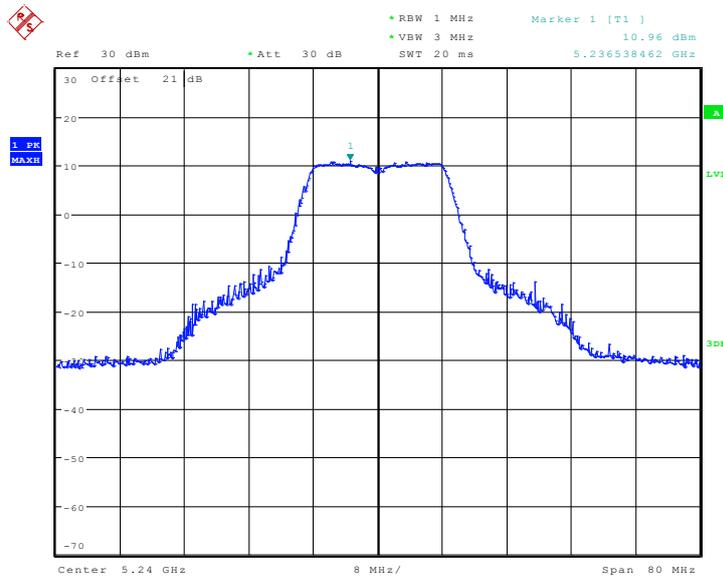
Date: 6.NOV.2013 09:16:37

Fig. 178 Peak Excursions (802.11n-HT20, ch36, peak)



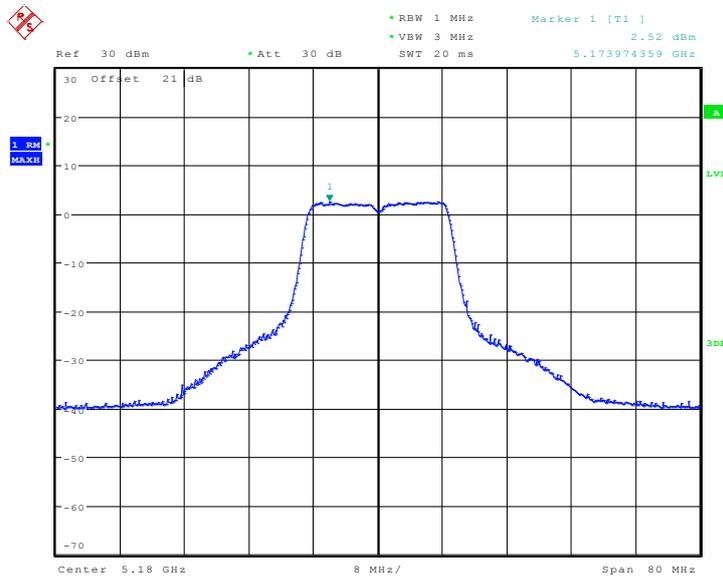
Date: 6.NOV.2013 09:17:04

Fig. 179 Peak Excursions (802.11n-HT20, ch40, peak)



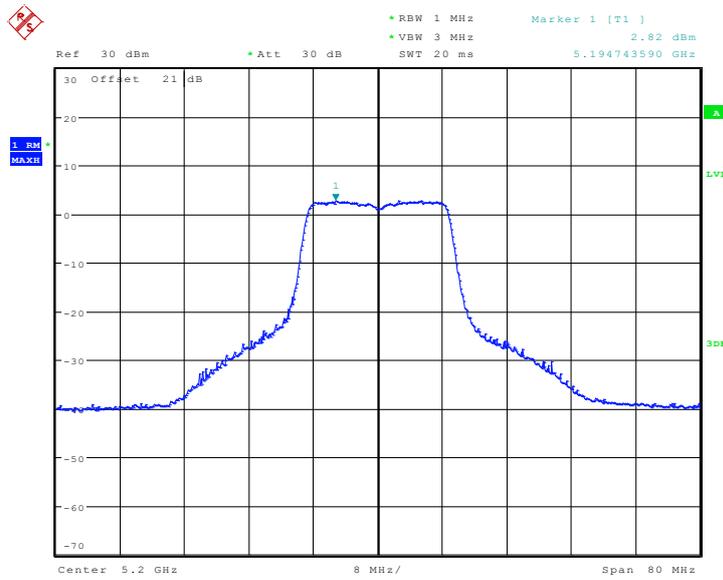
Date: 6.NOV.2013 09:17:53

Fig. 180 Peak Excursions (802.11n-HT20, ch48, peak)



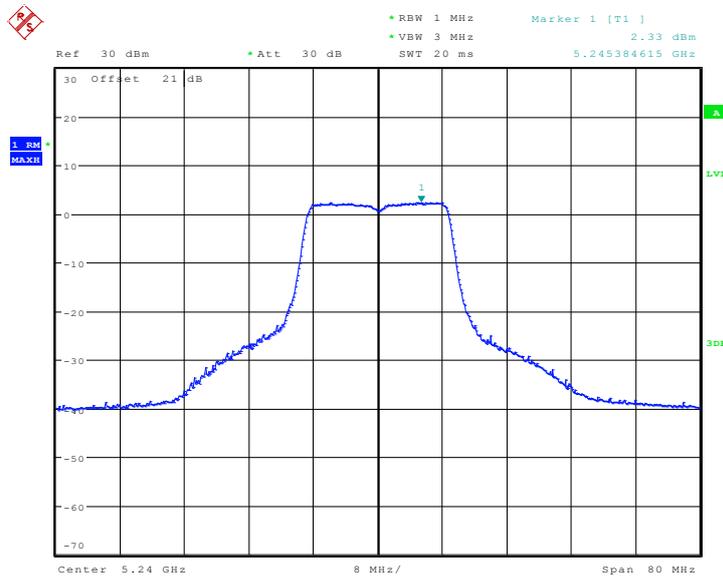
Date: 6.NOV.2013 09:16:22

Fig. 181 Peak Excursions (802.11n-HT20, ch36, average)



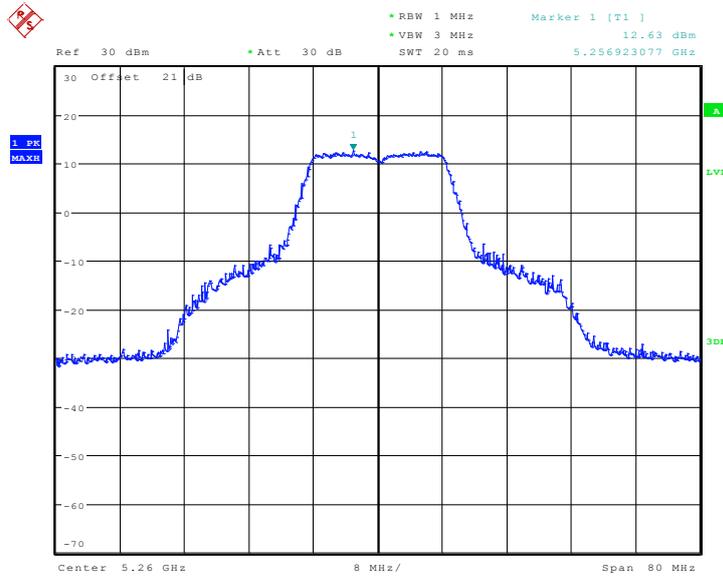
Date: 6.NOV.2013 09:17:16

Fig. 182 Peak Excursions (802.11n-HT20, ch40, average)



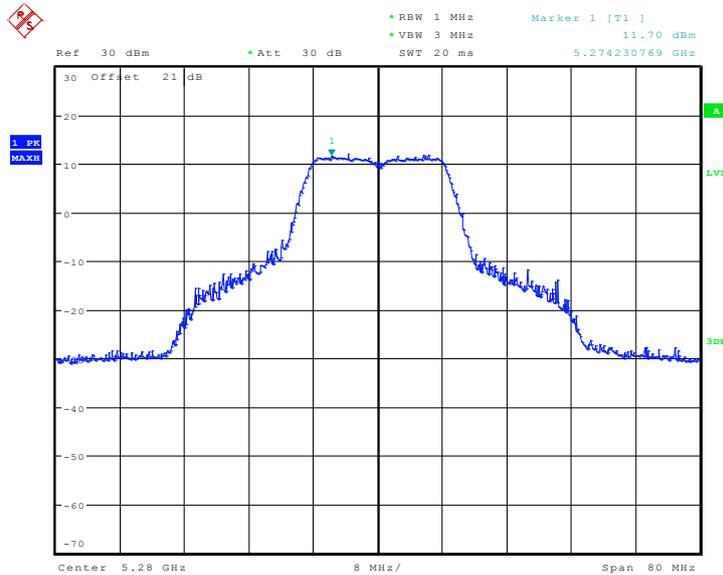
Date: 6.NOV.2013 09:17:38

Fig. 183 Peak Excursions (802.11n-HT20, ch48, average)



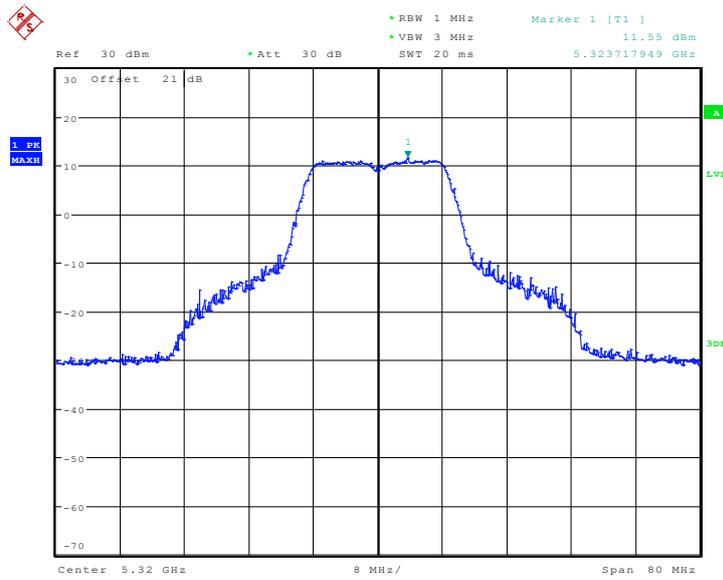
Date: 6.NOV.2013 09:18:17

Fig. 184 Peak Excursions (802.11n-HT20, ch52, peak)



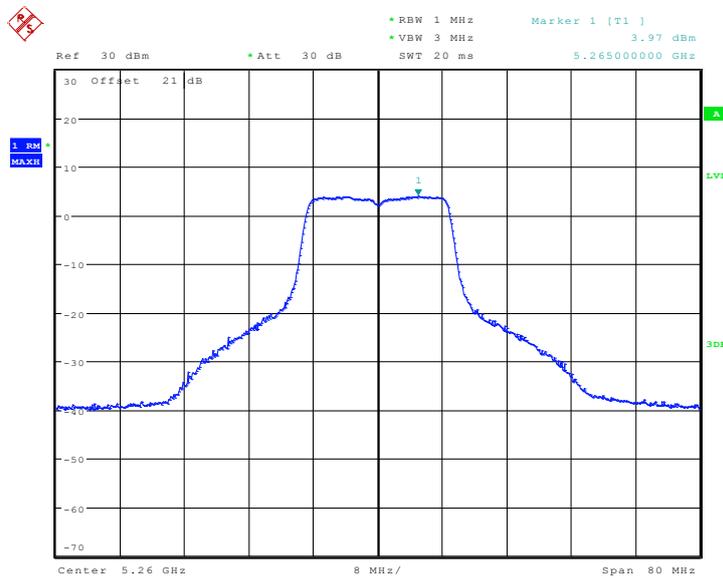
Date: 6.NOV.2013 09:19:31

Fig. 185 Peak Excursions (802.11n-HT20, ch56, peak)



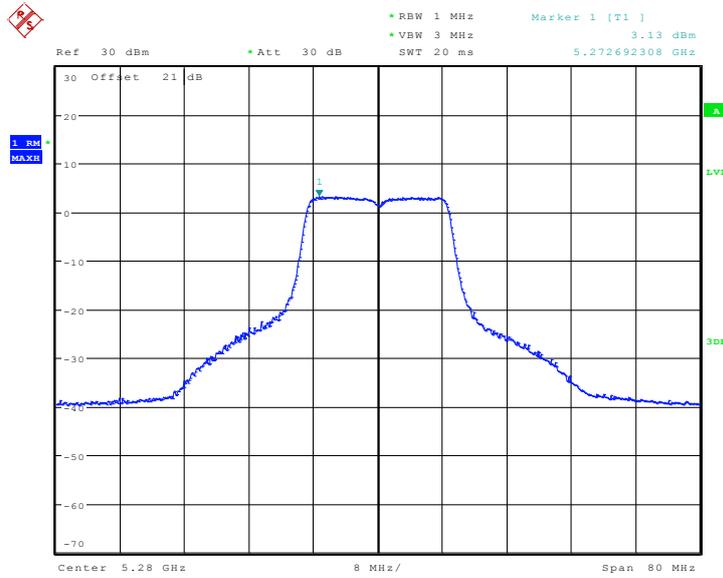
Date: 6.NOV.2013 09:19:57

Fig. 186 Peak Excursions (802.11n-HT20, ch64, peak)



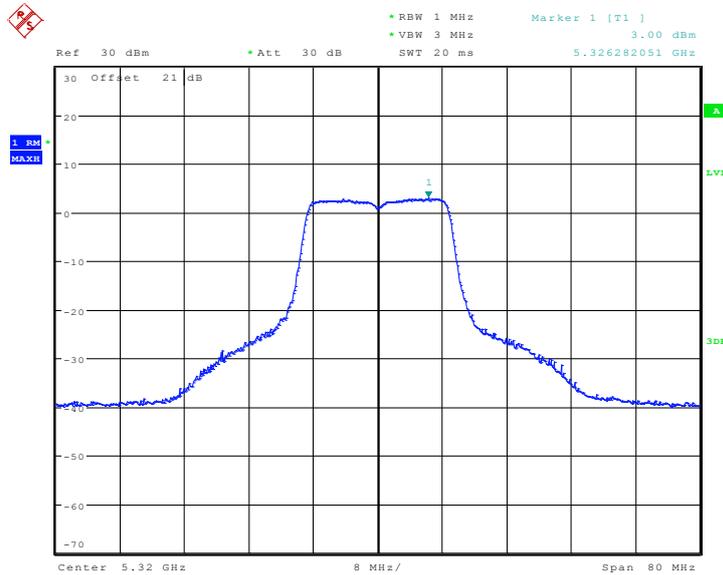
Date: 6.NOV.2013 09:18:35

Fig. 187 Peak Excursions (802.11n-HT20, ch52, average)



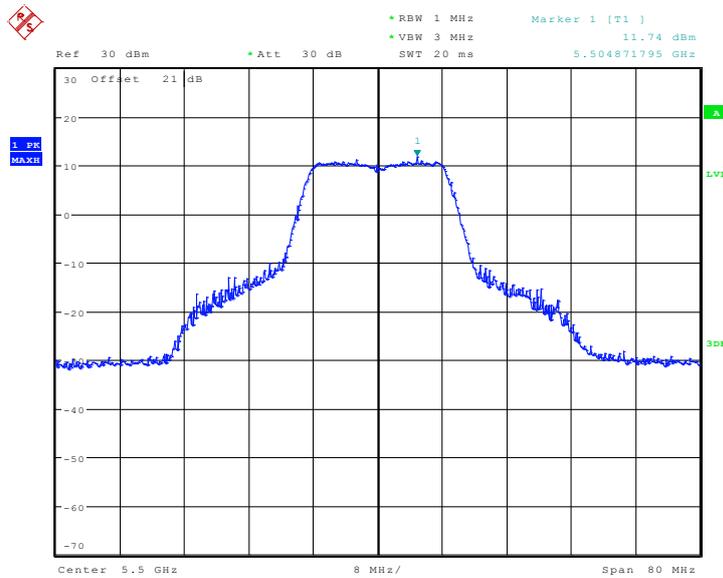
Date: 6.NOV.2013 09:19:09

Fig. 188 Peak Excursions (802.11n-HT20, ch56, average)



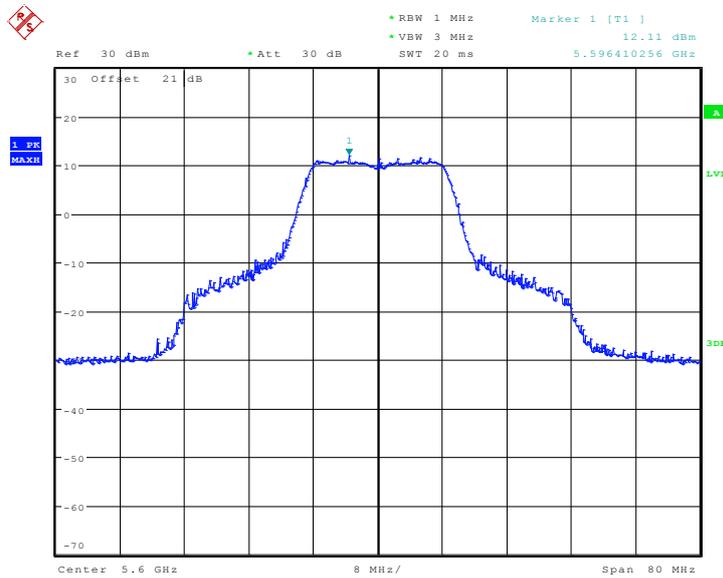
Date: 6.NOV.2013 09:20:11

Fig. 189 Peak Excursions (802.11n-HT20, ch64, average)



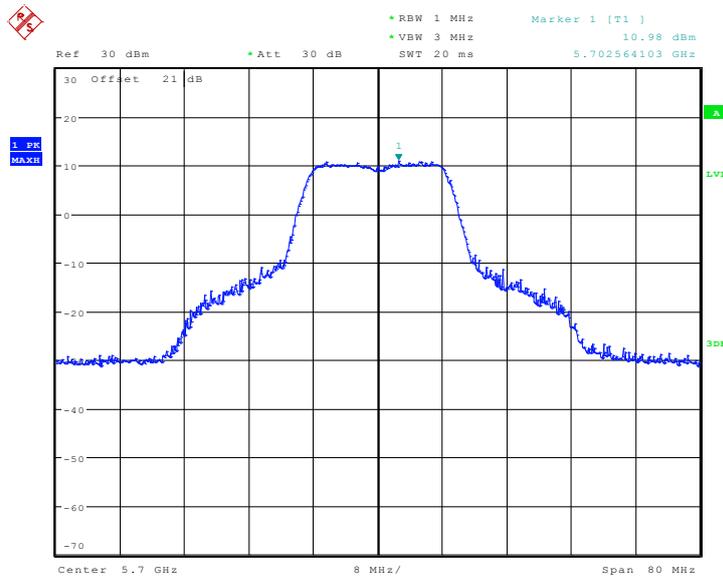
Date: 6.NOV.2013 09:21:08

Fig. 190 Peak Excursions (802.11n-HT20, ch100, peak)



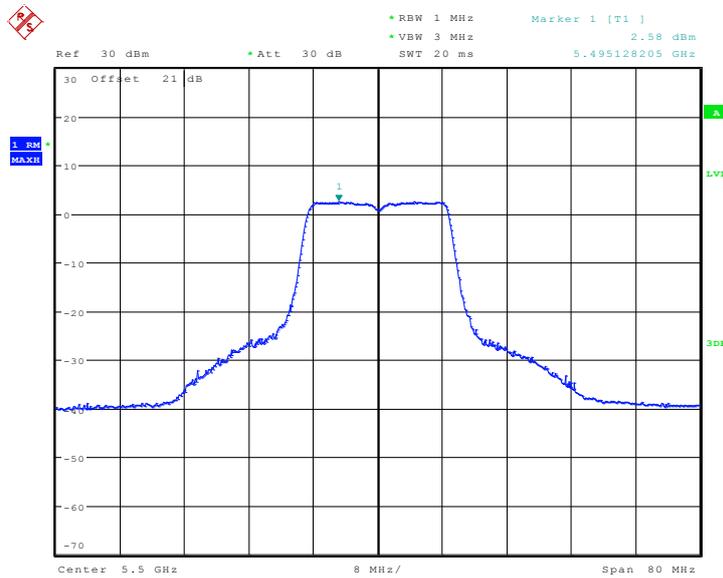
Date: 6.NOV.2013 09:22:05

Fig. 191 Peak Excursions (802.11n-HT20, ch120, peak)



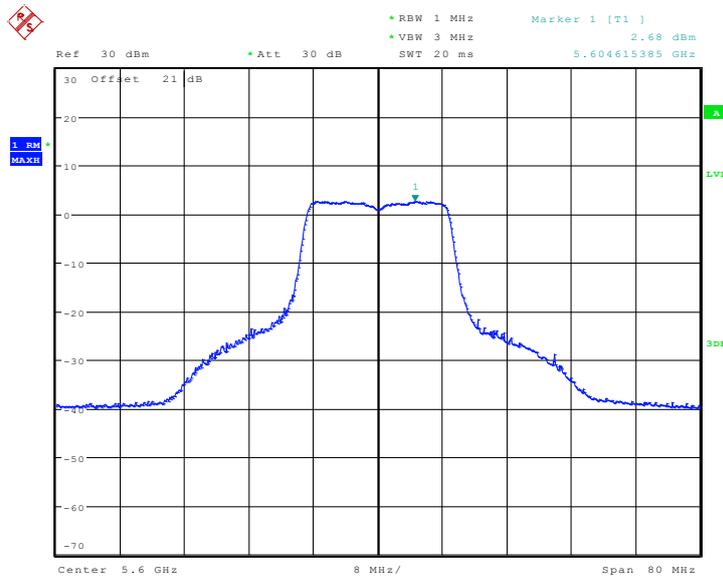
Date: 6.NOV.2013 09:23:26

Fig. 192 Peak Excursions (802.11n-HT20, ch140, peak)



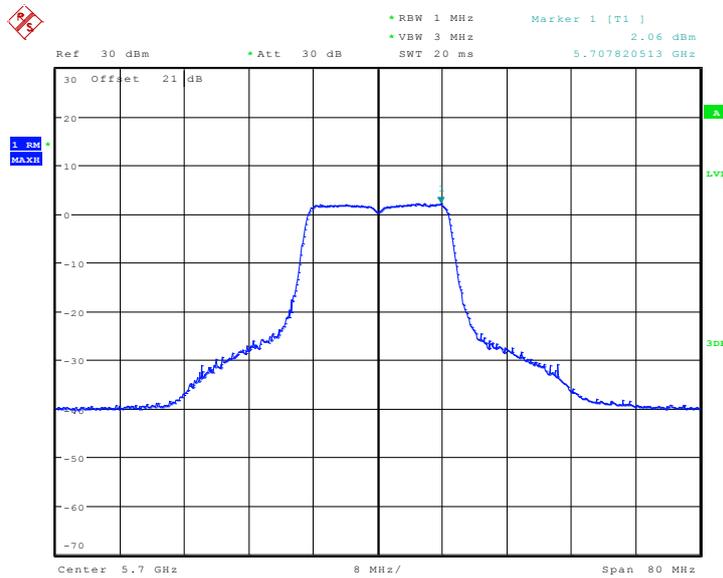
Date: 6.NOV.2013 09:20:51

Fig. 193 Peak Excursions (802.11n-HT20, ch100, average)



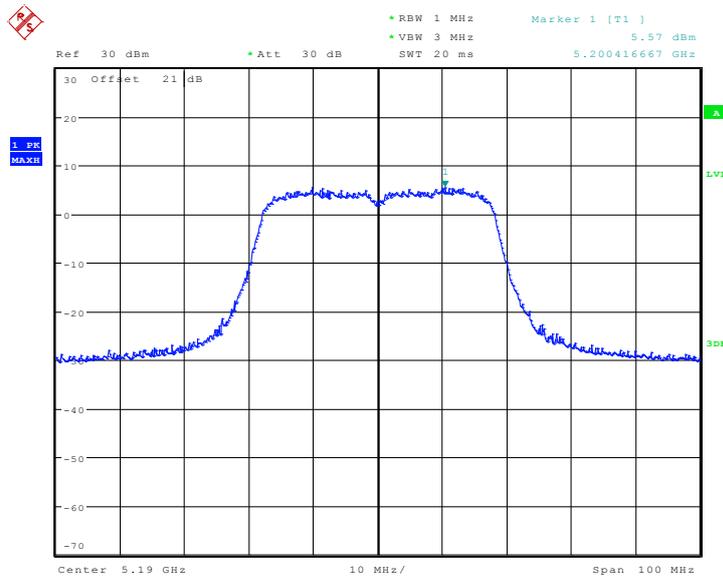
Date: 6.NOV.2013 09:22:28

Fig. 194 Peak Excursions (802.11n-HT20, ch120, average)



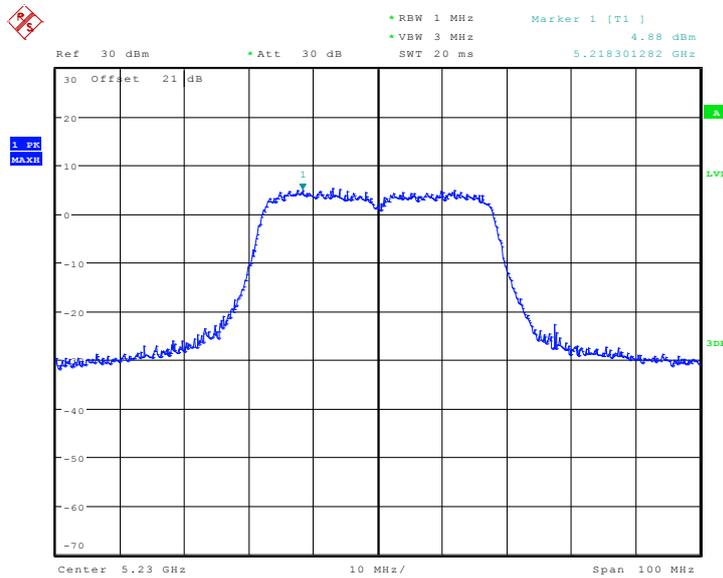
Date: 6.NOV.2013 09:22:52

Fig. 195 Peak Excursions (802.11n-HT20, ch140, average)



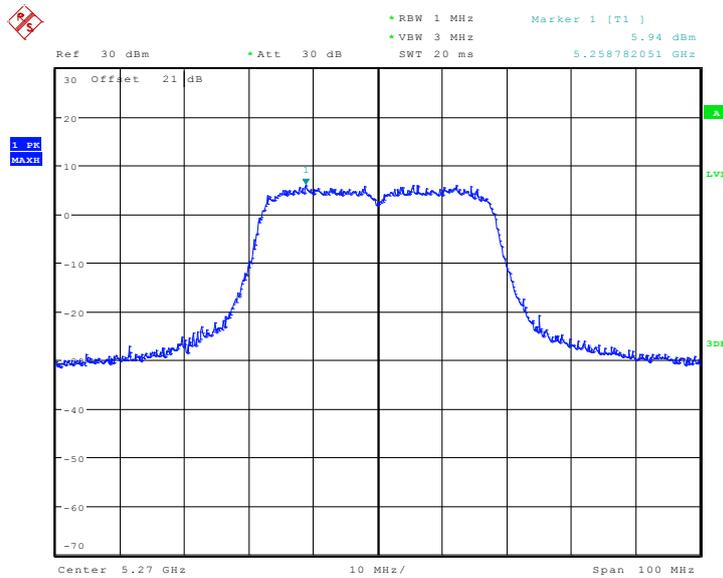
Date: 6.NOV.2013 09:27:25

Fig. 196 Peak Excursions (802.11n-HT40, ch38, peak)



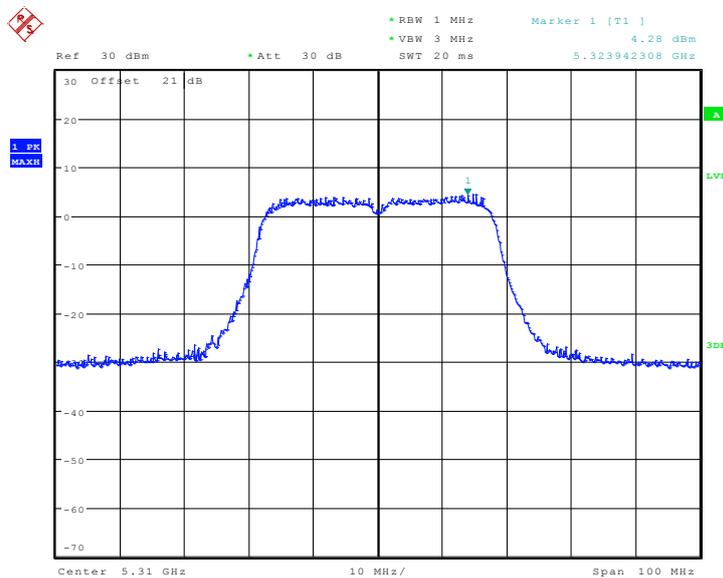
Date: 6.NOV.2013 09:28:33

Fig. 197 Peak Excursions (802.11n-HT40, ch46, peak)



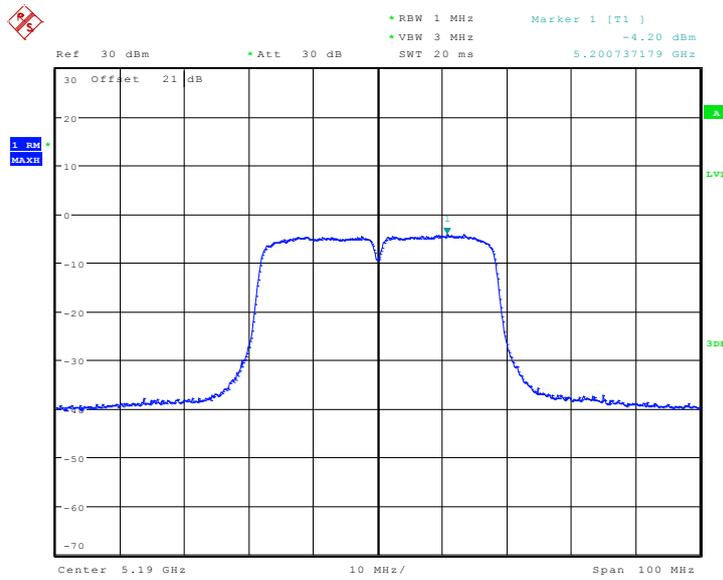
Date: 6.NOV.2013 09:29:12

Fig. 198 Peak Excursions (802.11n-HT40, ch54, peak)



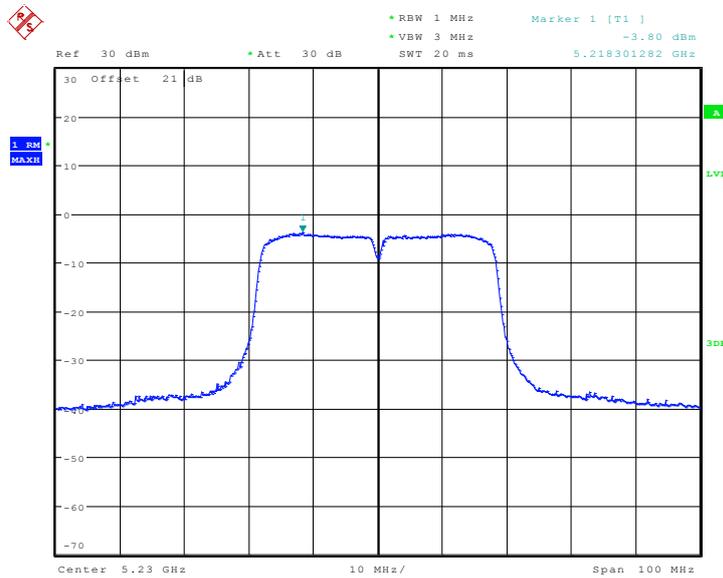
Date: 6.NOV.2013 09:30:14

Fig. 199 Peak Excursions (802.11n-HT40, ch62, peak)



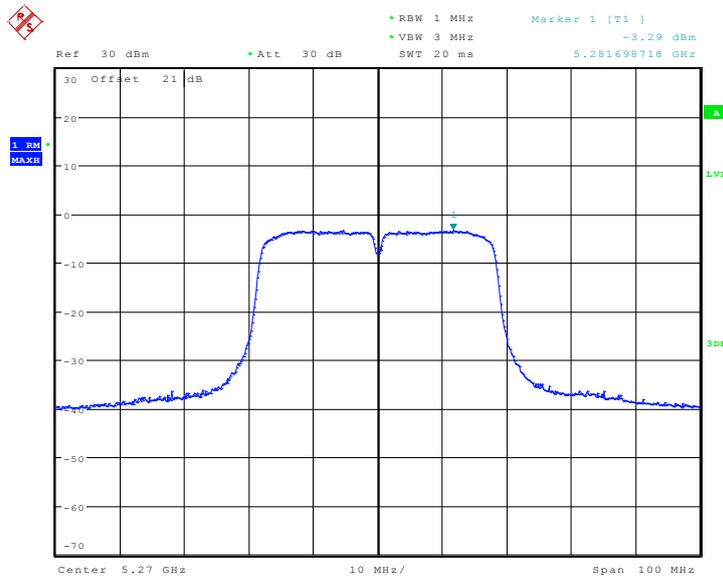
Date: 6.NOV.2013 09:27:38

Fig. 200 Peak Excursions (802.11n-HT40, ch38, average)



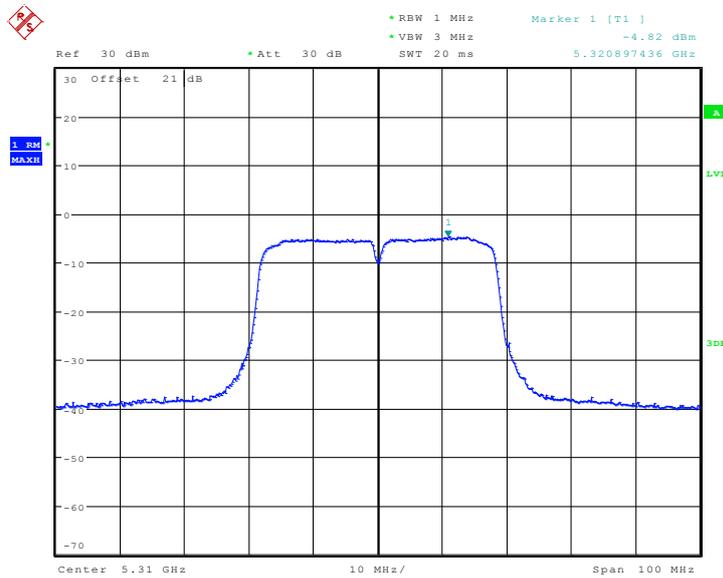
Date: 6.NOV.2013 09:28:11

Fig. 201 Peak Excursions (802.11n-HT40, ch46, average)



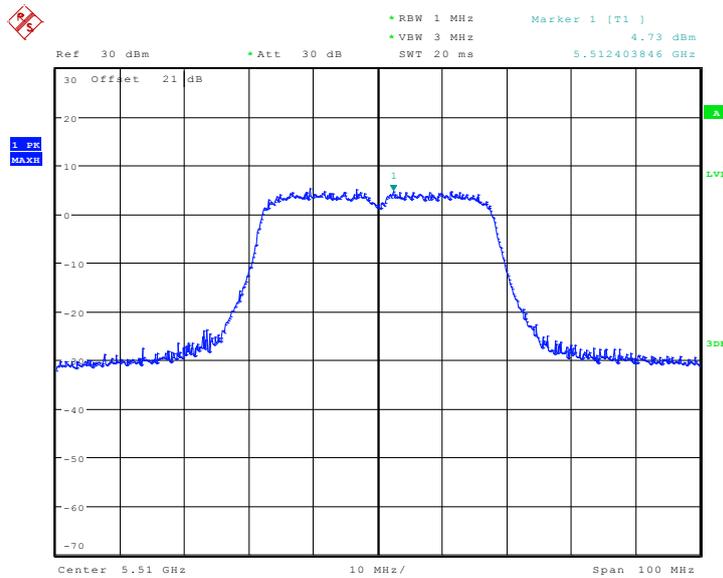
Date: 6.NOV.2013 09:29:26

Fig. 202 Peak Excursions (802.11n-HT40, ch54, average)



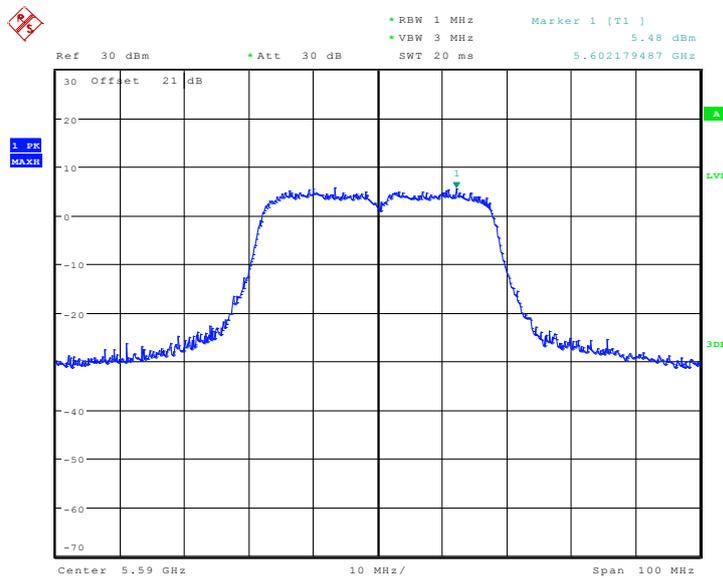
Date: 6.NOV.2013 09:29:55

Fig. 203 Peak Excursions (802.11n-HT40, ch62, average)



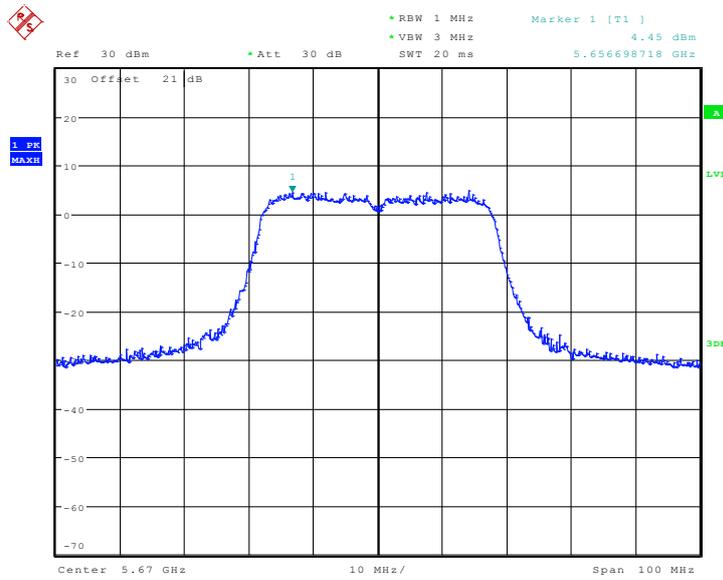
Date: 6.NOV.2013 09:30:43

Fig. 204 Peak Excursions (802.11n-HT40, ch102, peak)



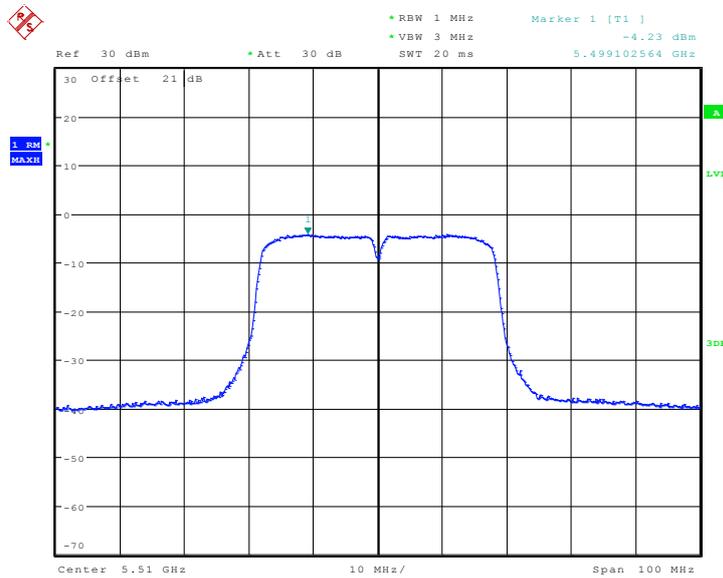
Date: 6.NOV.2013 09:31:40

Fig. 205 Peak Excursions (802.11n-HT40, ch118, peak)



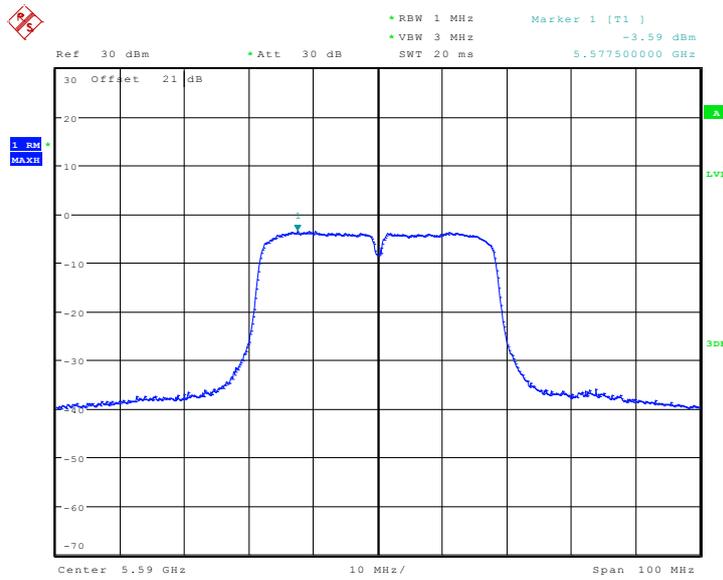
Date: 6.NOV.2013 09:32:12

Fig. 206 Peak Excursions (802.11n-HT40, ch134, peak)



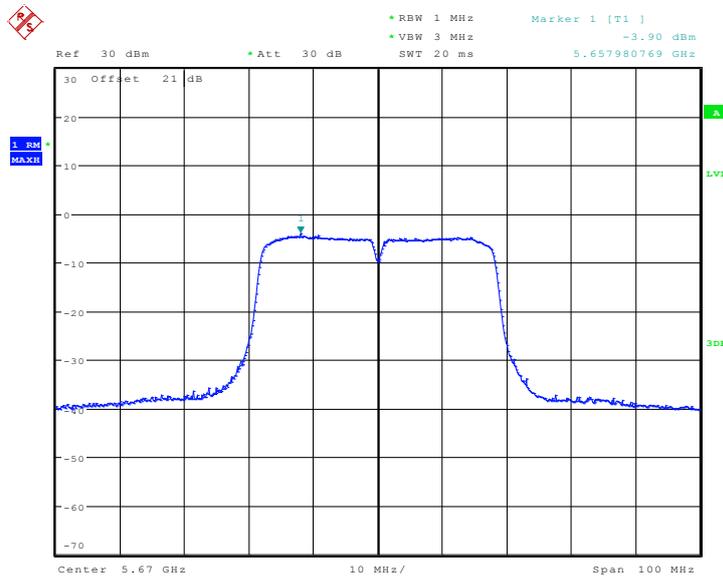
Date: 6.NOV.2013 09:30:58

Fig. 207 Peak Excursions (802.11n-HT40, ch102, average)



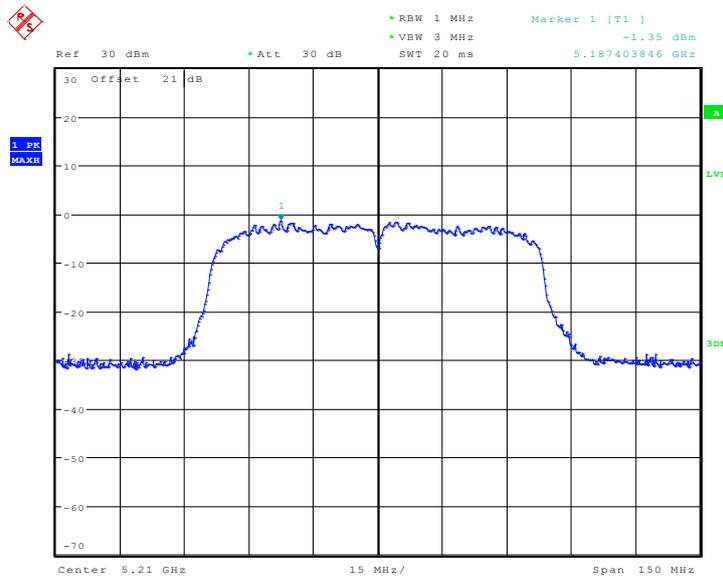
Date: 6.NOV.2013 09:31:24

Fig. 208 Peak Excursions (802.11n-HT40, ch118, average)



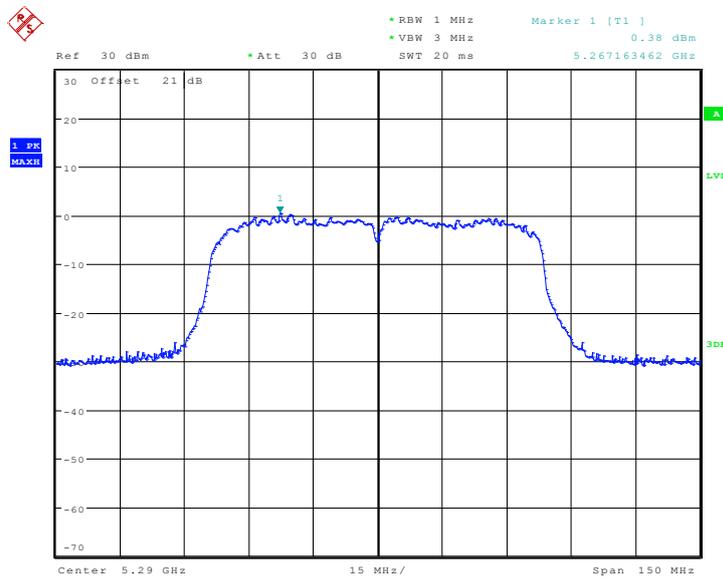
Date: 6.NOV.2013 09:32:26

Fig. 209 Peak Excursions (802.11n-HT40, ch134, average)



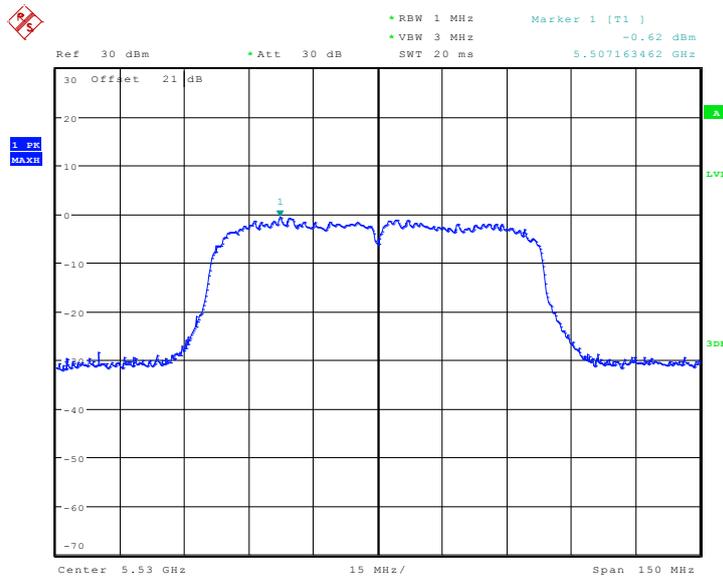
Date: 6.NOV.2013 09:34:02

Fig. 210 Peak Excursions (802.11ac-HT80, ch42, peak)



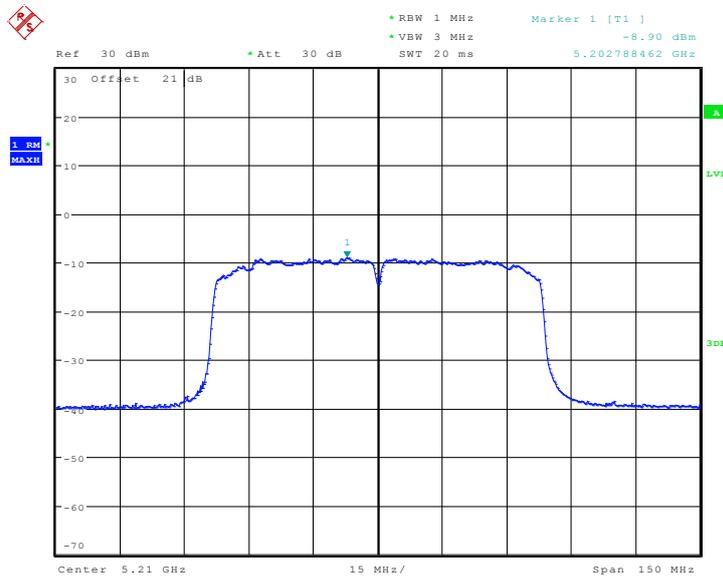
Date: 6.NOV.2013 09:34:46

Fig. 211 Peak Excursions (802.11ac-HT80, ch58, peak)



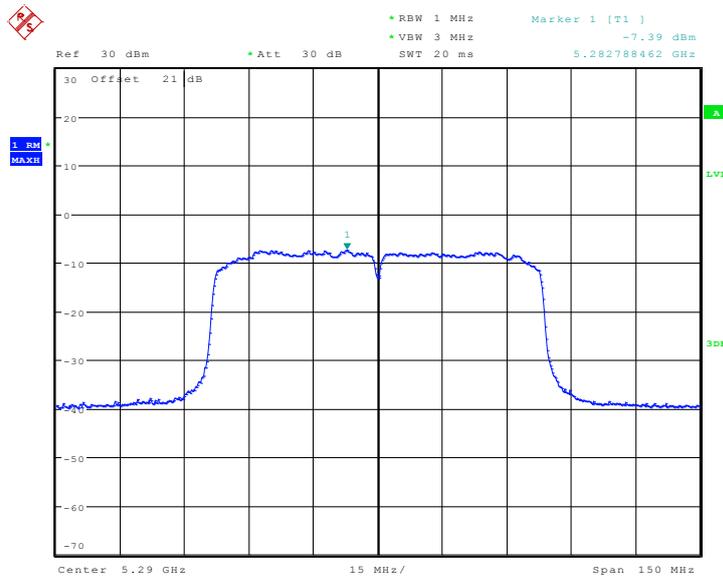
Date: 6.NOV.2013 09:35:41

Fig. 212 Peak Excursions (802.11ac-HT80, ch106, peak)



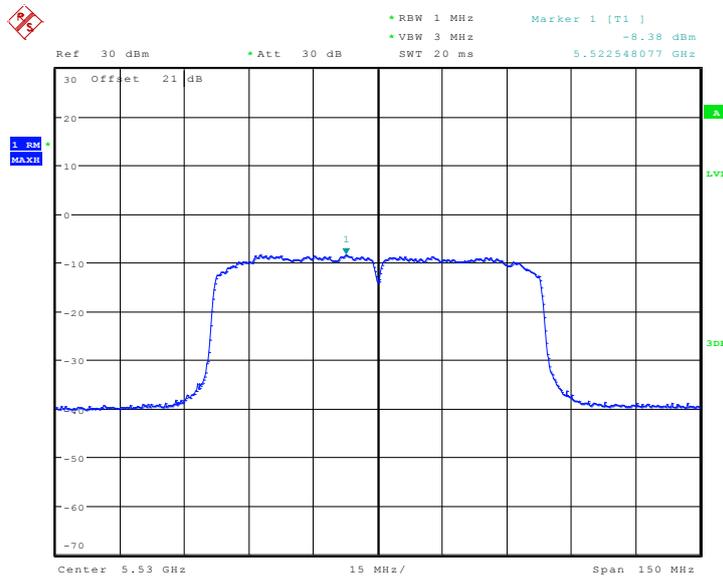
Date: 6.NOV.2013 09:33:50

Fig. 213 Peak Excursions (802.11ac-HT80, ch42, average)



Date: 6.NOV.2013 09:34:59

Fig. 214 Peak Excursions (802.11ac-HT80, ch58, average)



Date: 6.NOV.2013 09:35:28

Fig. 215 Peak Excursions (802.11ac-HT80, ch106, average)

A.10. Frequency Stability

Manufacturers ensured the EUT meet the requirement of frequency stability, such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

A.11. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).