



Test Report No. 8912324759

Applicant: Alvarion Ltd

BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

***From The Standards Institution
Of Israel
Industry Division
Telematics Laboratory
EMC Section***



ACCLASS Accreditation Services

Certificate Number: IT-1359



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Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

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1. Applicant information

Applicant:	Alvarion Ltd
Address:	21A Habarzel str, Tel-Aviv, 69710, Israel
Sample for test selected by:	The customer
The date of tests:	24 March, 29, 30 April 2009

Equipment under test information

Description of Equipment Under Test (EUT):	BreezeMax Extreme 5.8 Base station
Model:	EXTR-BS-2SIS-5.8-Ext
Serial Number:	NA
Manufactured by:	Alvarion Ltd

2. Test performance

Location:	SII EMC Section
Purpose of test:	Apparatus compliance verification in accordance with emission requirements
Test specifications:	47CFR part 15.247, part 1 §1.1310

Reference Documents:

CFR 47 FCC:	Rules and Regulations; Part 15. "Radio frequency devices"; Subpart C: "Intentional radiators"
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This Test Report contains 67 pages and may be used only in full.	This Test Report applies only to the specimen tested and may not be applied to other specimens of the same product.
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3. Summary of test

The EUT was found to be in compliance with requirements of: 47CFR Part 15, §§ 15.247, 15.207 and 15.209.

Transmitter characteristics	Subclasses
Minimum 6 dB bandwidth	15.247(a)(2)
Maximum output power	15.247(b)(3)
Spurious emissions at antenna terminal	15.247(d)
Out of band spurious emissions radiated	15.205, 15.247(d)
Peak power spectral density	15.247(e)
Conducted emissions on AC power line	15.207
Unwanted radiated emissions below 1 GHz	15.209

Test performed by:Mr. Michael Feldman
Test technicianTest report approved by:Mr. Yuri Rozenberg.
Head of EMC Branch


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4. Equipment under test description.

*The customer provided description.

4.1 General description

The BreezeMAX Extreme 5.8 Base station product is high-capacity WiMAX communication system. It shall be compatible with IEEE802.16e standard and support set of Alvarion's enhancements.

BreezeMAX Extreme 5.8 is digital modulated TDD system which covers 5470 MHz up to 5950 MHz range. The system contains a base station unit and a subscriber unit. The basic base station system configuration is all outdoor-box configurations.

The BTS Extreme is a low cost 16e mobile WiMAX solution. It should provide high performance and advanced feature set and complement Alvarion's macro-BTS solutions. This product family comes to provide wireless access solutions for the following deployment scenarios:

- Low cost Point to Multi Point wireless access mass deployments in emerging markets for licensed and un-licensed solutions to provide dual play services (Primary VoIP & Data).
- Vertical markets for video surveillance, security and municipalities markets solutions using products licensed and un-licensed portfolio.

Base station Extreme consists of the following main components: One or two 16e WiMax SoCs (System on Chip) with one or two Radio channels using integrated antenna or external antennas. In two Radio channels applications, one antenna is connected to each radio output port.

EUT technical characteristics

Transmitter technical characteristics.		Note	
Stand-alone/fixed use			
Assigned frequency range	5725 MHz – 5850 MHz		
Operating frequency range	5727.5 MHz – 5847.5 MHz	5 MHz EBW	
	5730 MHz – 5845 MHz	10 MHz EBW	
RF channel spacing	5 MHz, 10 MHz		
Maximum rated output power	22 dBm		
Antenna connection	N-type for external antenna	Professional installation	
Type of modulation	4QAM, 16QAM, 64QAM		
Type of multiplexing	OFDM		
Modulating test signal (baseband)	PRBS		
Maximum transmitter duty cycle in normal use	60 %		
Transmitter duty cycle supplied for test	100%		
Antenna information			
Type	Manufacturer	Model	Gain
Internal dual slant	MTI	AN1427-01	15.5 dBi
External, Omni	MTI	AN1435-01	9.5 dBi
External, sector	MTI	AN1353	17 dBi

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5. Environmental evaluation and exposure limit according to FCC part 1, §1.1307, §1.1310

Limit for power density for general population/uncontrolled exposure is $1(\text{mW}/\text{cm}^2)$ or $10 (\text{W}/\text{m}^2)$.

The power density calculation is $S = (P_t / 4\pi r^2)$.

Where:

P_t - The transmitted power (EIRP) (mW)

r - The distance from the unit. (cm)

The limit $1(\text{mW}/\text{cm}^2)$ can be calculated from the above based on the following data:

P_t - the transmitted power which is equal to the peak output power 26.9 dBm plus external antenna gain 9.5 dBi . The maximum peak EIRP = 36.4 dBm = 4365 mW

Maximum allowed distance “ r ”, where RF exposure limits may not be exceeded,

$r = \text{SQRT}(4365/4\pi)$ and is more than 18.6 cm from the antenna.

6. EUT test configuration

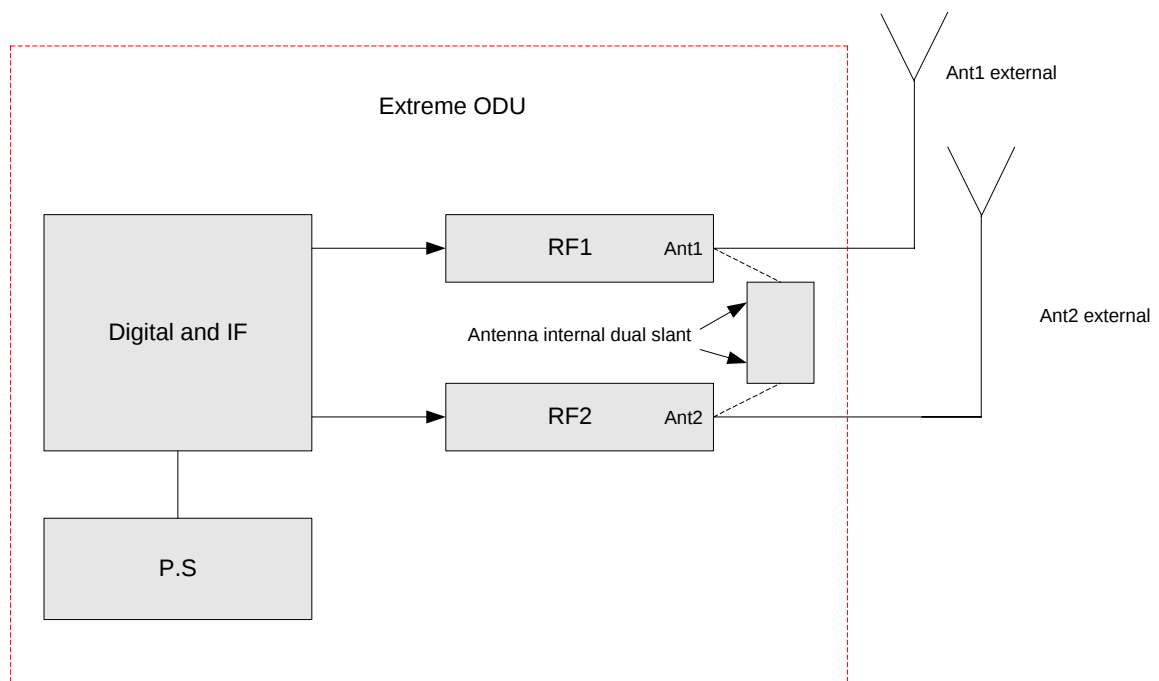


Fig. 1. EUT block diagram.

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7. Test results

7.1 Transmitter characteristics

7.1.1 Occupied 6 dB bandwidth for digitally systems.

Method of measurement FCC March 23, 2005 procedure
Operating Frequency Range 5727.5 – 5847.5 MHz
Ambient Temperature 23° C Relative Humidity 49% Air Pressure 1011 hPa

5 MHz emission bandwidth

Carrier frequency MHz	Measured 6 dB bandwidth, MHz	Reference to plots
5727.5	4.569	#1
5787.5	4.568	#2
5847.5	4.568	#3

10 MHz emission bandwidth

Carrier frequency MHz	Measured 6 dB bandwidth, MHz	Reference to plots
5730.0	9.10	#4
5787.5	9.07	#5
5845.0	9.10	#6

LIMIT

Minimum allowed bandwidth - 500 kHz @ 6 dBc

TEST PROCEDURE

The measurements were performed in normal (transmitting) mode of operation for carrier (channel) frequency at bottom, middle and at the top of 5725 – 5850 MHz frequency band under maximum data transfer bit rate. The EUT RF output was connected to the Spectrum Analyzer through appropriate attenuator and accounted with cable loss in SA settings.

TEST EQUIPMENT USED:

2	3	4	5			
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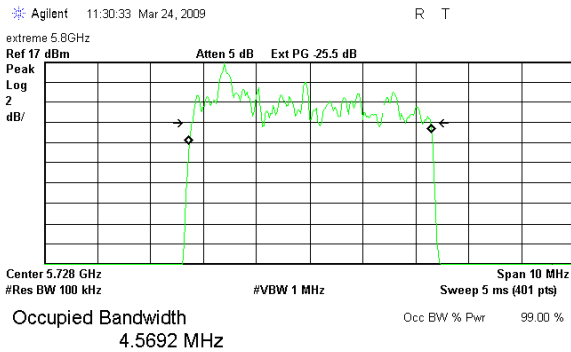
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Title: BreezeMax Extreme 5.8 Base station

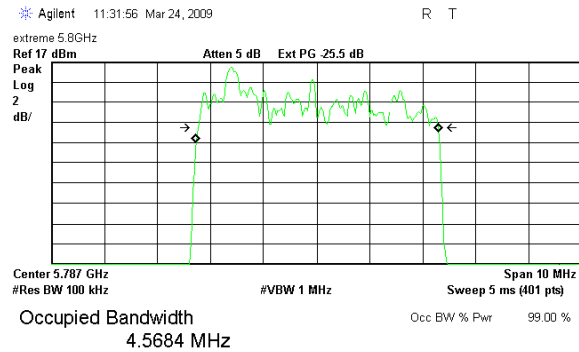
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58



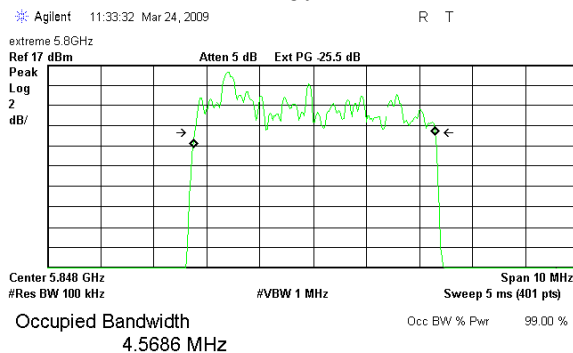
Transmit Freq Error 21.934 kHz
x dB Bandwidth 4.503 MHz

Plot # 1



Transmit Freq Error 20.803 kHz
x dB Bandwidth 4.523 MHz

Plot # 2



Transmit Freq Error 22.024 kHz
x dB Bandwidth 4.528 MHz

Plot # 3



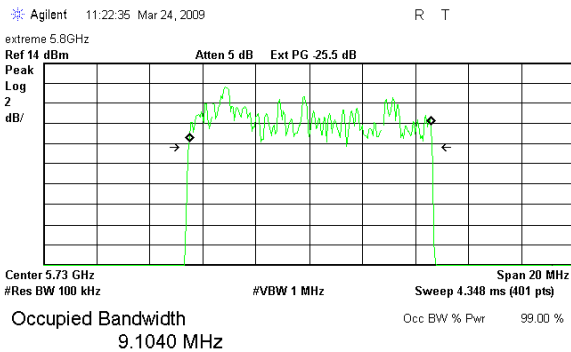
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Title: BreezeMax Extreme 5.8 Base station

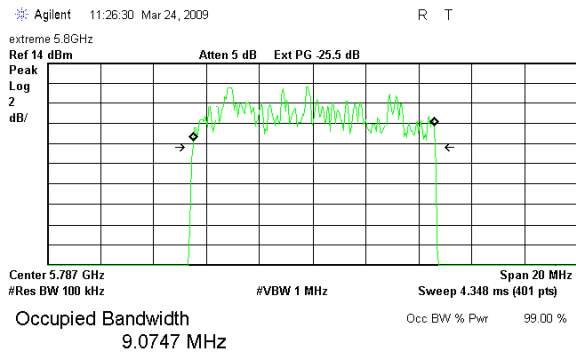
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58



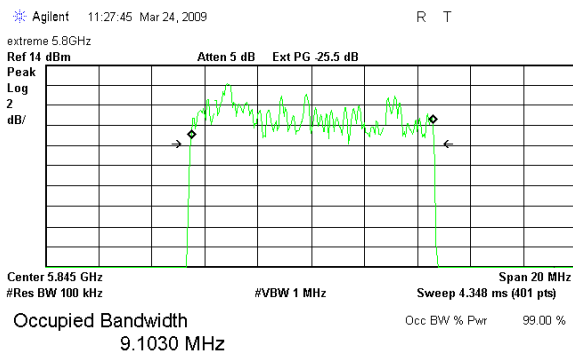
Transmit Freq Error 41.284 kHz
x dB Bandwidth 9.164 MHz

Plot # 4



Transmit Freq Error 47.084 kHz
x dB Bandwidth 9.141 MHz

Plot # 5



Transmit Freq Error 39.411 kHz
x dB Bandwidth 9.162 MHz

Plot # 6

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Method of measurement FCC March 23, 2005 procedure
Operating Frequency Range 5727.5 – 5847.5 MHz
Ambient Temperature 23⁰ C Relative Humidity 49% Air Pressure 1011 hPa

RF chain 15 MHz emission bandwidth

Carrier frequency MHz	26 dB emission bandwidth MHz	Measured Peak output power, dBm	Reference to plots
5727.5	5.320	26.89	#7, 10
5787.5	5.315	25.88	#8, 11
5847.5	5.314	26.68	#9, 12

10 MHz emission bandwidth

Carrier frequency MHz	26 dB emission bandwidth MHz	Measured Peak output power, dBm	Reference to plots
5730.0	10.394	26.31	#13, 16
5787.5	10.372	26.61	#14, 17
5845.0	10.358	26.15	#15, 18

RF chain 25 MHz emission bandwidth

Carrier frequency MHz	26 dB emission bandwidth MHz	Measured Peak output power, dBm	Reference to plots
5727.5	5.342	26.46	#19, 22
5787.5	5.332	26.51	#20, 23
5847.5	5.356	26.44	#21, 24

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Carrier frequency MHz	26 dB emission bandwidth MHz	Measured Peak output power, dBm	Reference to plots
5730.0	10.407	25.90	#25, 28
5787.5	10.347	25.86	#26, 29
5845.0	10.348	25.81	#27, 30

LIMIT

For systems using digital modulation in the 5725 – 5850 MHz band: 1W (30 dBm).

The conducted output power limit is based on the use of antennas with directional gain that do not exceed 6 dBi. Limit of conducted output power for external antenna 9.5 dBi was calculated as follow:

$P_{out} = 30 \text{ dBm} - (9.5 - 6) + 0.7 \text{ dB} = 27.2 \text{ dBm}$. External antenna cable loss 0.7 dB was added to limit calculation.

TEST PROCEDURE

Test was performed at worse case output power that was calculated for antenna 9.5 dBi.

The measurements were performed in normal (transmitting) mode of operation for carrier (channel) frequency at bottom, middle and the top of the 5725 – 5850 MHz frequency band under maximum data transfer bit rate. The EUT RF output was connected to the Spectrum Analyzer through appropriate attenuator and accounted with cable loss in SA settings.

TEST EQUIPMENT USED:

2	3	4	5			
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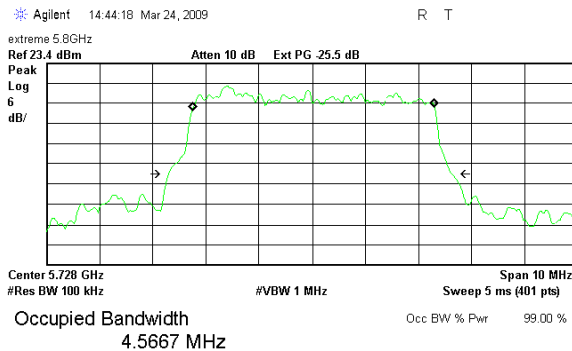
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

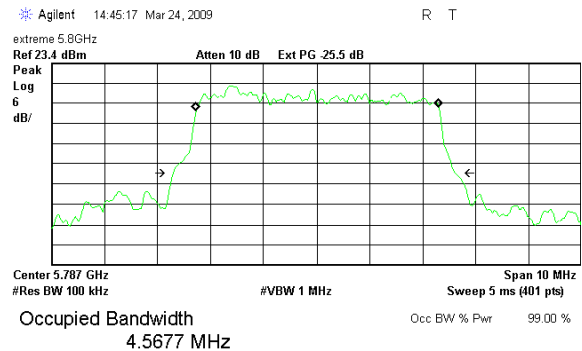
RF chain 1

5 MHz EBW option, 26 dB bandwidth test result



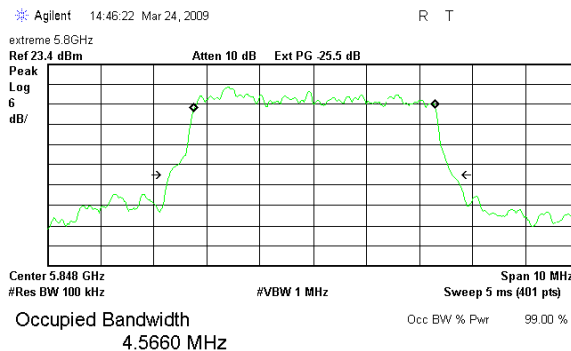
Transmit Freq Error 22.537 kHz
x dB Bandwidth 5.320 MHz

Plot # 7



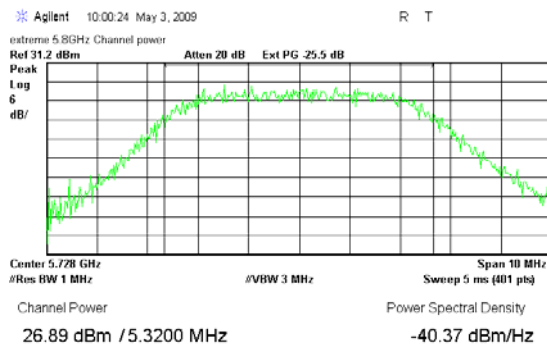
Transmit Freq Error 21.240 kHz
x dB Bandwidth 5.315 MHz

Plot # 8

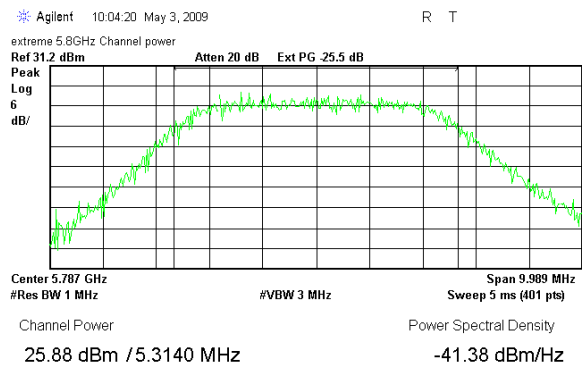


Transmit Freq Error 22.427 kHz
x dB Bandwidth 5.314 MHz

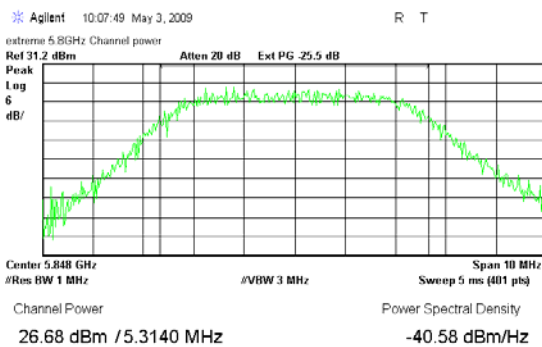
Plot # 9

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Plot # 10



Plot # 11



Plot # 12

Insertion loss of external attenuator, directional coupler and cable = 25.5 dB



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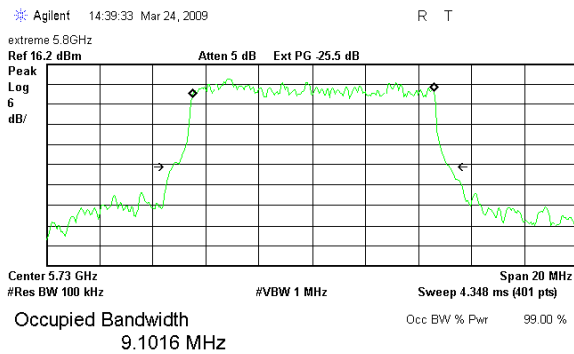
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Title: BreezeMax Extreme 5.8 Base station

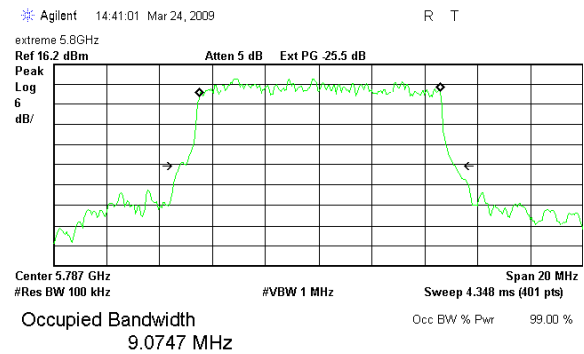
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

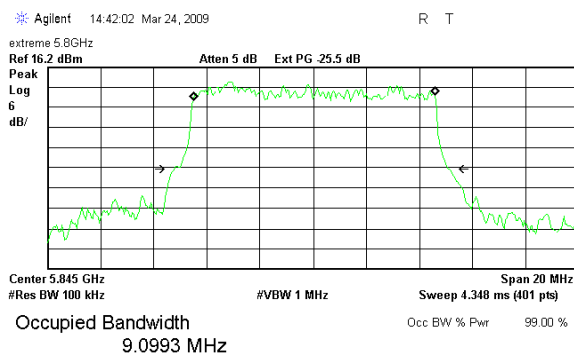
10 MHz EBW option, 26 dB bandwidth test result



Plot # 13



Plot # 14



Plot # 15



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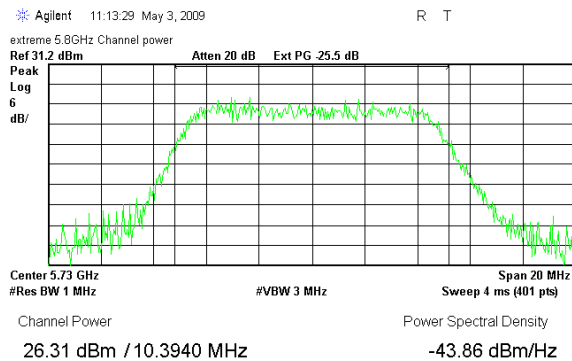
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

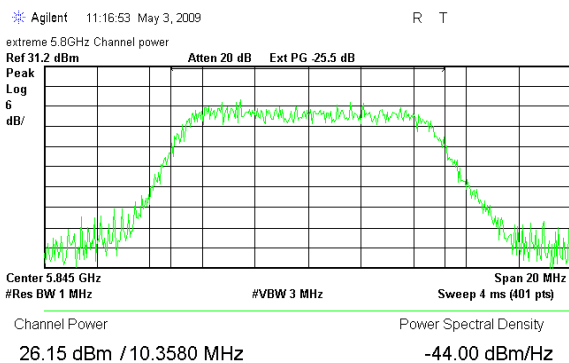
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FCC ID: LKT-EXTR-58

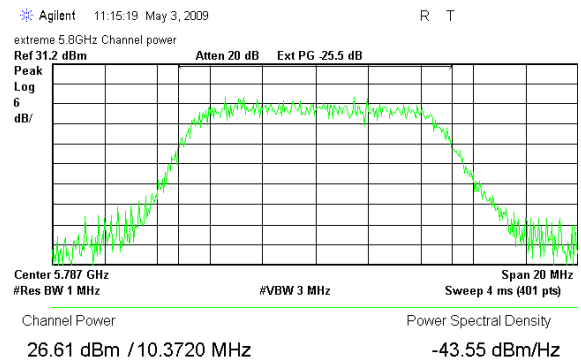
10 MHz EBW option. Peak output power results



Plot # 16



Plot # 18



Plot # 17

Insertion loss of external attenuator, directional coupler and cable = 25.5 dB



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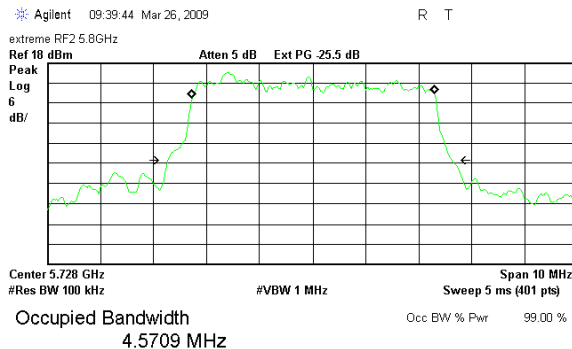
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

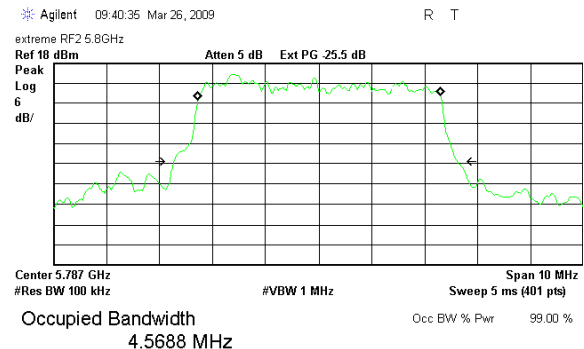
FCC ID: LKT-EXTR-58

RF chain 2

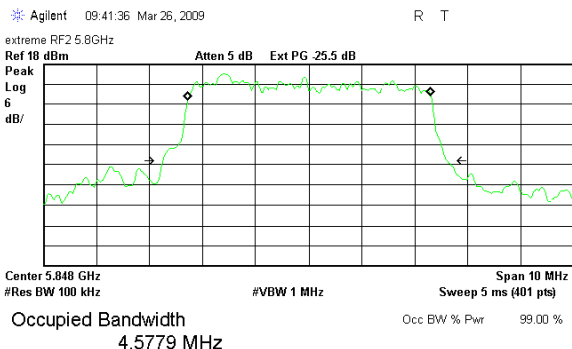
5 MHz EBW option, 26 dB bandwidth test result



Plot # 19



Plot # 20



Plot # 21



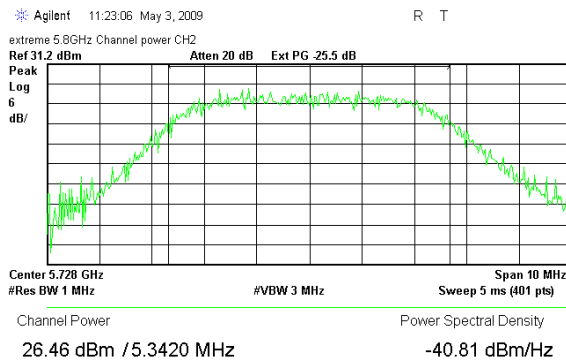
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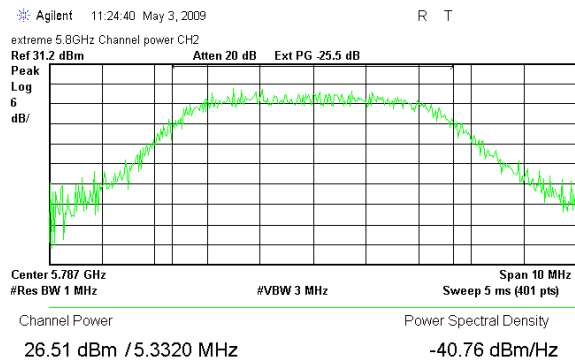
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

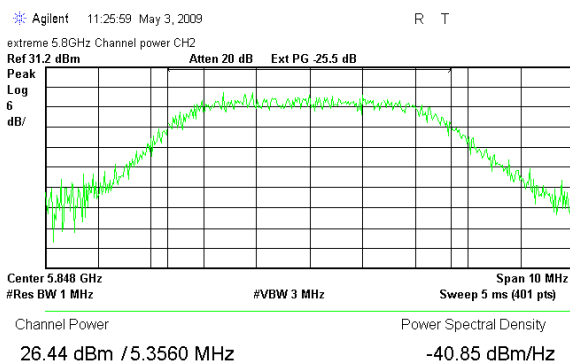
FCC ID: LKT-EXTR-58

5 MHz EBW option. Peak output power results

Plot # 22



Plot # 23



Plot # 24

Insertion loss of external attenuator, directional coupler and cable = 25.5 dB



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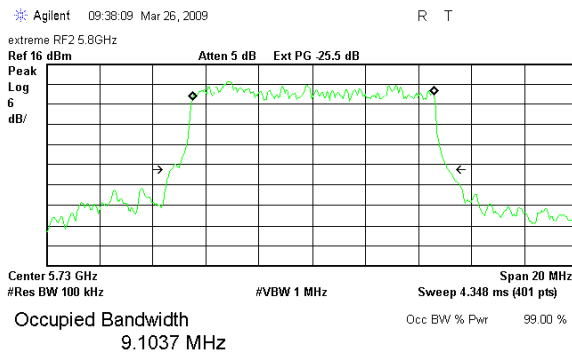
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

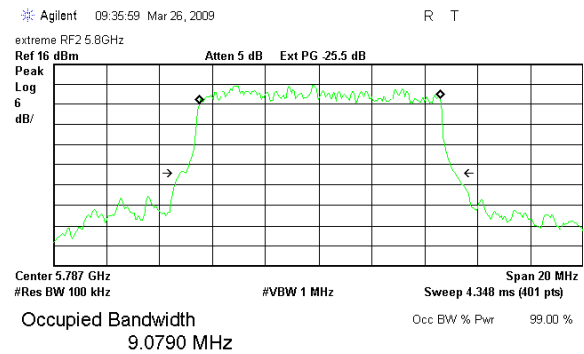
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FCC ID: LKT-EXTR-58

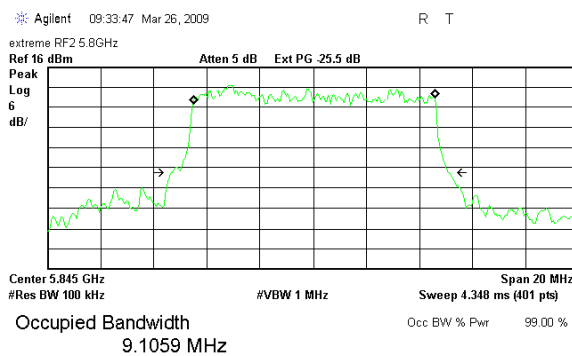
10 MHz BW option, 26 dB bandwidth test result



Plot # 25



Plot # 26



Plot # 27



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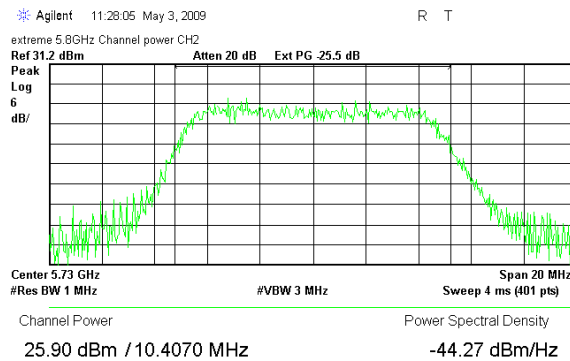
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

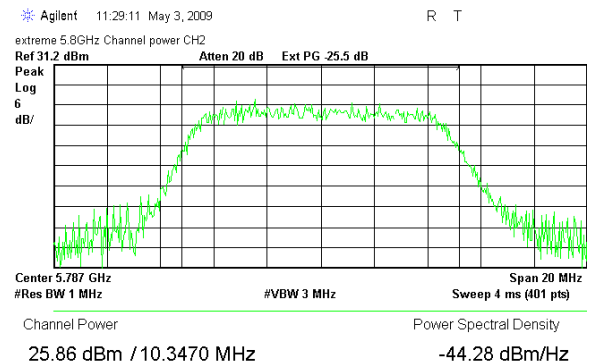
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FCC ID: LKT-EXTR-58

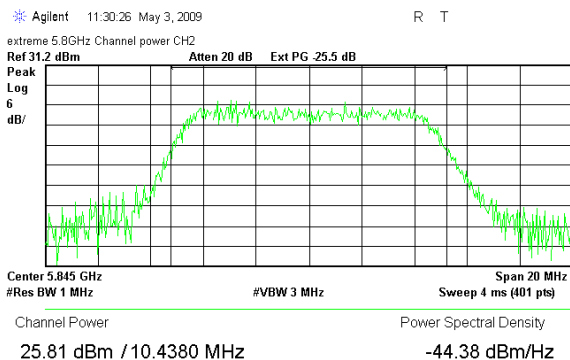
10 MHz BW option. Peak output power results



Plot # 28



Plot # 29



Plot # 30

Insertion loss of external attenuator, directional coupler and cable = 25.5 dB

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Method of measurement	FCC March 23, 2005 procedure
Operating Frequency Range	5727.5 – 5847.5 MHz
Ambient Temperature	23 ⁰ C
Relative Humidity	49%
Air Pressure	1009 hPa

The frequency spectrum was investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz and up to 40 GHz. The emission levels of the EUT in peak mode more than 20 dB lower than the specified limit were not recorded in the table. For the test results refer to plots ## 31-42 in this section.

LIMIT

In any 100 kHz bandwidth, outside the frequency band, in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

TEST PROCEDURE

Test was performed at worse case output power that was calculated for antenna 9.5 dBi gain. The measurements were performed in normal (transmitting) mode of operation for carrier (channel) frequency at bottom, middle and the top of the 5725 – 5850 MHz frequency band under maximum data transfer bit rate. The EUT RF output was connected to the Spectrum Analyzer through appropriate attenuator and accounted with cable loss in SA settings

TEST EQUIPMENT USED:

1	3	4	5			
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Test report N: 8912324759

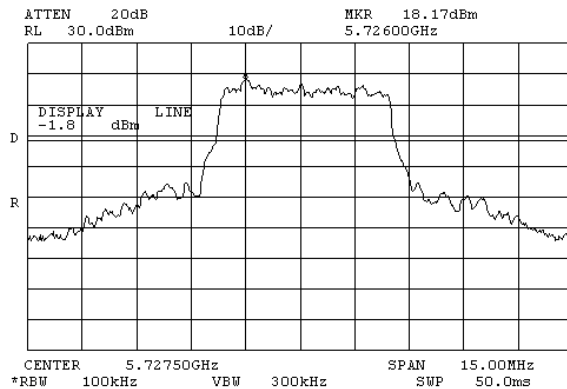
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Title: BreezeMax Extreme 5.8 Base station

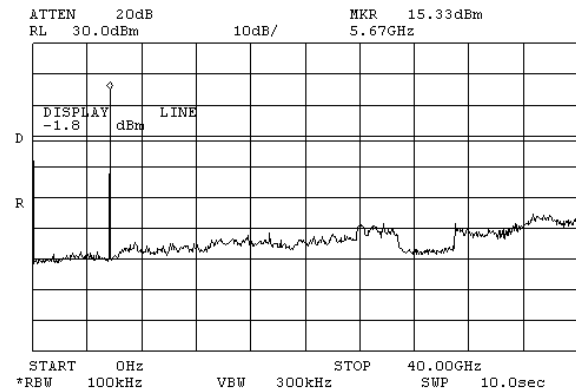
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

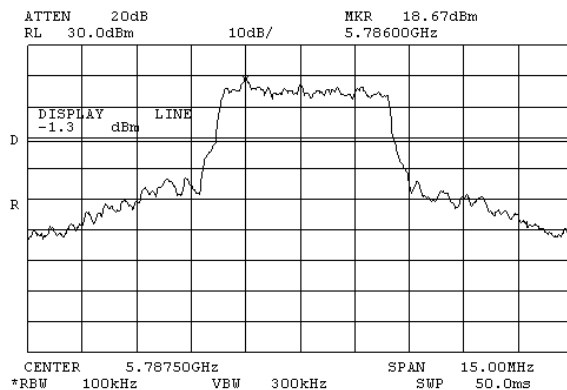
5 MHz emission bandwidth



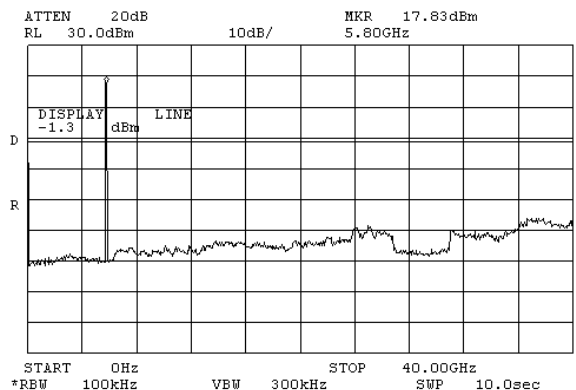
Plot # 31. Carrier frequency 5727.5 MHz.



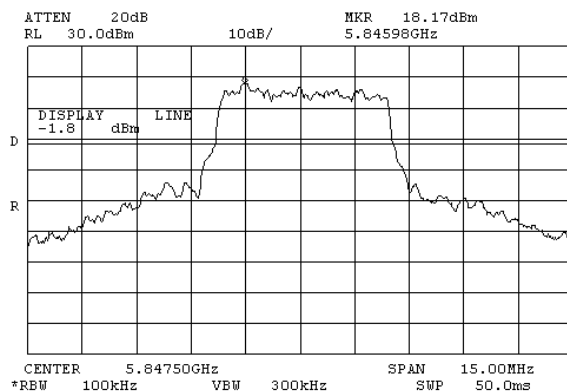
Plot # 32. Carrier frequency 5727.5 MHz..



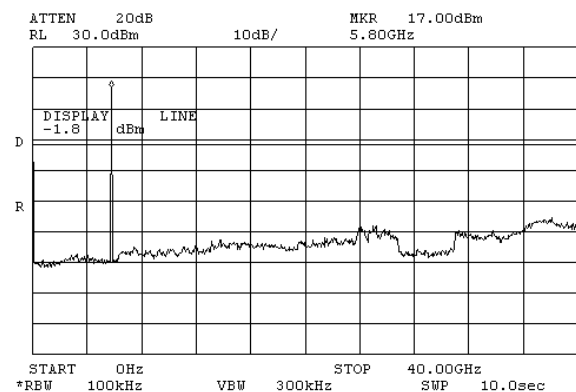
Plot # 33. Carrier frequency 5787.5 MHz.



Plot # 34. Carrier frequency 5787.5 MHz.



Plot # 35. Carrier frequency 5847.5 MHz



Plot # 36. Carrier frequency 5847.5 MHz



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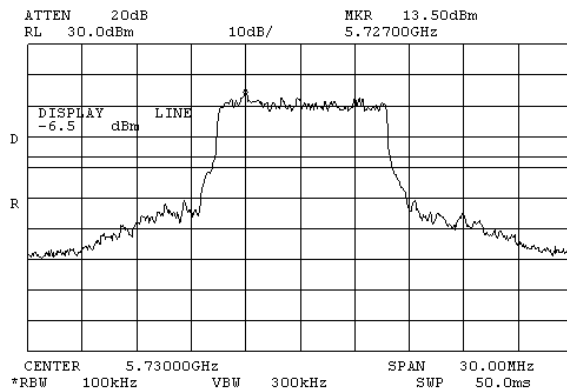
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Title: BreezeMax Extreme 5.8 Base station

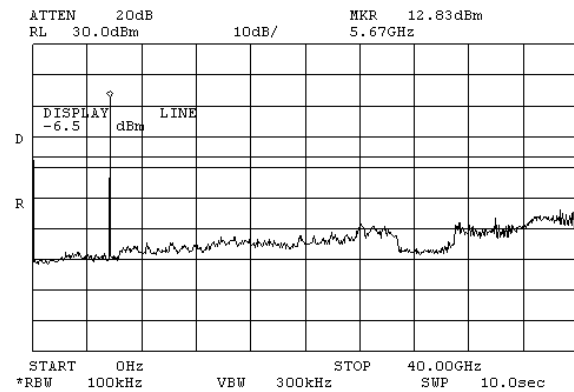
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

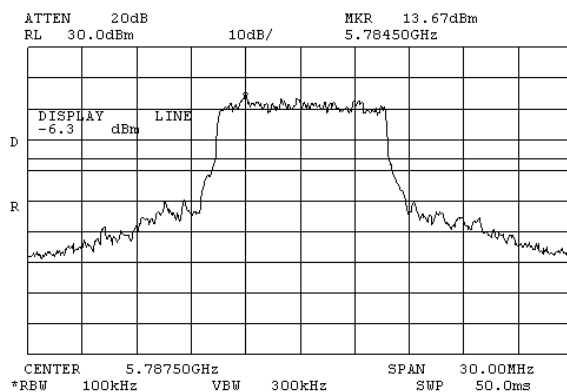
10 MHz emission bandwidth



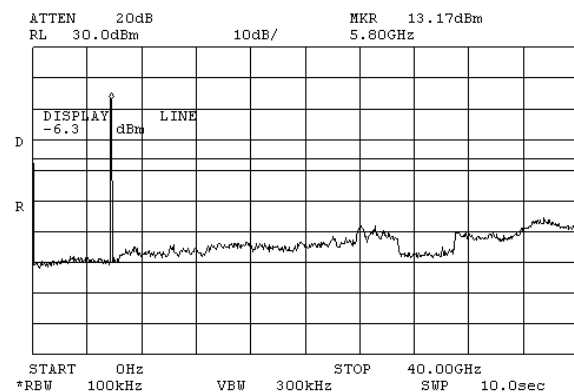
Plot # 37. Carrier frequency 5730 MHz.



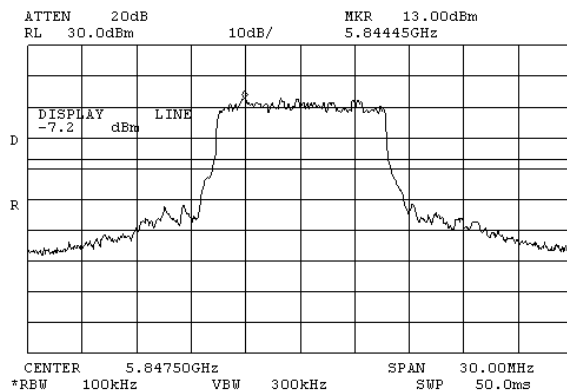
Plot # 38. Carrier frequency 5730 MHz.



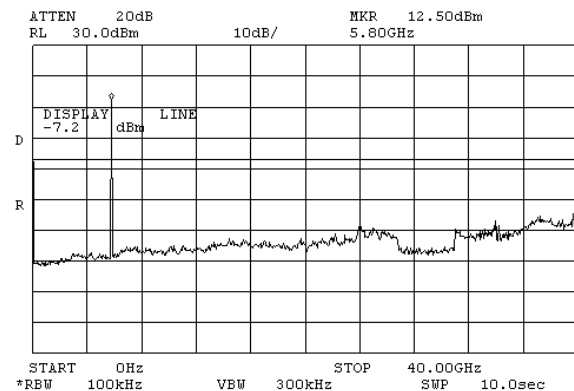
Plot # 39. Carrier frequency 5787.5 MHz



Plot # 40. Carrier frequency 5787.5 MHz



Plot # 41. Carrier frequency 5845 MHz



Plot # 42. Carrier frequency 5845 MHz

**Test report N: 8912324759****Page 22 of 67****Title: BreezeMax Extreme 5.8 Base station****Model: EXTR-BS-2SIS-5.8-Ext****FCC ID: LKT-EXTR-58****7.1.4 Radiated emissions out of band test according to §15.247(d), 15.205**

Method of measurement FCC March 23, 2005 procedure
 Operating Frequency Range 5727.5 – 5847.5 MHz
 Ambient Temperature 23⁰ C Relative Humidity 56% Air Pressure 1011 hPa

The frequency spectrum was investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz and up to 40 GHz. The emission levels of the EUT more than 20 dB lower than the specified limit were not recorded in the tables. For the test results refer to tables and plots in this section. Test results in 30 – 1000 MHz frequency range are recorded in section 5.2.

Internal slant antenna5 MHz emission bandwidth

Carrier frequency 5727.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5360	60.4	74*	-	13.6	Detector peak
2985	47.9	-	54	4.1	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
2974	65.0	74	-	9.0	Detector peak
2974	48.2	-	54	5.8	Detector Average.

Carrier frequency 5847.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
2985	64.2	74	-	9.8	Detector peak
2974	48.3	-	54	5.7	Detector Average.

*Limit 15.205(c) 3m test distance.

Test report N: 8912324759

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

Carrier frequency 5730 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5415	63.9	74*	-	10.1	Detector peak
2985	48.3	-	54	5.7	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5270	62.7	74	-	11.3	Detector peak
5404	47.1	-	54	6.9	Detector Average.

Carrier frequency 5845 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5360	63.0	74*	-	11.0	Detector peak
5438	47.5	-	54*	6.5	Detector Average.

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

External Omni antenna

5 MHz emission bandwidth

Carrier frequency 5727.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5427	64.0	74*	-	10.0	Detector peak
5371	47.4	-	54*	6.6	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5337	63.6	74	-	10.4	Detector peak
5393	47.3	-	54*	6.7	Detector Average.

Carrier frequency 5847.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5371	63.9	74*	-	10.1	Detector peak
5371	47.3	-	54*	6.7	Detector Average.

**Test report N: 8912324759****Page 25 of 67****Title: BreezeMax Extreme 5.8 Base station****Model: EXTR-BS-2SIS-5.8-Ext****FCC ID: LKT-EXTR-58**10 MHz emission bandwidth

Carrier frequency 5730 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5349	63.0	74	-	11.0	Detector peak
5404	47.3	-	54*	6.7	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5404	64.9	74*	-	9.1	Detector peak
5404	47.6	-	54*	6.4	Detector Average.

Carrier frequency 5845 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5449	63.9	74*	-	10.1	Detector peak
5393	47.4	-	54*	6.6	Detector Average.

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

External sector antenna.

5 MHz emission bandwidth

Carrier frequency 5727.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5438	63.8	74*	-	10.2	Detector peak
5427	47.4	-	54*	6.6	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5371	58.1	74*	-	15.9	Detector peak
5393	47.5	-	54*	6.5	Detector Average.

Carrier frequency 5847.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5427	63.1	74*	-	10.9	Detector peak
5415	47.4	-	54*	6.6	Detector Average.

Test report N: 8912324759

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

Carrier frequency 5730 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5371	63.3	74*	-	10.7	Detector peak
5393	47.3	-	54*	6.7	Detector Average.

Carrier frequency 5787.5 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5360	63.9	74*	-	10.1	Detector peak
5404	47.4	-	54*	6.6	Detector Average.

Carrier frequency 5845 MHz

Frequency, MHz	Radiated emissions, dB (μV/m)	Peak limit dB (μV/m)	Avg limit, dB (μV/m)	Margin, dB	Note
5349	63.5	74	-	10.5	Detector peak
5404	47.4	-	54*	6.6	Detector Average.

**Test report N: 8912324759****Page 28 of 67****Title: BreezeMax Extreme 5.8 Base station****Model: EXTR-BS-2SIS-5.8-Ext****FCC ID: LKT-EXTR-58****TEST PROCEDURE**

The test was conducted with three antenna configurations: internal slant, external Omni and external sector. In order to find a worse case result preliminary testing for each configuration were performed in single chain (SISO) and in spatial multiplexing (SM-MIMO) modes. The worse case result was found for internal slant antenna in SISO mode, for external Omni antenna in SM-MIMO mode and for external sector antenna in SISO mode.

Transmitter output power was changed according to standard requirements and antenna configuration:

Antenna configuration	Output power dBm
Internal slant antenna 15.5 dBi	20.5 dBm
Antenna Omni 9.5 dBi	*24.2 dBm
Antenna sector 17 dBi	*19.7 dBm

* Calculation includes external antenna cable loss 0.7 dB.

Calculation of transmitter output power was performed as follow:

For internal antenna $P_{out} = 30 \text{ dBm} - (\text{Ant. gain} - 6)$.

For external antennas $P_{out} = 30 \text{ dBm} - (\text{Ant. gain} - 6) + \text{External antenna cable loss}$.

In SM-MIMO mode transmitter output power was reduced by additional $10 \log 2 = 3 \text{ dB}$ antenna gain.

The measurements were performed at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5725 – 5850 MHz frequency band under maximum data transfer bit rate. To find maximum radiation the turntable was rotated 360°, measuring antenna height was changed from 1 to 4 m, and the antenna polarization was changed from vertical to horizontal.

LIMIT

In any 100 kHz bandwidth outside the frequency band the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below in band highest level desired power.

Radiated emissions, which fall in the restricted bands, must comply with the radiated emissions limit specified in section 15.205(c).

TEST SUMMARY

All emissions outside of the 5725 – 5850 MHz band were found below 15.247(d) limit.

No emissions were found above SA noise floor in 6.5 – 40 GHz frequency band that is at least 40 dB under the limit.

TEST EQUIPMENT USED:

1	5	6	7	9		
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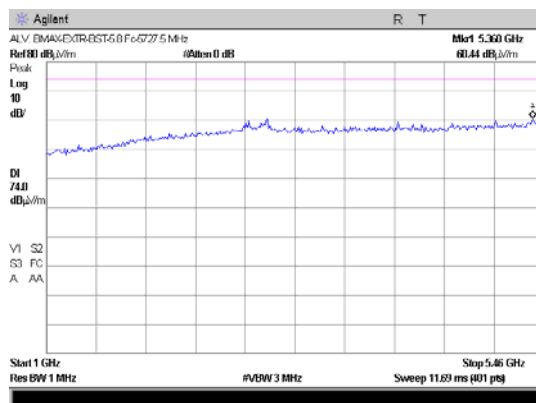
Test report N: 8912324759

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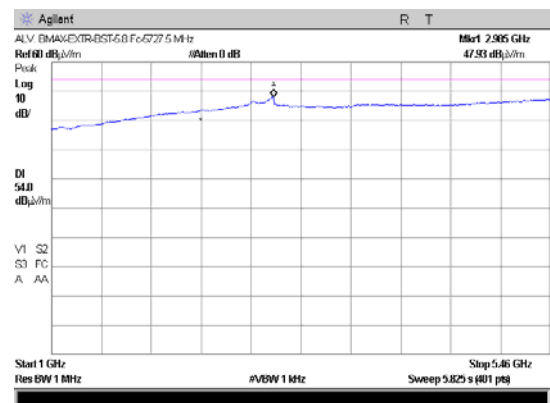
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

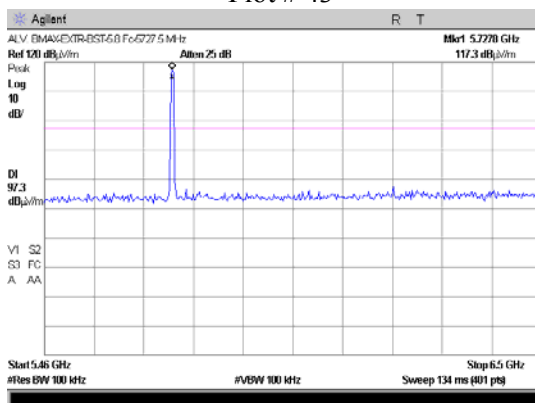
FCC ID: LKT-EXTR-58

Internal antenna option.5 MHz emission bandwidthCarrier frequency – 5727.5 MHz

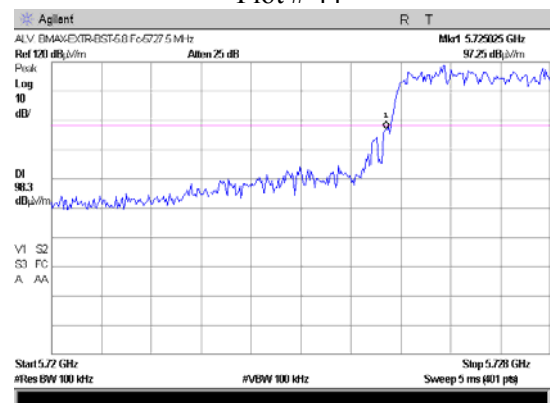
Plot # 43



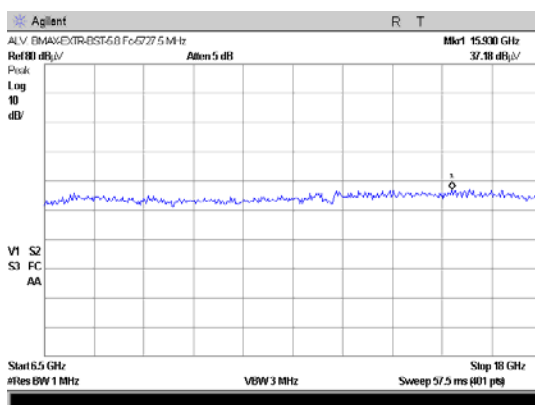
Plot # 44



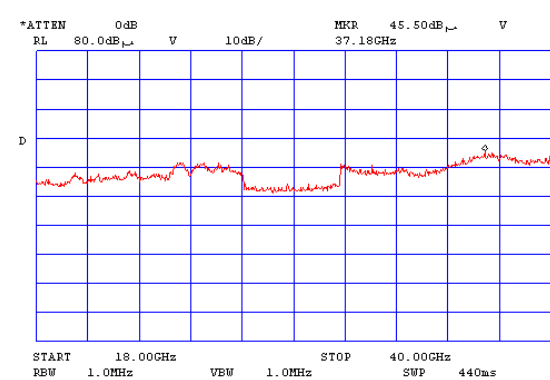
Plot # 45



Plot # 46



Plot # 47



Plot # 48



Test report N: 8912324759

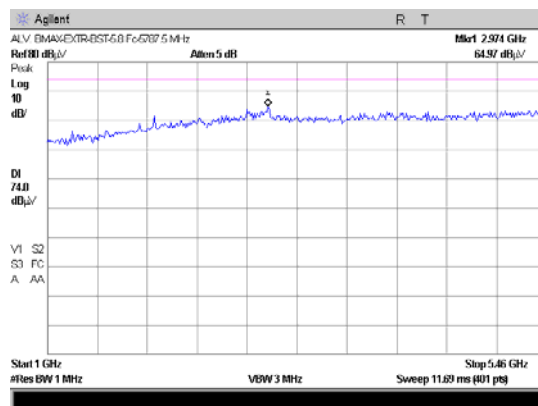
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Title: BreezeMax Extreme 5.8 Base station

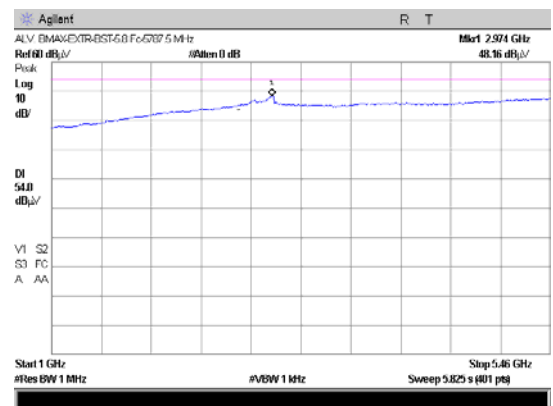
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

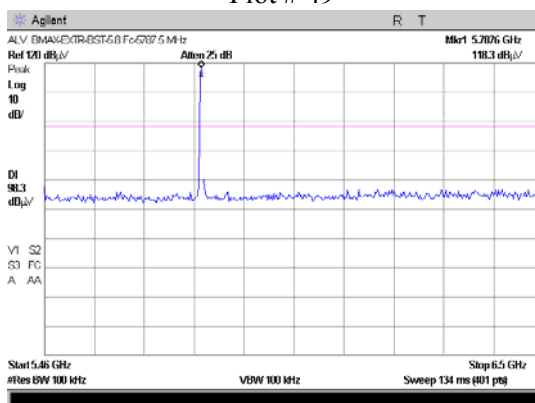
Carrier frequency – 5787.5 MHz



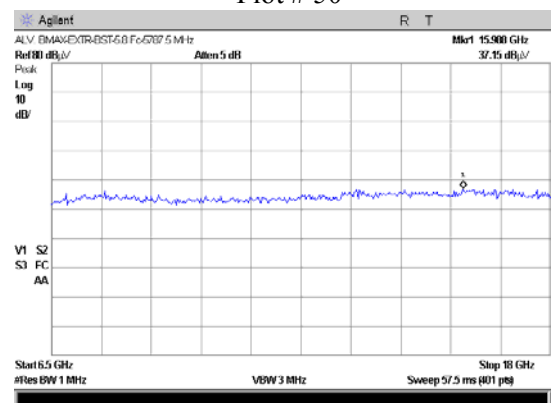
Plot # 49



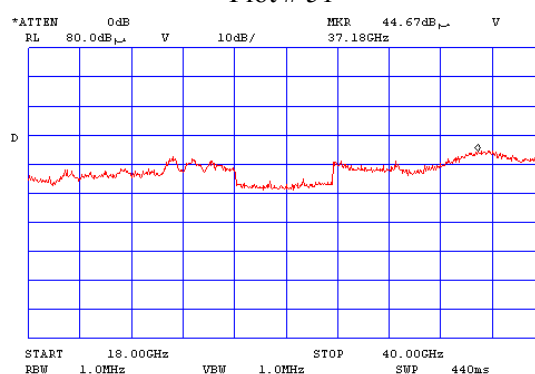
Plot # 50



Plot # 51



Plot # 52



Plot # 53



Test report N: 8912324759

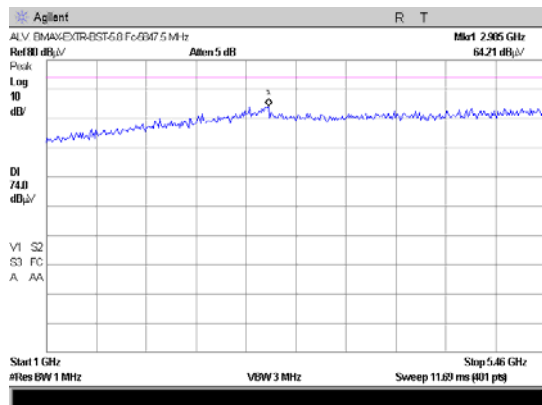
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Title: BreezeMax Extreme 5.8 Base station

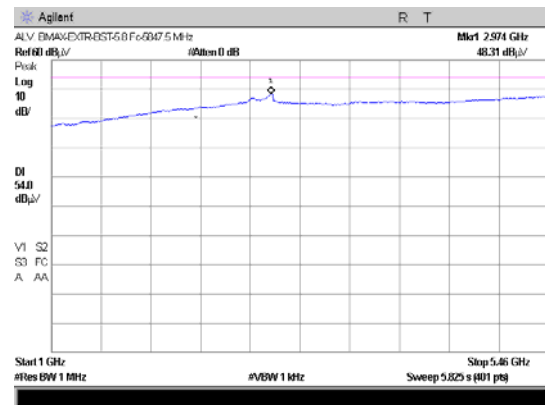
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

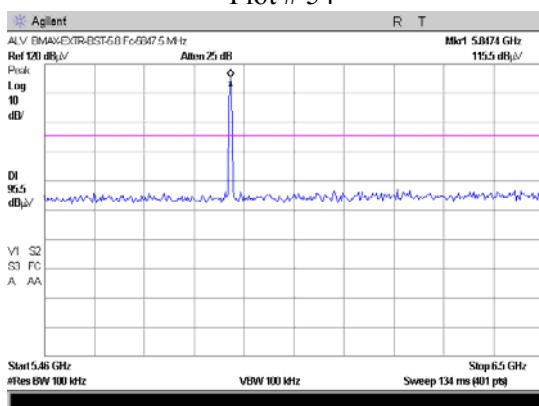
Carrier frequency – 5847.5 MHz



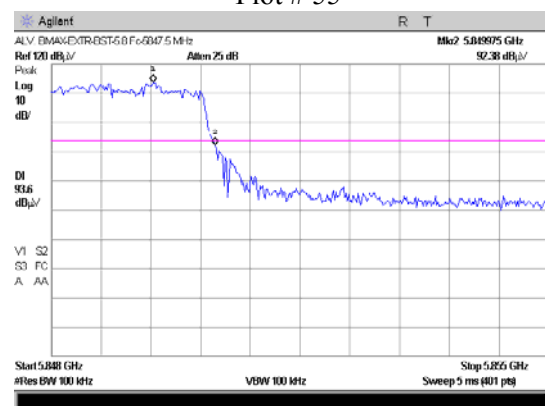
Plot # 54



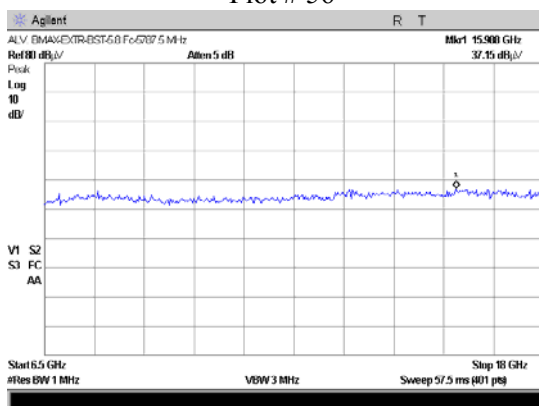
Plot # 55



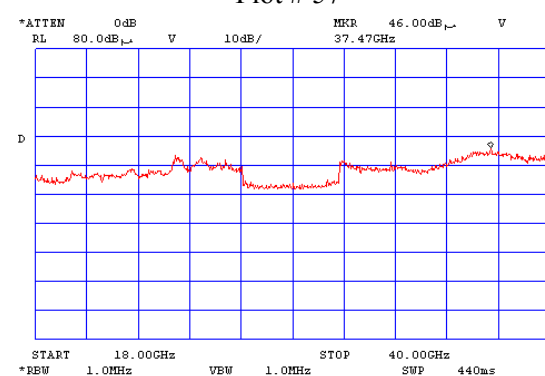
Plot # 56



Plot # 57



Plot # 58



Plot # 59



Test report N: 8912324759

Title: BreezeMax Extreme 5.8 Base station

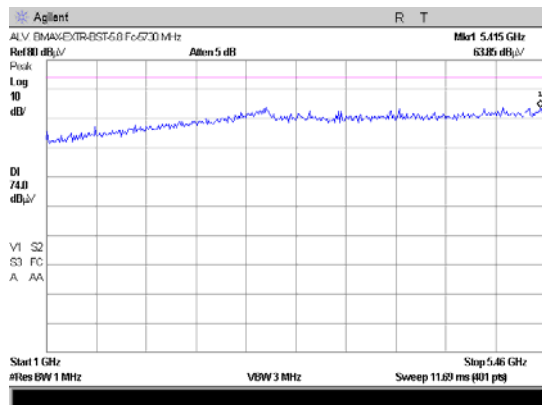
Model: EXTR-BS-2SIS-5.8-Ext

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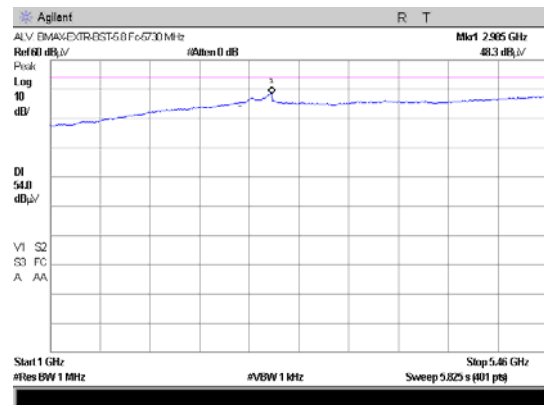
FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

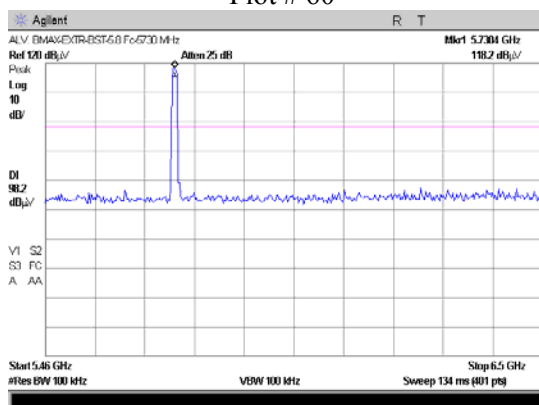
Carrier frequency - 5730 MHz



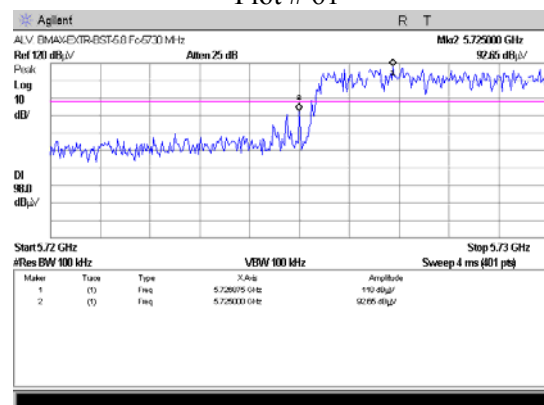
Plot # 60



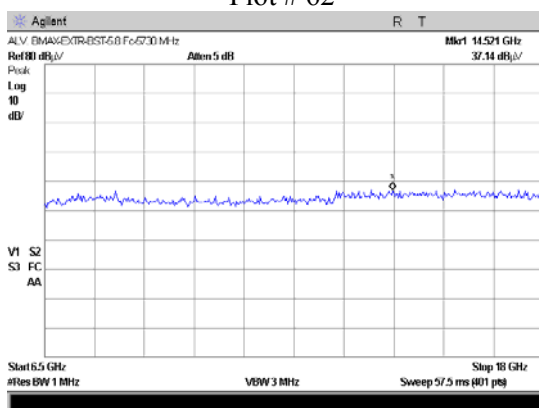
Plot # 61



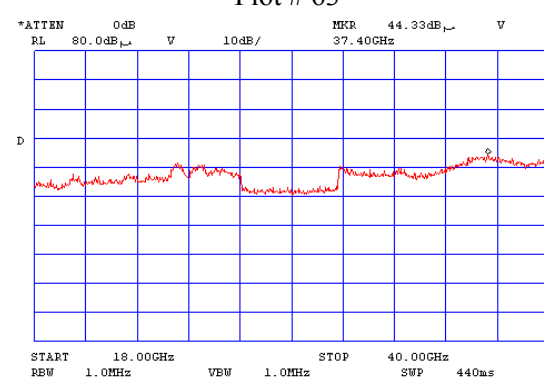
Plot # 62



Plot # 63



Plot # 64



Plot # 65



Test report N: 8912324759

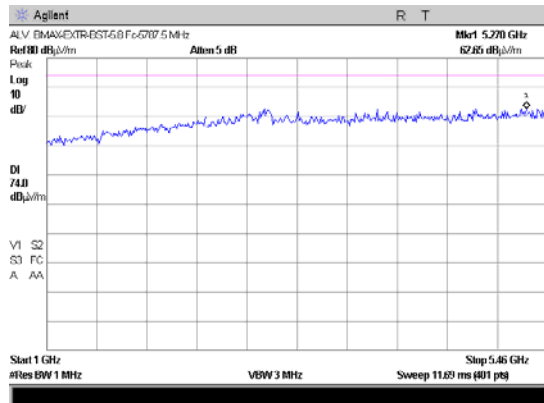
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Title: BreezeMax Extreme 5.8 Base station

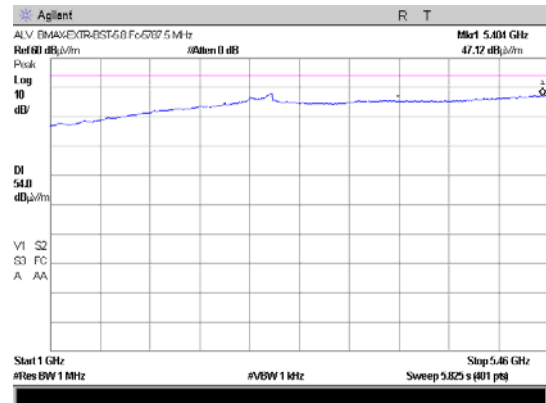
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

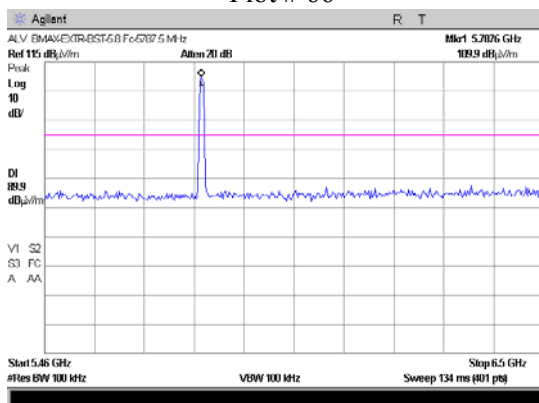
Carrier frequency – 5787.5 MHz



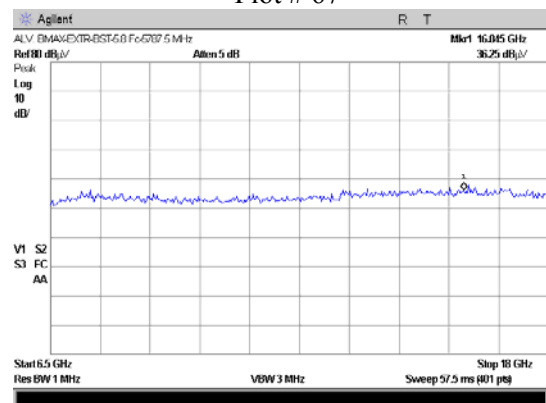
Plot # 66



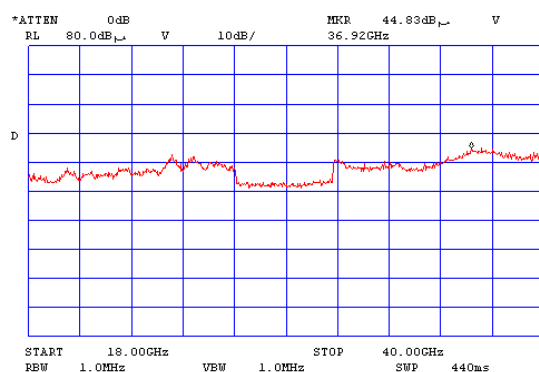
Plot # 67



Plot # 68



Plot # 69



Plot # 70



Test report N: 8912324759

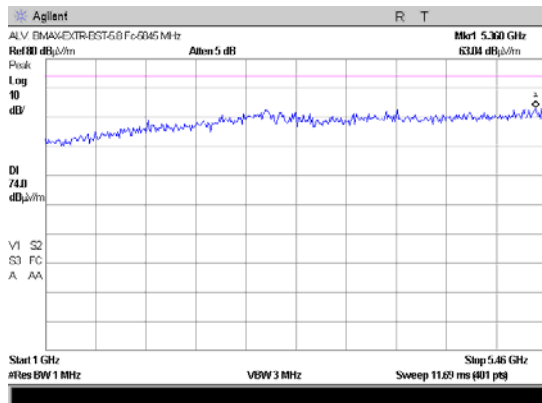
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Title: BreezeMax Extreme 5.8 Base station

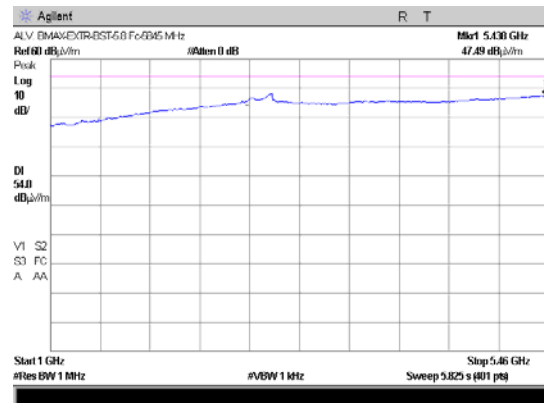
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

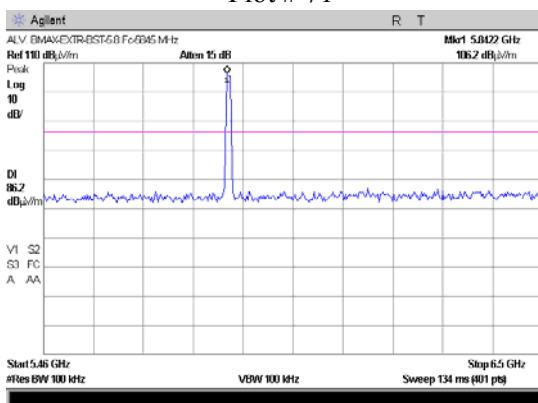
Carrier frequency 5845 MHz



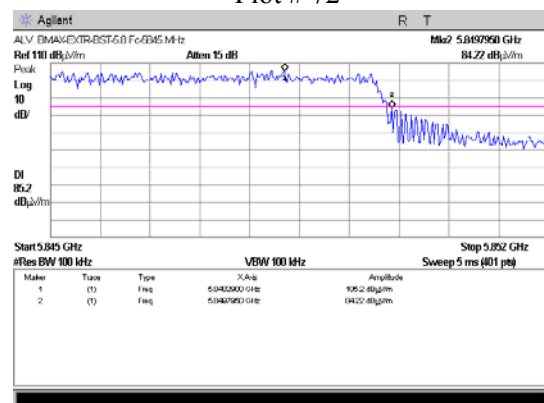
Plot # 71



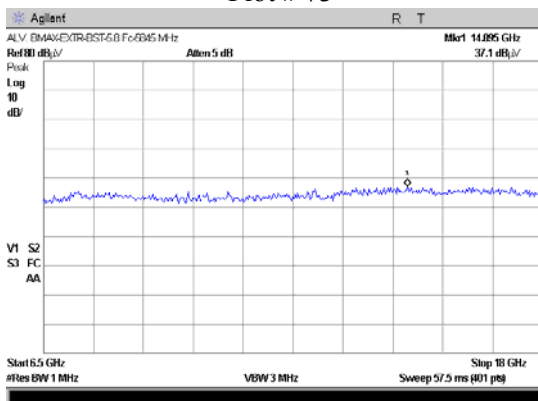
Plot # 72



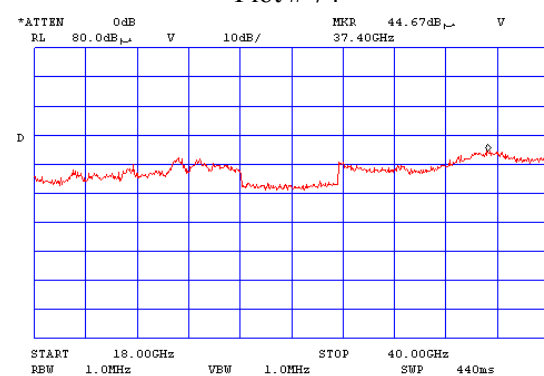
Plot # 73



Plot # 74



Plot # 75



Plot # 76



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Title: BreezeMax Extreme 5.8 Base station

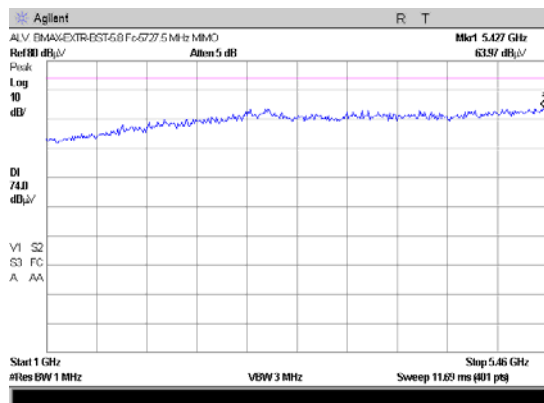
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

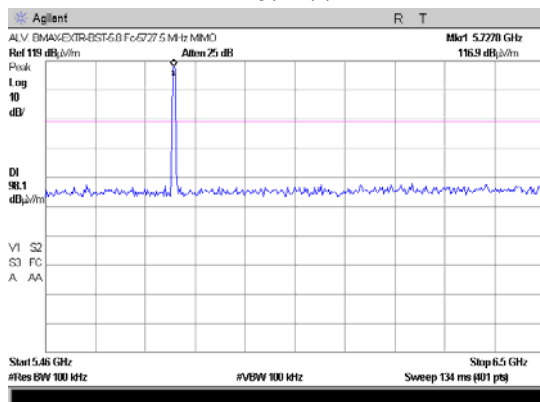
External Omni antenna test

5 MHz emission bandwidth

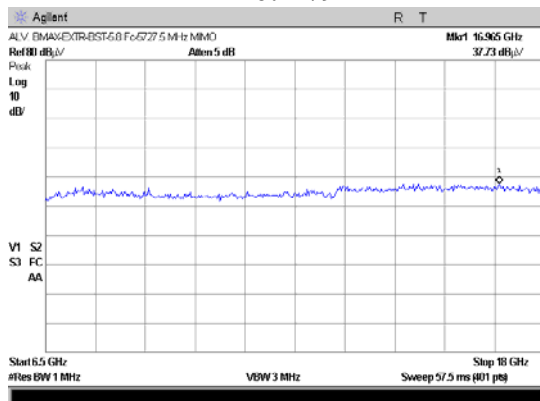
Carrier frequency – 5727.5 MHz



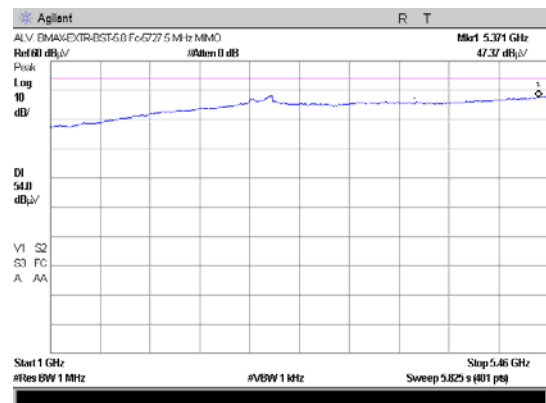
Plot # 77



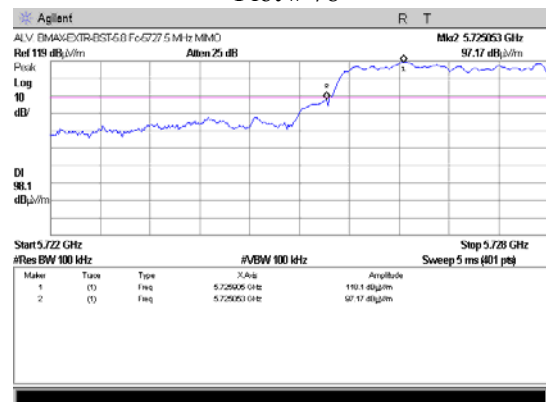
Plot # 79



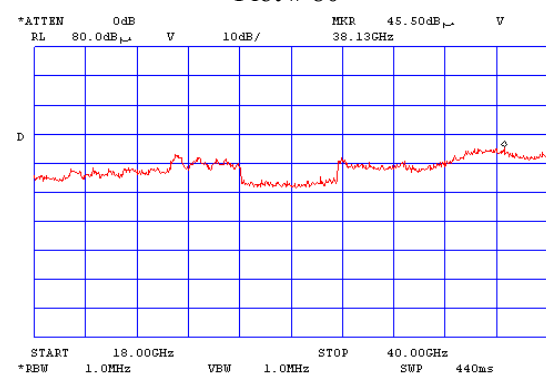
Plot # 81



Plot # 78



Plot # 80



Plot # 82



Test report N: 8912324759

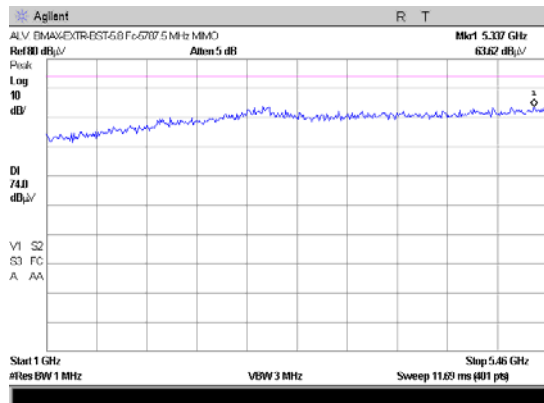
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Title: BreezeMax Extreme 5.8 Base station

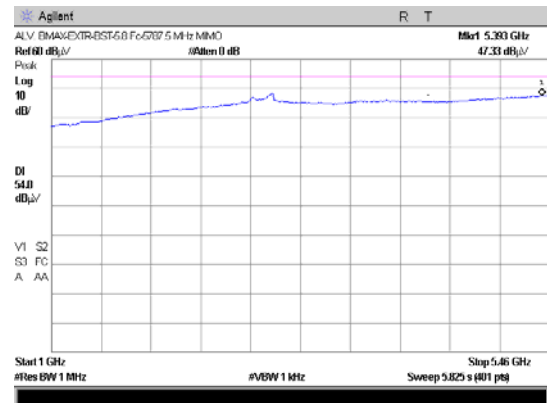
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

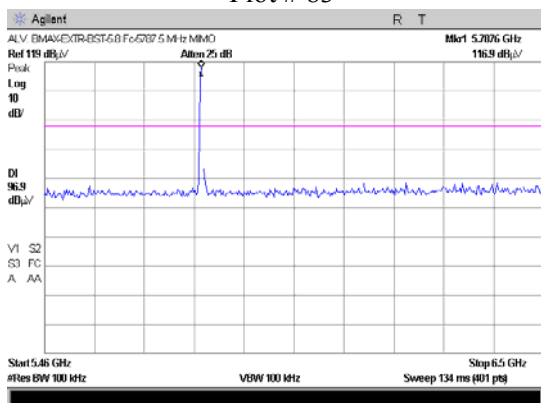
Carrier frequency – 5787.5 MHz



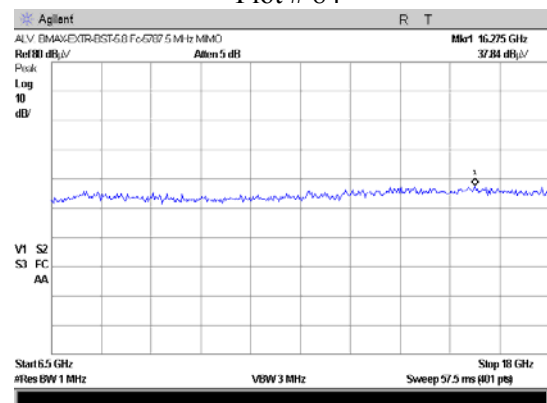
Plot # 83



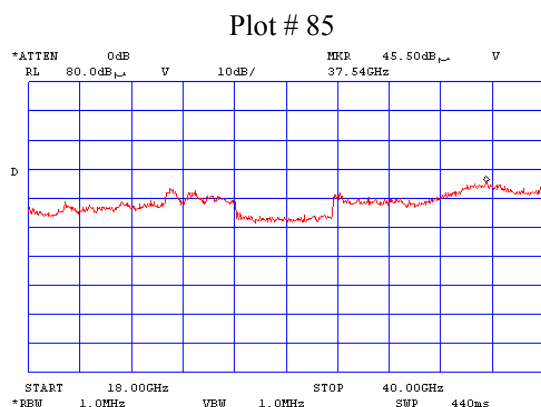
Plot # 84



Plot # 85



Plot # 86



Plot # 87



Test report N: 8912324759

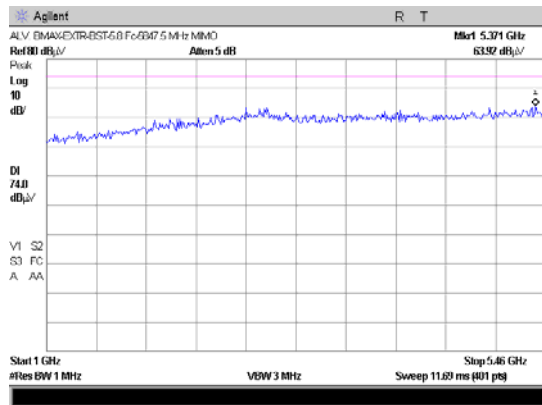
Page 37 of 67

Title: BreezeMax Extreme 5.8 Base station

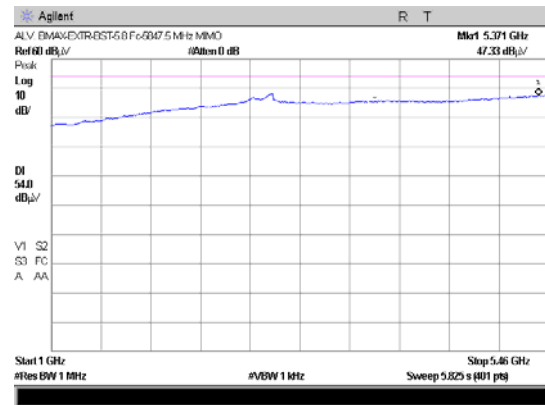
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

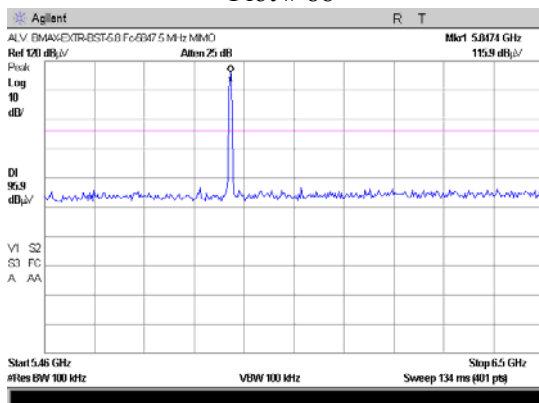
Carrier frequency – 5847.5 MHz



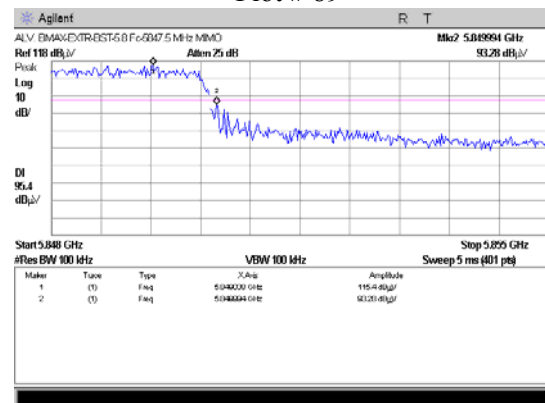
Plot # 88



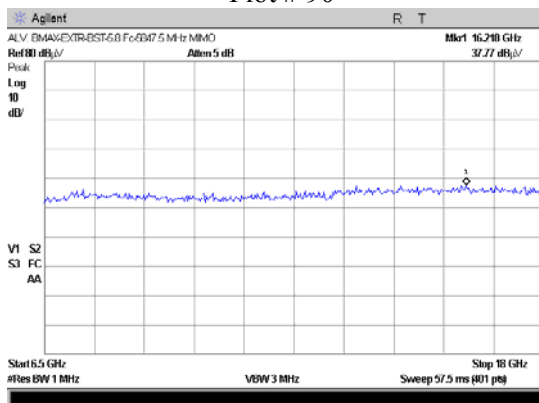
Plot # 89



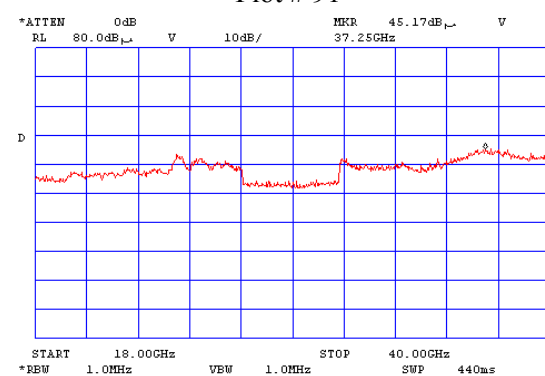
Plot # 90



Plot # 91



Plot # 92



Plot # 93



Test report N: 8912324759

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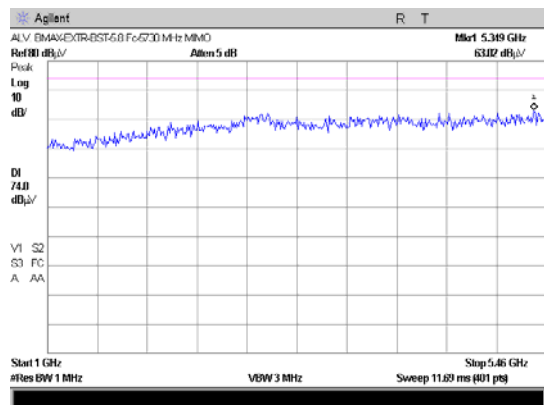
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

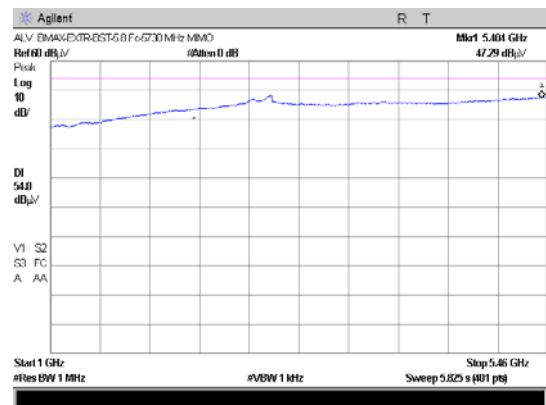
FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

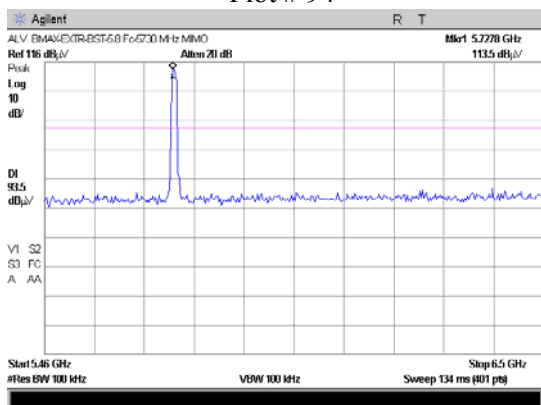
Carrier frequency – 5730 MHz



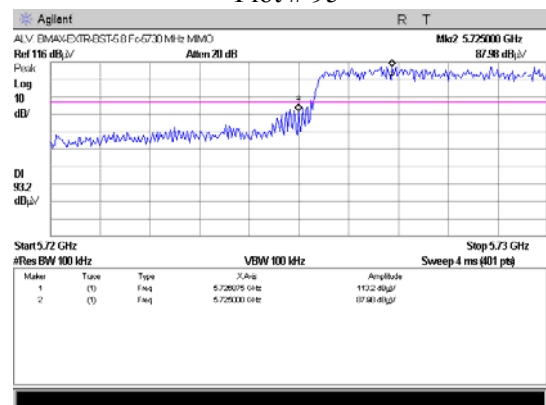
Plot # 94



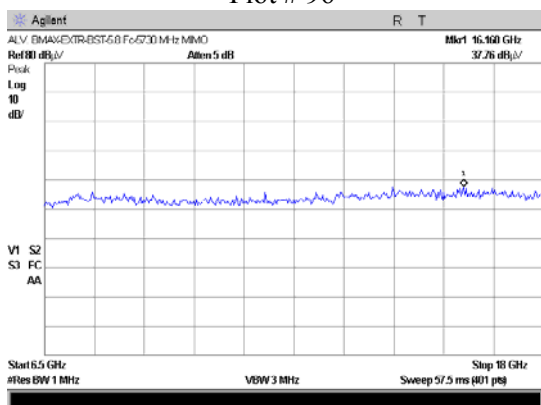
Plot # 95



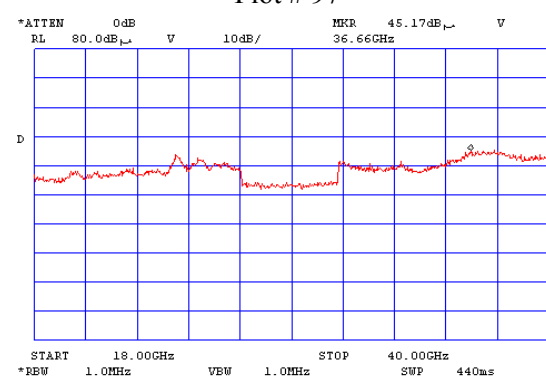
Plot # 96



Plot # 97



Plot # 98



Plot # 99



Test report N: 8912324759

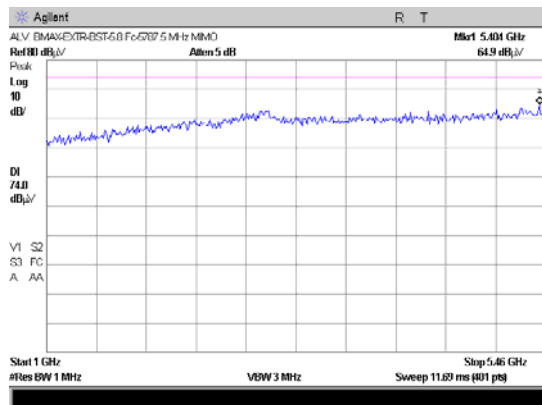
Page 39 of 67

Title: BreezeMax Extreme 5.8 Base station

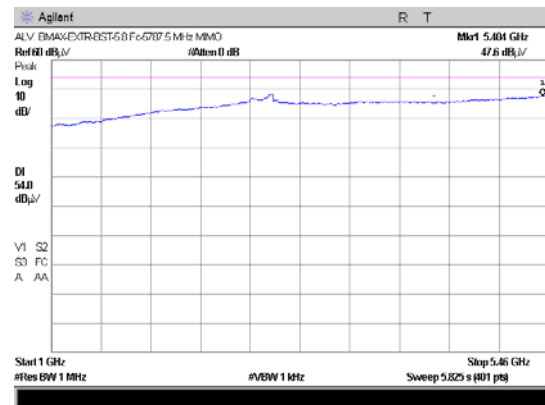
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

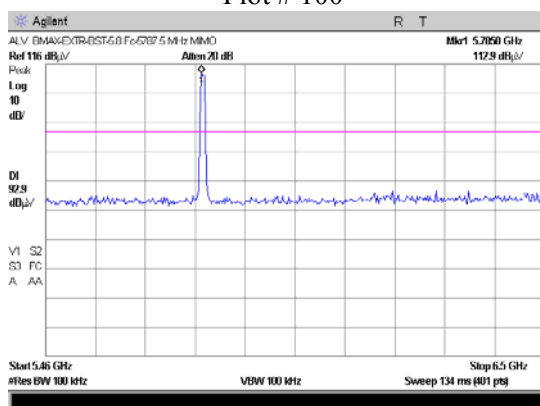
Carrier frequency – 5787.5 MHz



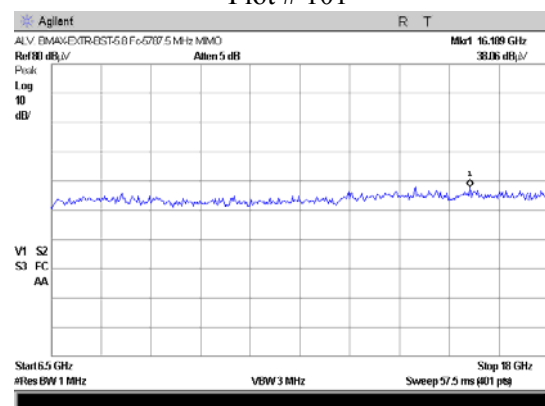
Plot # 100



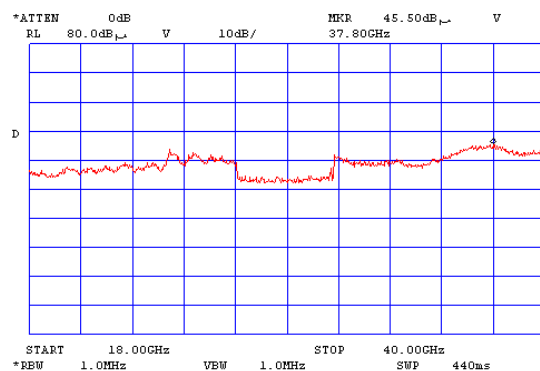
Plot # 101



Plot # 102



Plot # 103



Plot # 104



Test report N: 8912324759

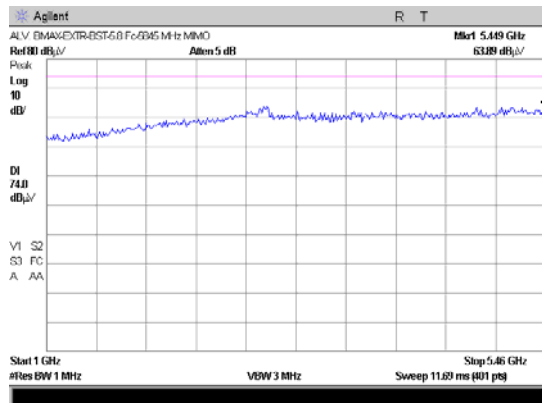
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Title: BreezeMax Extreme 5.8 Base station

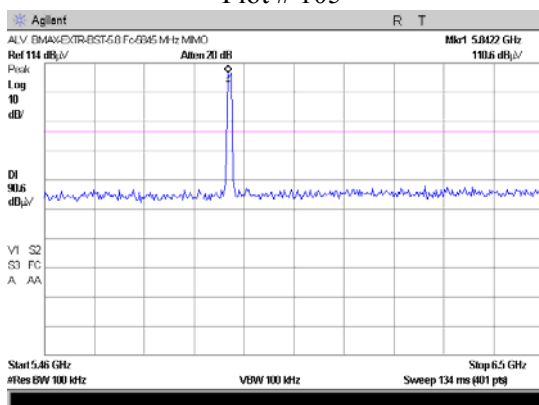
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

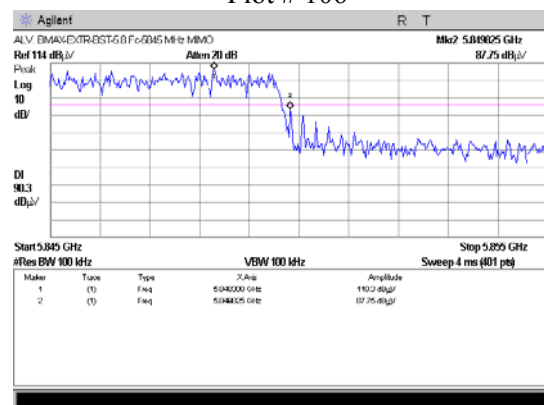
Carrier frequency – 5845 MHz



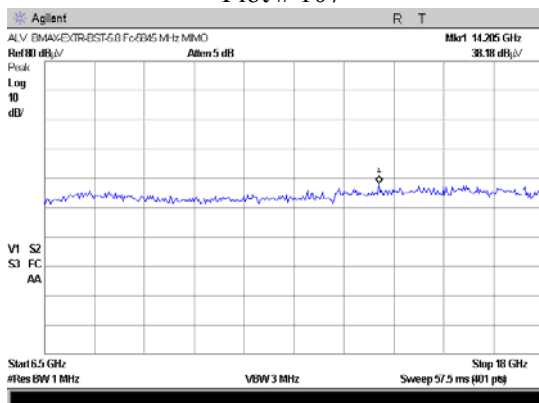
Plot # 105



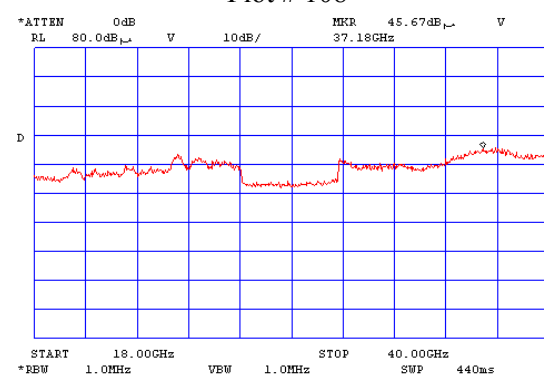
Plot # 106



Plot # 107



Plot # 108



Plot # 109

Plot # 110



Test report N: 8912324759

Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

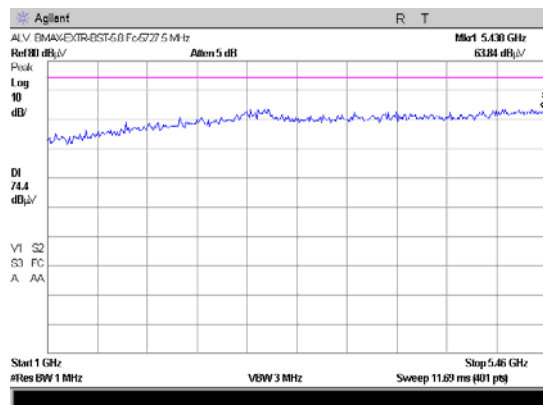
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FCC ID: LKT-EXTR-58

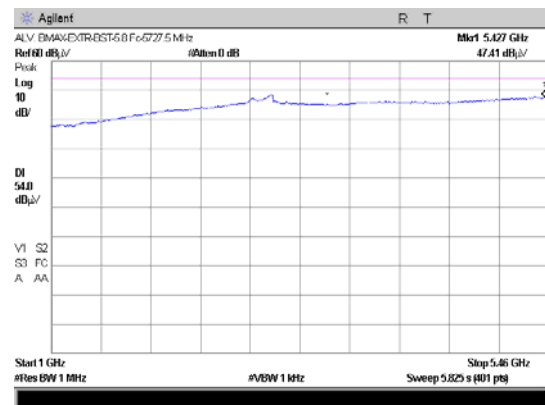
External sector antenna test.

5 MHz emission bandwidth

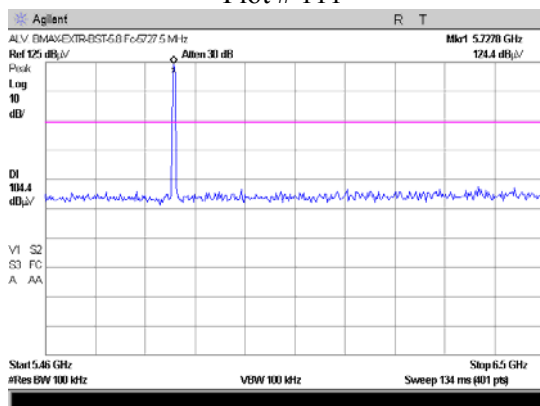
Carrier frequency – 5727.5 MHz



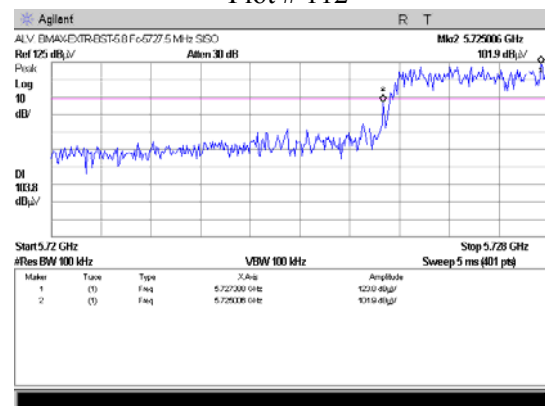
Plot # 111



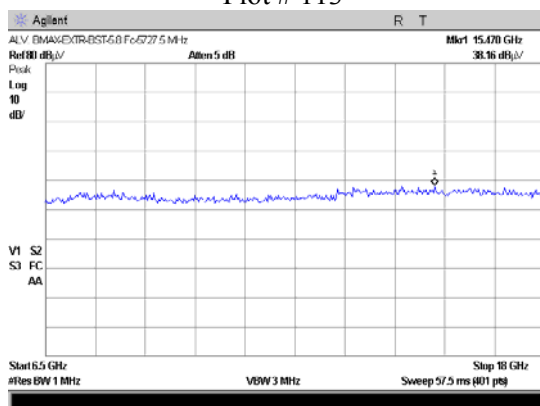
Plot # 112



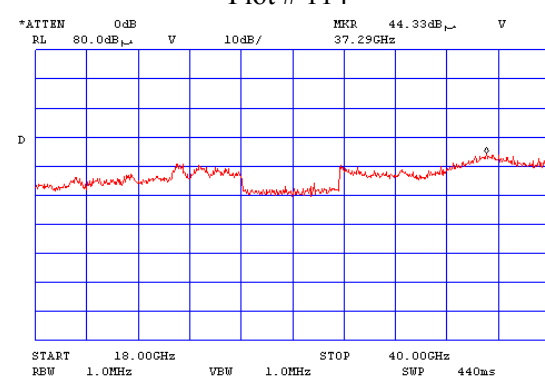
Plot # 113



Plot # 114



Plot # 115



Plot # 116



Test report N: 8912324759

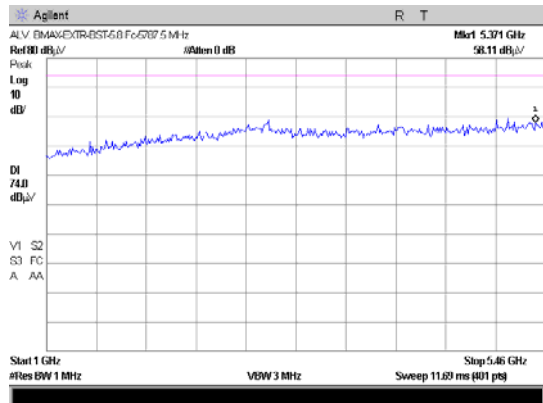
Page 42 of 67

Title: BreezeMax Extreme 5.8 Base station

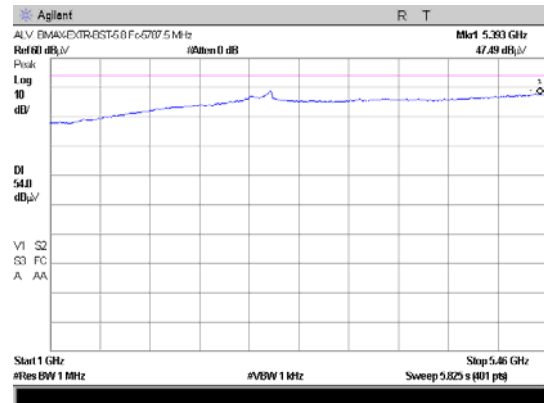
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

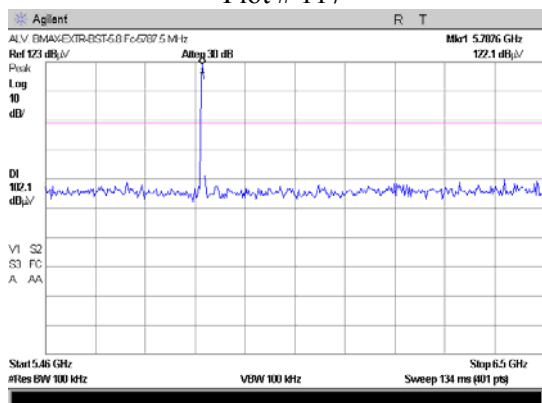
Carrier frequency – 5787.5 MHz



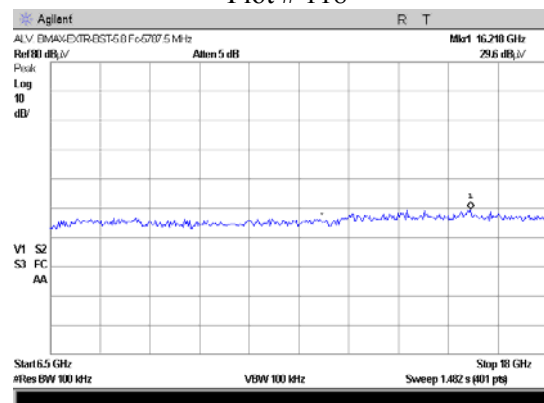
Plot # 117



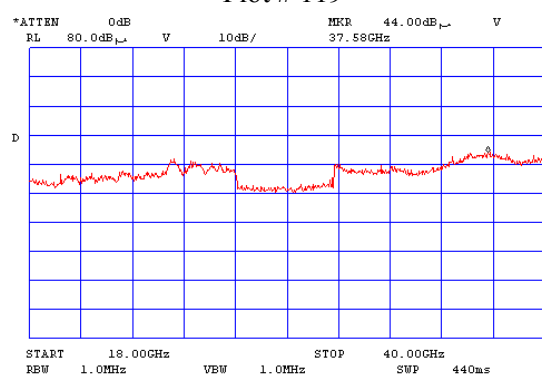
Plot # 118



Plot # 119



Plot # 120



Plot # 121



Test report N: 8912324759

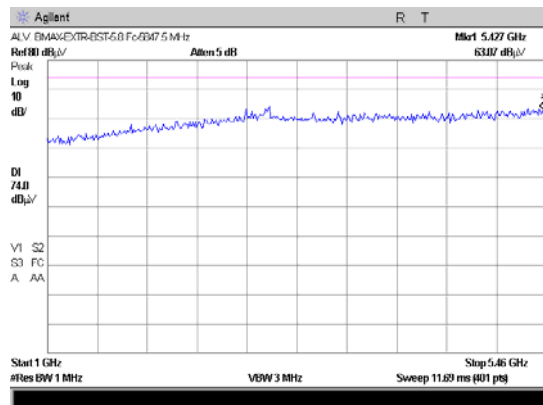
Page 43 of 67

Title: BreezeMax Extreme 5.8 Base station

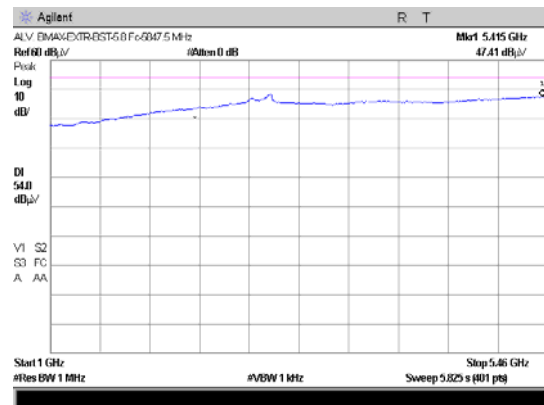
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

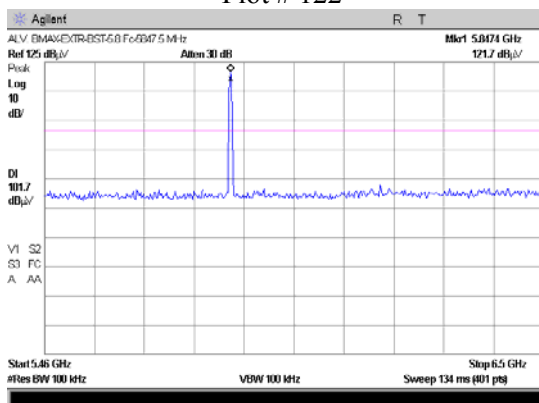
Carrier frequency – 5847.5 MHz



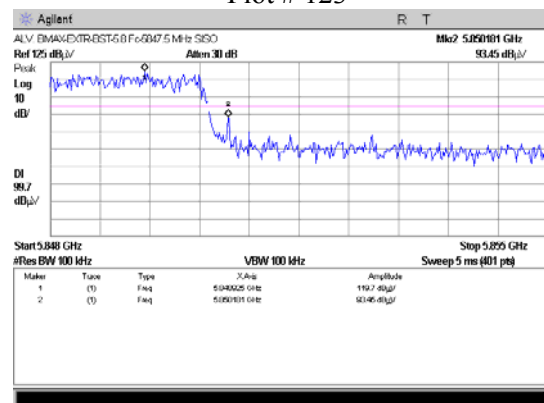
Plot # 122



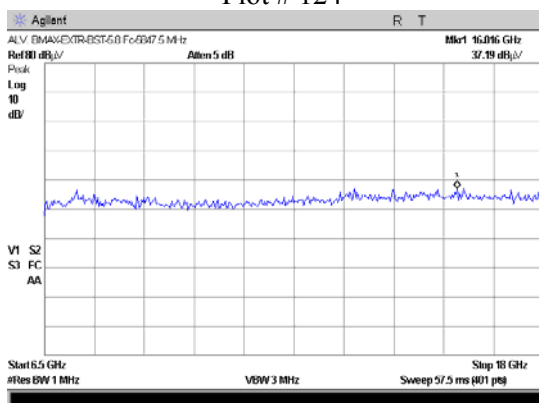
Plot # 123



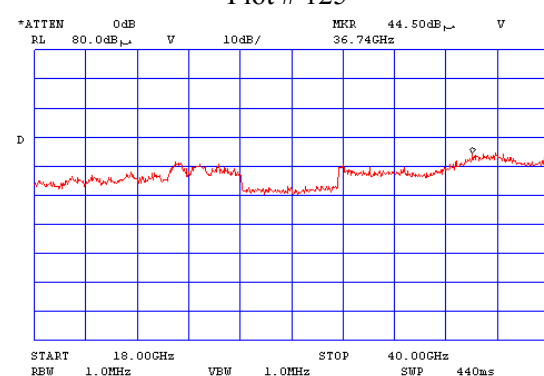
Plot # 124



Plot # 125



Plot # 126



Plot # 127



Test report N: 8912324759

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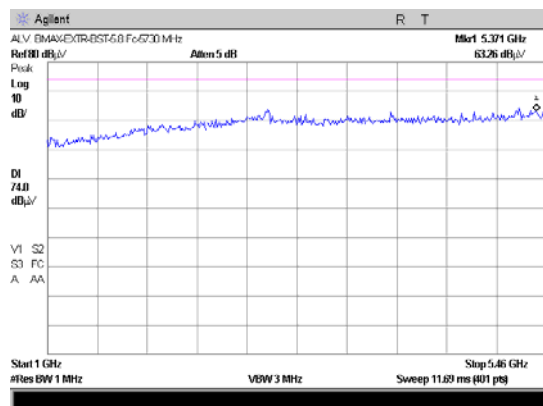
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

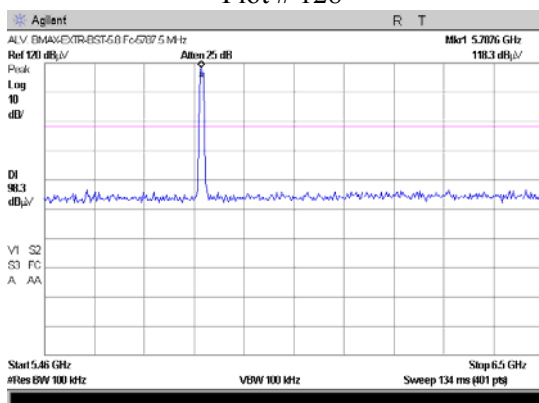
FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

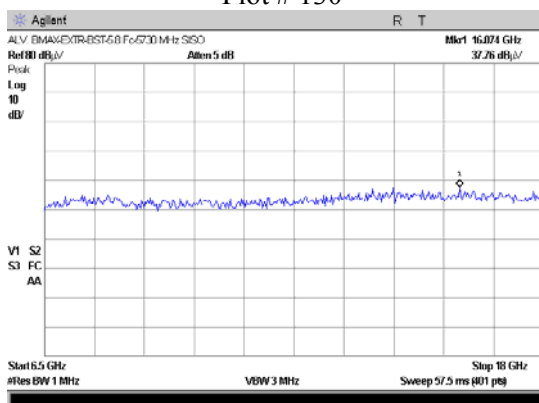
Carrier frequency - 5730 MHz



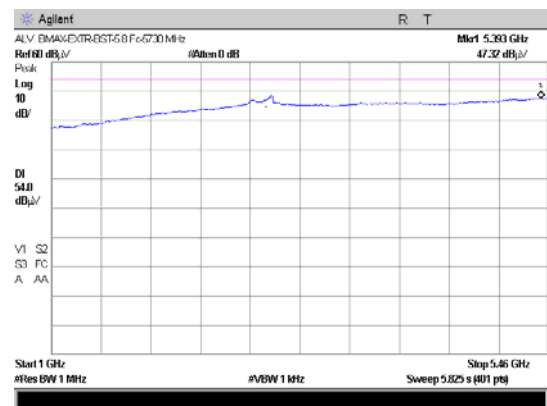
Plot # 128



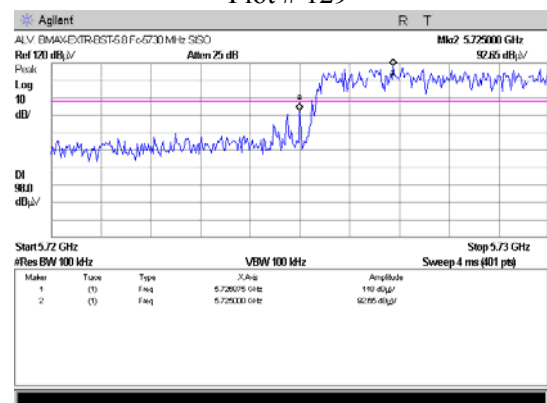
Plot # 130



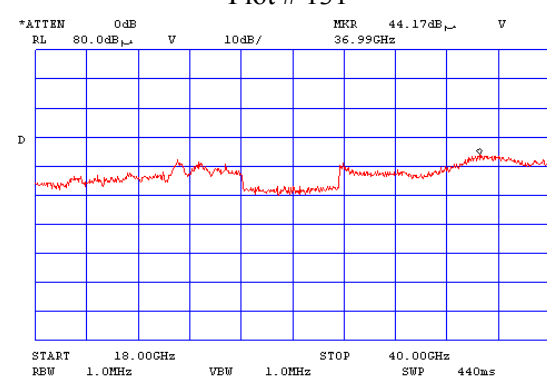
Plot # 132



Plot # 129



Plot # 131



Plot # 133



Test report N: 8912324759

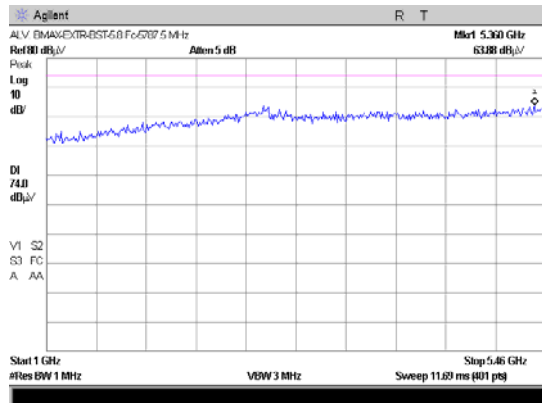
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Title: BreezeMax Extreme 5.8 Base station

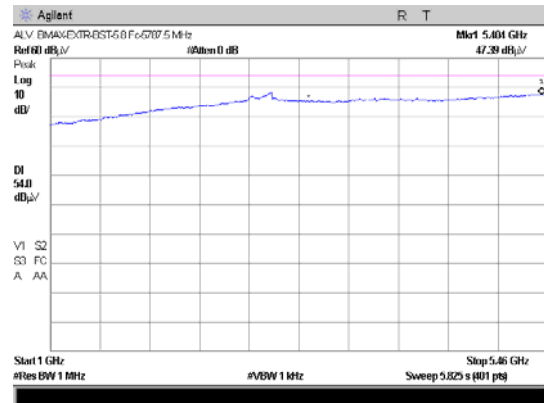
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

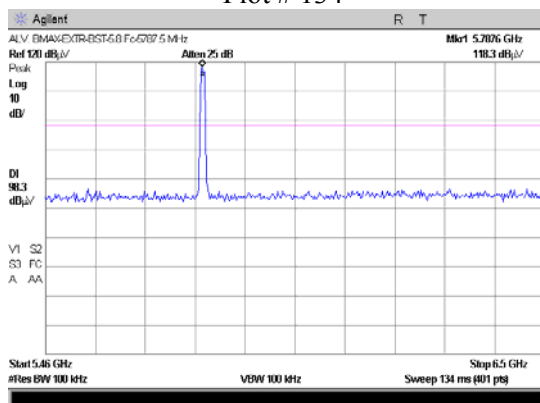
Carrier frequency – 5787.5 MHz



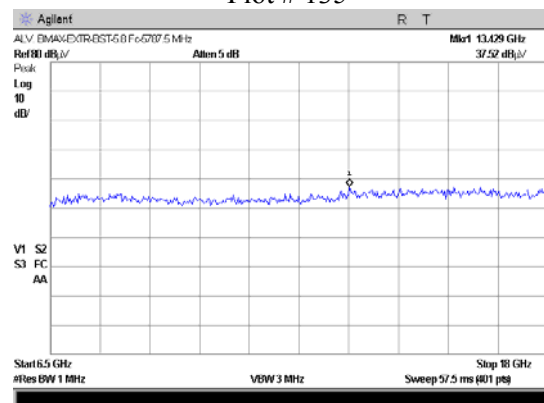
Plot # 134



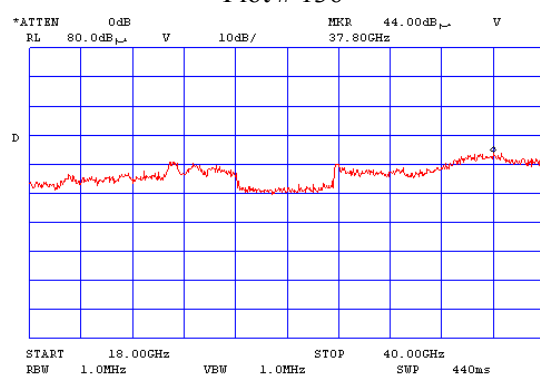
Plot # 135



Plot # 136



Plot # 137



Plot # 138



Test report N: 8912324759

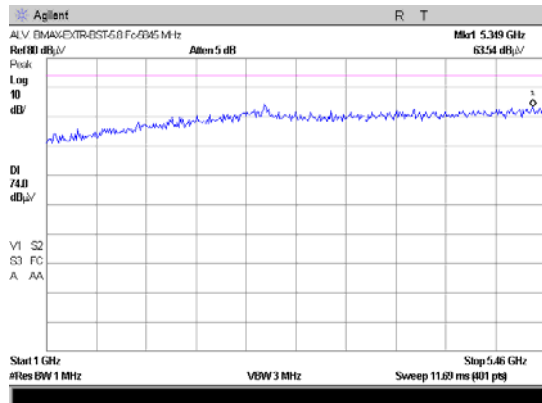
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Title: BreezeMax Extreme 5.8 Base station

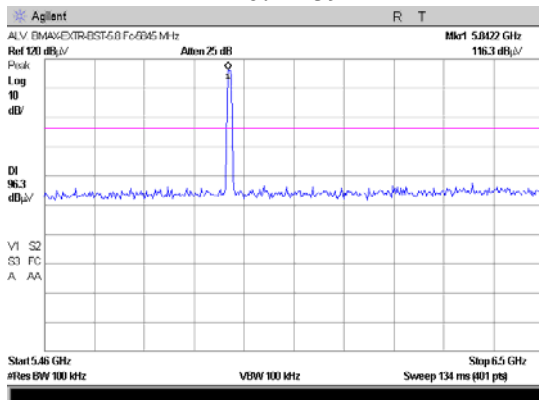
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

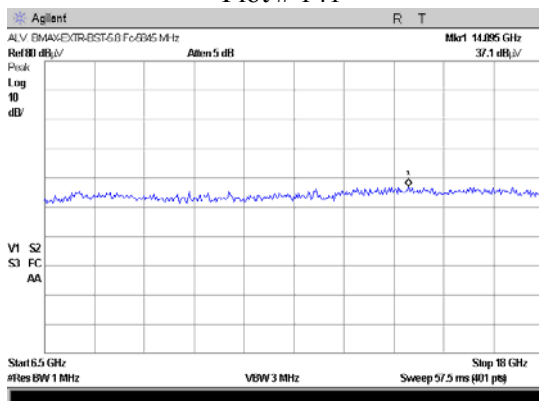
Carrier frequency – 5845 MHz



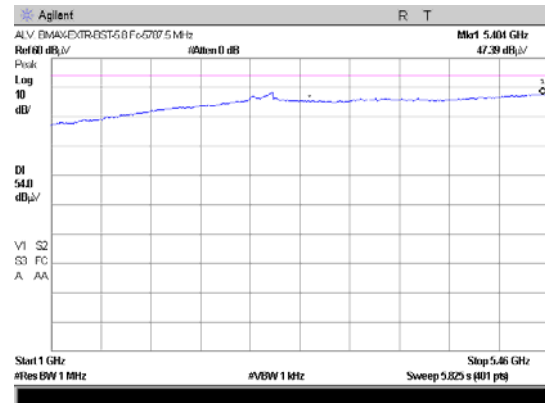
Plot # 139



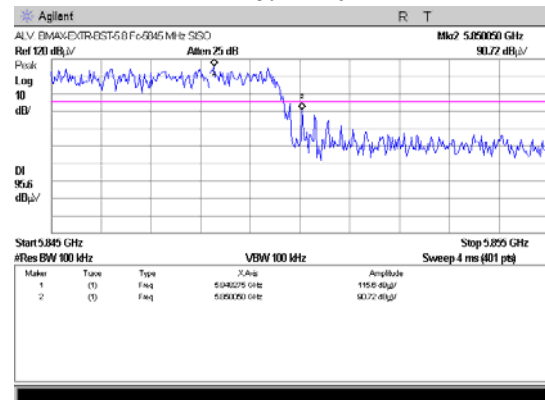
Plot # 141



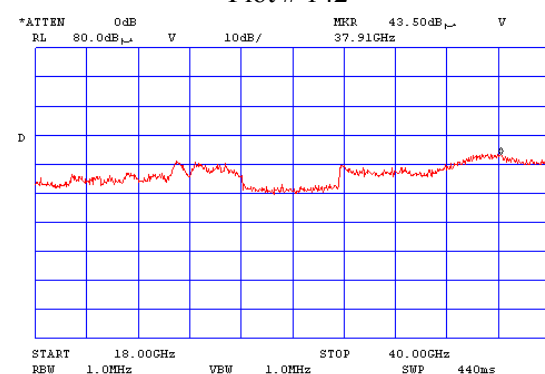
Plot # 143



Plot # 140



Plot # 142



Plot # 144



Test report N: 8912324759

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

7.1.5 Power spectral density of digital modulated systems according to § 15.247(e)

Method of measurement FCC March 23, 2005 procedure
Operating Frequency Range 5727.5 – 5847.5 MHz
Ambient Temperature 23⁰ C Relative Humidity 49% Air Pressure 1007 hPa

RF chain 15 MHz emission bandwidth

Carrier frequency MHz	Measured PSD dBm	Specified limit dBm	Reference to plots
5727.5	-2.30	8	##145, 146
5787.5	-1.58	8	##147, 148
5847.5	-3.29	8	##149, 150

10 MHz emission bandwidth

Carrier frequency MHz	Measured PSD dBm	Specified limit dBm	Reference to plots
5730.0	-4.20	8	##151, 152
5787.5	-4.96	8	##153, 154
5845.0	-3.87	8	##155, 156

RF chain 25 MHz emission bandwidth

Carrier frequency MHz	Measured PSD dBm	Specified limit dBm	Reference to plots
5727.5	-2.85	8	##157, 158
5787.5	-4.40	8	##159, 160
5847.5	-4.81	8	##161, 162

10 MHz emission bandwidth

Carrier frequency MHz	Measured PSD dBm	Specified limit dBm	Reference to plots
5730.0	-4.17	8	##163, 164
5787.5	-6.30	8	##165, 166
5845.0	-4.44	8	##167, 168



Test report N: 8912324759

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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

TEST PROCEDURE

Test was performed at worse case output power that was allowed for antenna 9.5 dBi gain. The measurements were performed in normal (transmitting) mode of operation for carrier (channel) frequency at bottom, middle and the top of the 5725 – 5850 MHz frequency range under maximum data transfer bit rate. The EUT RF output was connected to the Spectrum Analyzer through appropriate attenuator and accounted with cable loss in SA settings

LIMIT

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST EQUIPMENT USED:

2	3	4	5			
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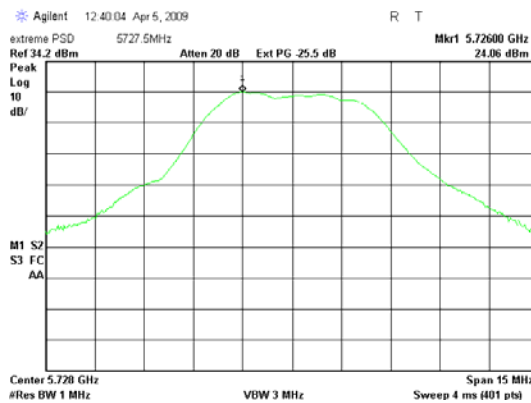
Test report N: 8912324759

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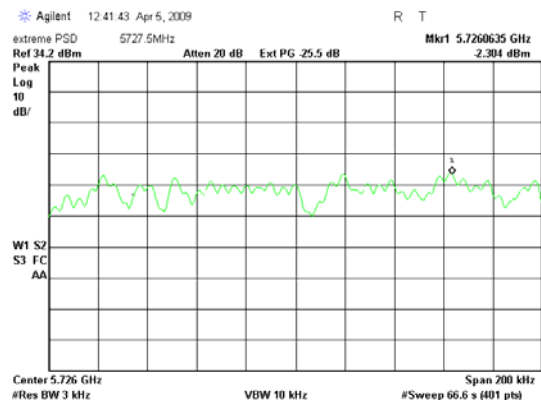
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

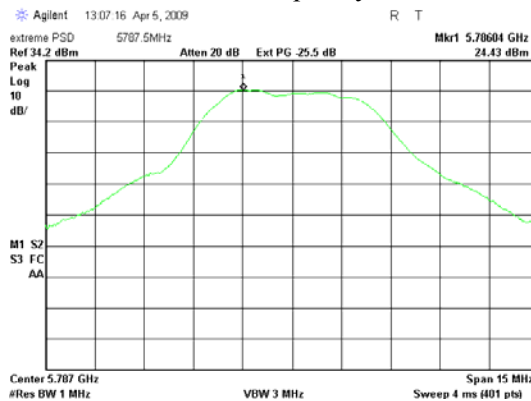
FCC ID: LKT-EXTR-58

RF chain 15 MHz emission bandwidth

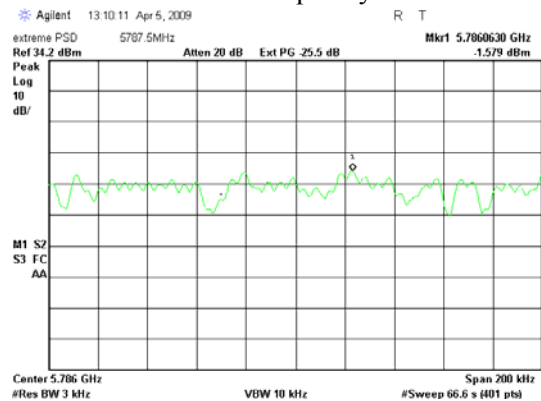
Plot # 145. Carrier frequency 5727.5 MHz.



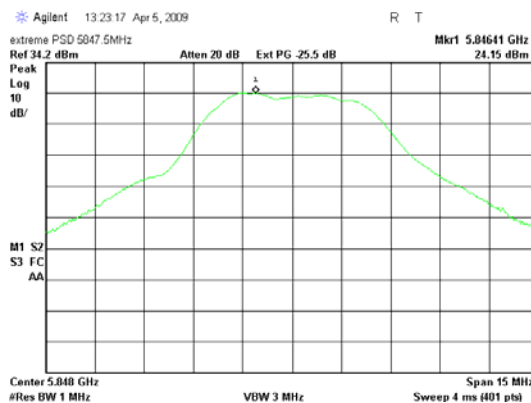
Plot # 146. Carrier frequency 5727.5 MHz.



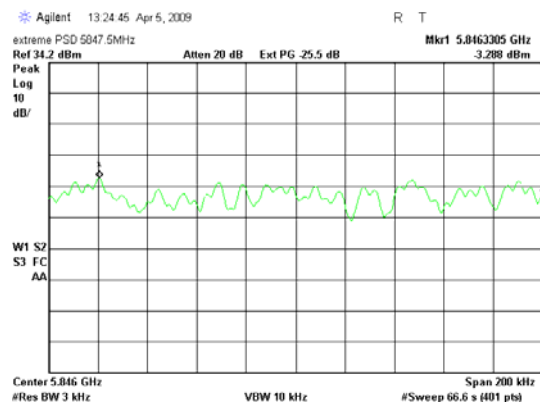
Plot # 147. Carrier frequency 5787.5 MHz.



Plot # 148. Carrier frequency 5787.5 MHz.



Plot # 149. Carrier frequency 5847.5 MHz



Plot # 150. Carrier frequency 5847.5 MHz

Insertion loss of external attenuator, directional coupler and cable = 25.5 dB



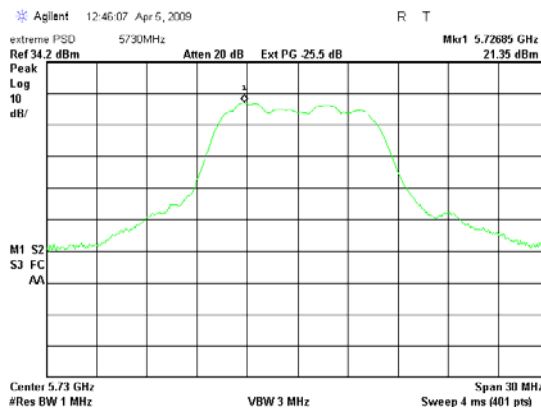
Test report N: 8912324759

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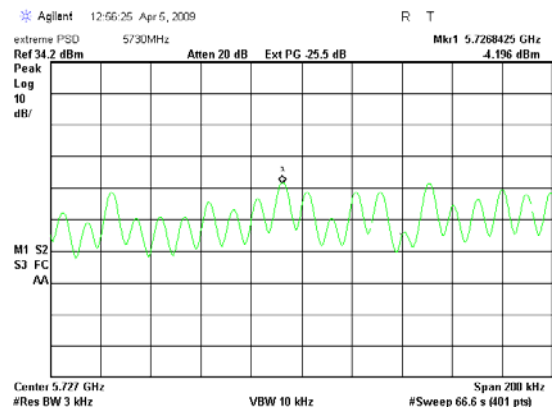
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

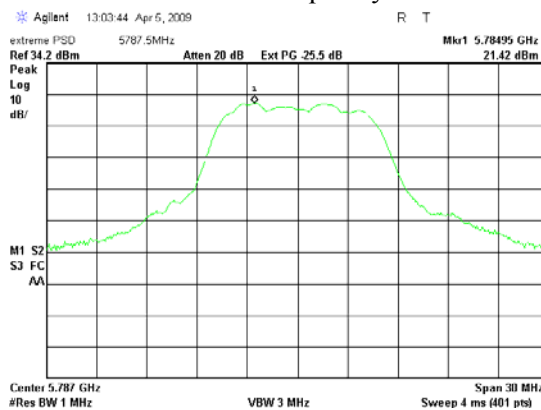
FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

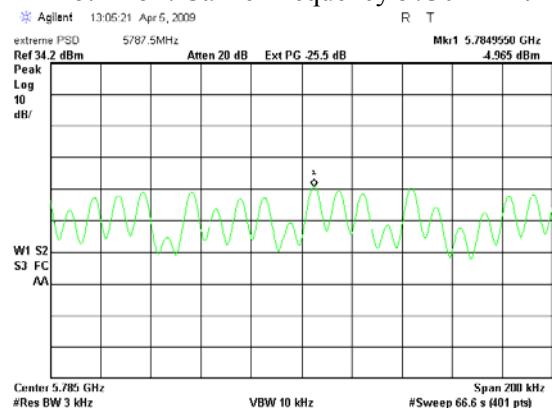
Plot # 151. Carrier frequency 5730 MHz.



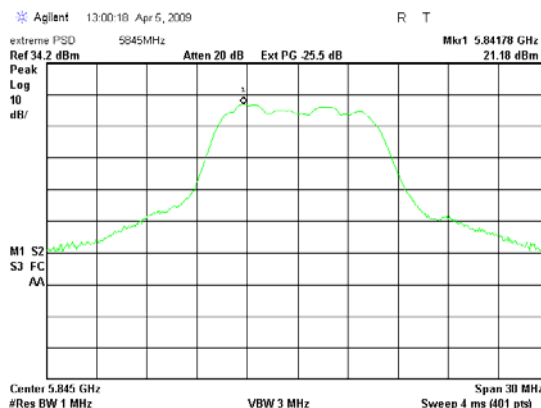
Plot # 152. Carrier frequency 5730 MHz.



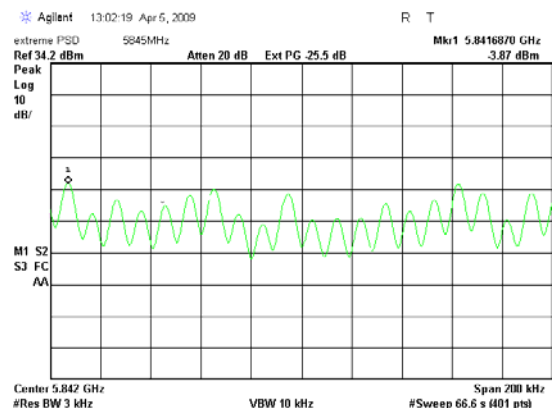
Plot # 153. Carrier frequency 5787.5 MHz.



Plot # 154. Carrier frequency 5787.5 MHz.



Plot # 155. Carrier frequency 5845 MHz



Plot # 156. Carrier frequency 5845 MHz



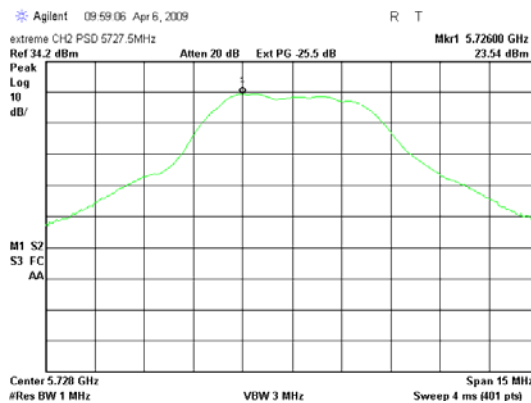
Test report N: 8912324759

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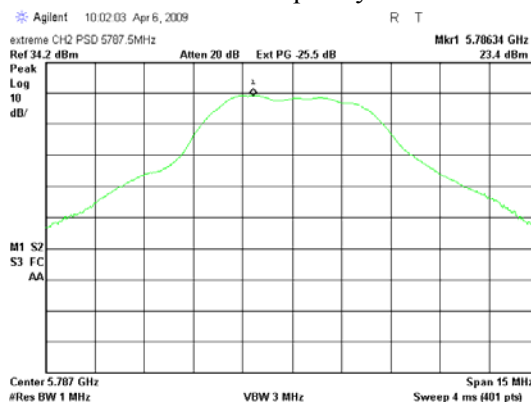
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

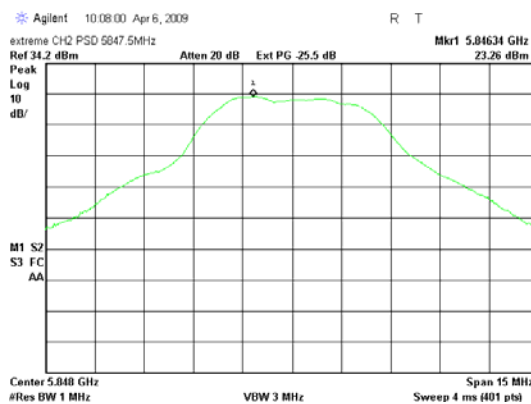
FCC ID: LKT-EXTR-58

RF chain 25 MHz emission bandwidth

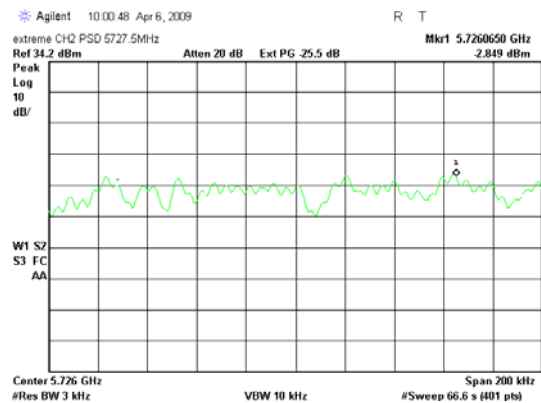
Plot # 157. Carrier frequency 5727.5 MHz.



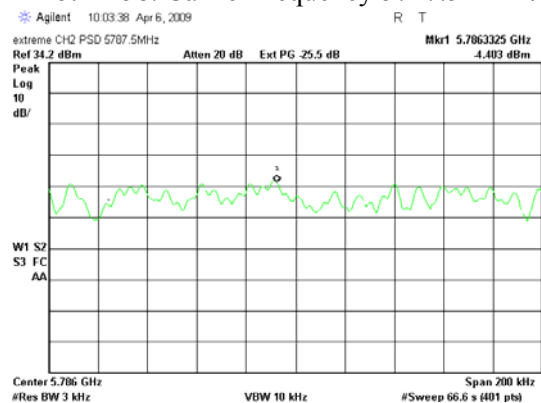
Plot # 159. Carrier frequency 5787.5 MHz.



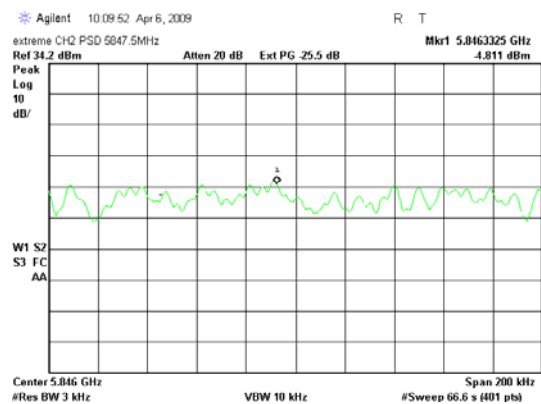
Plot # 161. Carrier frequency 5847.5 MHz



Plot # 158. Carrier frequency 5727.5 MHz.



Plot # 160. Carrier frequency 5787.5 MHz.



Plot # 162. Carrier frequency 5847.5 MHz



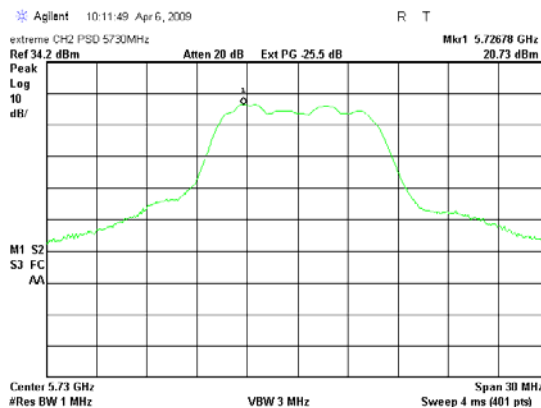
Test report N: 8912324759

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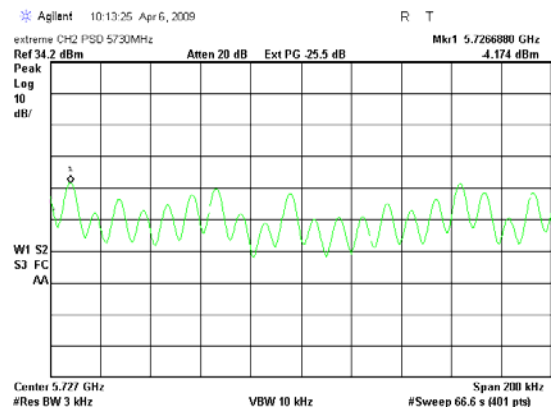
Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

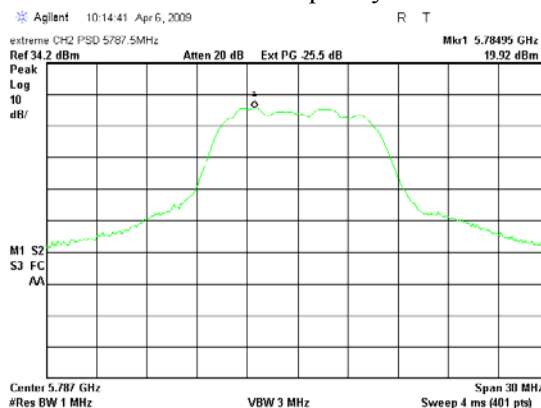
FCC ID: LKT-EXTR-58

10 MHz emission bandwidth

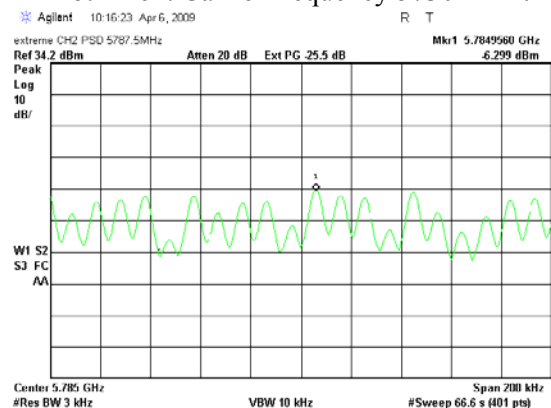
Plot # 163. Carrier frequency 5730 MHz.



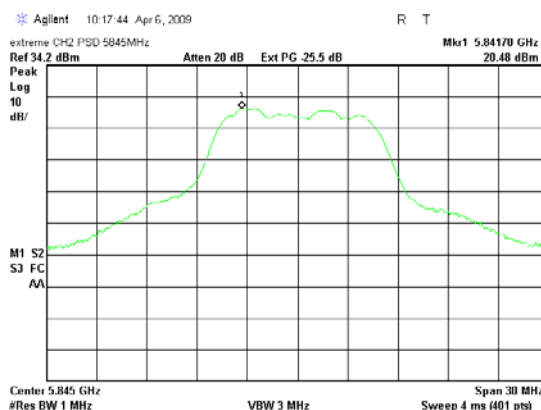
Plot # 164. Carrier frequency 5730 MHz.



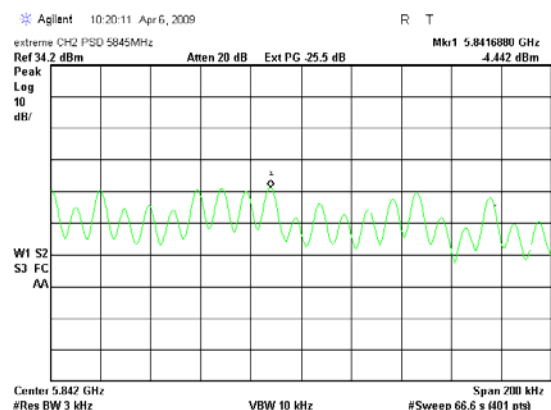
Plot # 165. Carrier frequency 5787.5 MHz.



Plot # 166. Carrier frequency 5787.5 MHz.



Plot # 167. Carrier frequency 5845 MHz



Plot # 168. Carrier frequency 5845 MHz

**Test report N: 8912324759****Page 53 of 67****Title: BreezeMax Extreme 5.8 Base station****Model: EXTR-BS-2SIS-5.8-Ext****FCC ID: LKT-EXTR-58****8. Radiated emissions test according to § 15.209**

Method of measurement	ANSI 63.4 §13.1.4		
Operating Frequency Range	5727.5 – 5847.5 MHz		
Ambient Temperature	22 ⁰ C	Relative Humidity	54% Air Pressure 1011 hPa

TEST DESCRIPTION:

The measurements were performed at the Open Area Test Site at a 10 m test distance. EUT was arranged on a wooden table 0.8 m placed on the turn - table. The Biconilog antenna 30 MHz-2 GHz frequency range was used. The frequency range was investigated from 30 MHz to 1.0 GHz and the measurements were performed at each frequency at which the signal was 10 dB below the limit or less. The level was maximized by initially rotating turntable through 360°, varying the antenna height between 1 m and 4 m, rerouting EUT cables and changing antenna polarization from vertical to horizontal.

REQUIREMENTS:

EUT radiated emission shall not exceed value required in section 15.209

TEST RESULT:

Test results are presented in the tables #1 and #2.

Results more than 20 dB under the limit were not inserted in the table

TEST EQUIPMENT USED:

8	9					
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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

Table 1. Radiated emission test results. AC option.

Frequency (MHz)	Antenna Polariz V/H	Turn- table Angle (°)	Antenna Height (m)	Emission Level Note 1 (dBμV/m)	Limit @ 3m (dBμV/m)	Margin Note 2 (dB)	Results
59.4	V	303	1.0	27.3	40.0	12.7	Pass
112.2	V	286	1.0	28.6	43.5	14.9	Pass
136.0	V	231	1.0	24.2	43.5	19.3	Pass

Table 2. Radiated emission test results. DC option.

Frequency (MHz)	Antenna Polariz V/H	Turn- table Angle (°)	Antenna Height (m)	Emission Level Note 1 (dBμV/m)	Limit @ 3m (dBμV/m)	Margin Note 2 (dB)	Results
66.7	V	104	1.0	23.9	40.0	16.1	Pass
69.6	V	104	1.0	24.2	40.0	15.8	Pass
112.2	V	231	1.0	28.6	43.5	14.9	Pass
136.0	V	236	1.0	24.2	43.5	19.3	Pass

Note 1: Emission level = E Reading (dBμV) + Cable loss (dB) + Antenna Factor (dB/m) + 10 dB
Where 10 dB is an extrapolation distance factor.

For Cable Loss and Antenna Factor refer to Appendix 2.

Note 2: Margin (dB) = Limit (dBμV/m) – Emission level (dBμV/m)

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Method of measurement ANSI 63.4 §13.1.3
Operating Frequency Range 5727.5 – 5847.5 MHz
Ambient Temperature 21⁰ C Relative Humidity 54% Air Pressure 1008 hPa

Frequency, MHz	Class B equipment, dB (µV)	
	QP	AVRG
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

EUT was placed on a wooden table in a shielded chamber at a height of 80 cm from the floor and 40 cm from the vertical reference plane. The measurements were performed at mains terminals by means of LISN, connected to spectrum analyzer in the frequency range as referred to in the table above. The measurements were made with quasi-peak (CISPR) and average detectors. The position of the EUT cables was varied to determine maximum emission level. Test was conducted twice on EUT AC main input and on AC power line to AC/DC auxiliary power supply in 48VDC power option

TEST RESULTS:

Test results for EUT AC main option present at plots # 169 for line Phase and # 170 for line Neutral. Test result for AC/DC auxiliary power supply option present at plots # 171 for line Phase and # 172 for line Neutral.

TEST EQUIPMENT USED:

10	11	12				
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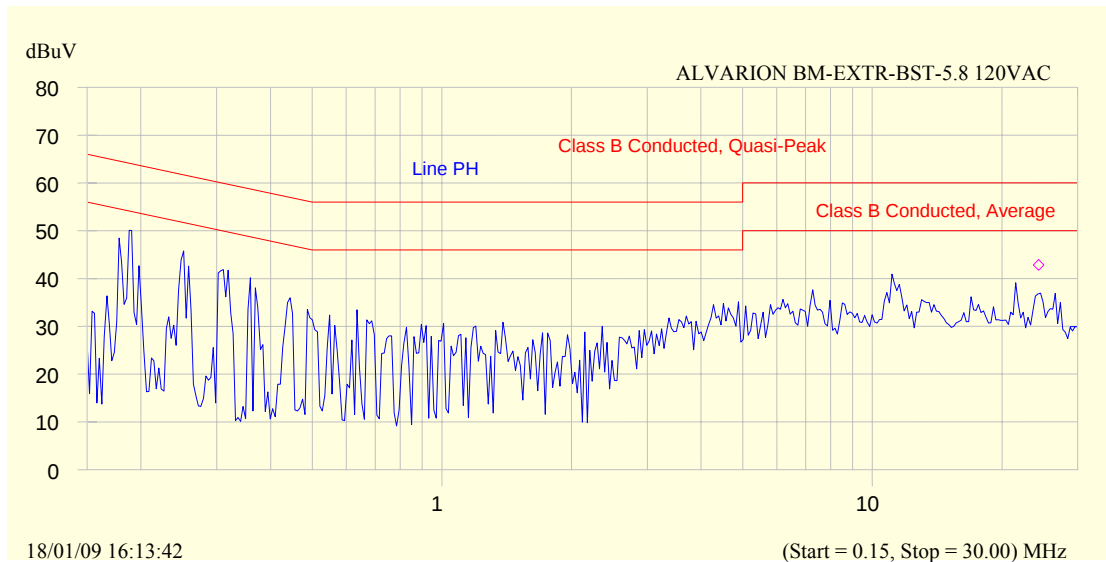
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Model: EXTR-BS-2SIS-5.8-Ext

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Frequency MHz	Peak dBμV	QP dBμV	QP Limit dB	QP-QP Limit dB	Avg dBμV	Avg Limit dB	Avg-Avg Limit dB
0.184	54.0	53.0	64.3	-11.3	39.9	54.3	-14.4
0.257	50.1	49.2	61.5	-12.3	39.8	51.5	-11.7
0.371	44.7	42.8	58.5	-15.6	33.3	48.5	-15.2
0.494	36.3	35.3	56.1	-20.8	26.2	46.1	-19.9
24.046	41.8	38.4	60.0	-21.6	34.3	50.0	-15.7
24.352	42.8	39.7	60.0	-20.3	33.7	50.0	-16.3

Plot # 169. AC line conducted emissions test. Line Phase



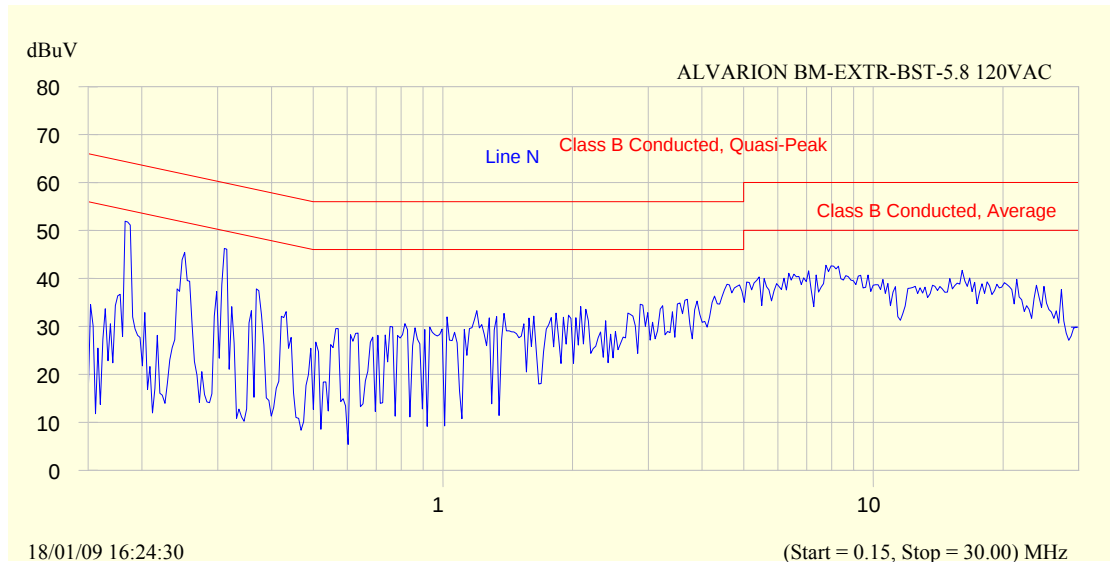
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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

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Frequency MHz	Peak dBμV	QP dBμV	QP Limit dB	QP-QP Limit dB	Avg dBμV	Avg Limit dB	Avg-Avg Limit dB
0.184	51.4	43.4	64.3	-20.9	35.7	54.3	-18.6
0.257	48.9	48.1	61.5	-13.4	39.2	51.5	-12.3
0.370	43.1	41.7	58.5	-16.8	31.6	48.5	-16.9
0.960	31.9	30.6	56.0	-25.4	23.8	46.0	-22.2
24.046	41.7	38.4	60.0	-21.6	34.2	50.0	-15.8
24.351	42.9	39.5	60.0	-20.5	33.6	50.0	-16.4

Plot # 170. AC line conducted emissions test. Line Neutral

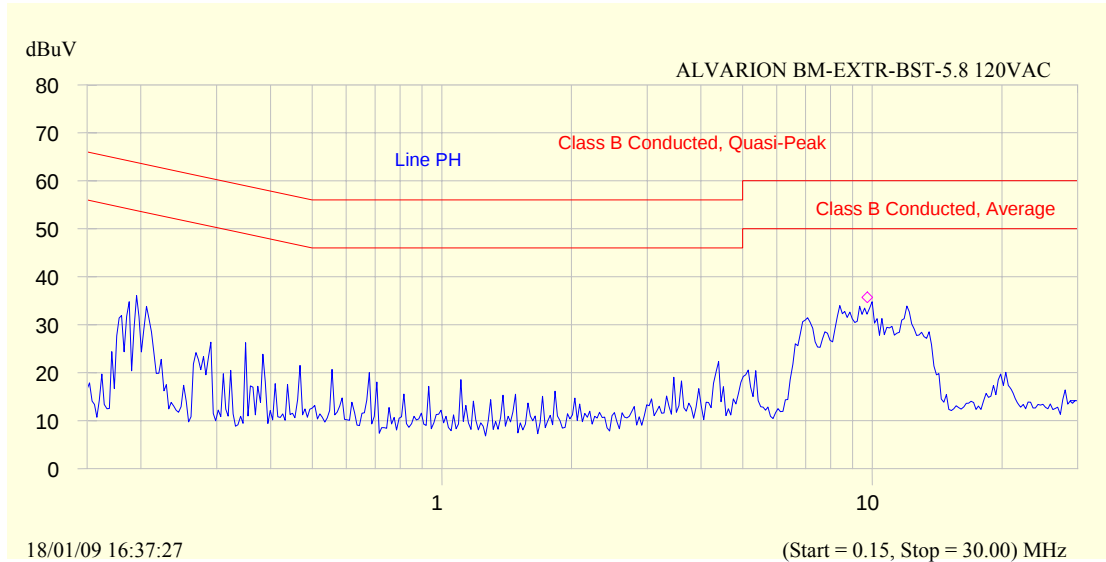
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Title: BreezeMax Extreme 5.8 Base station

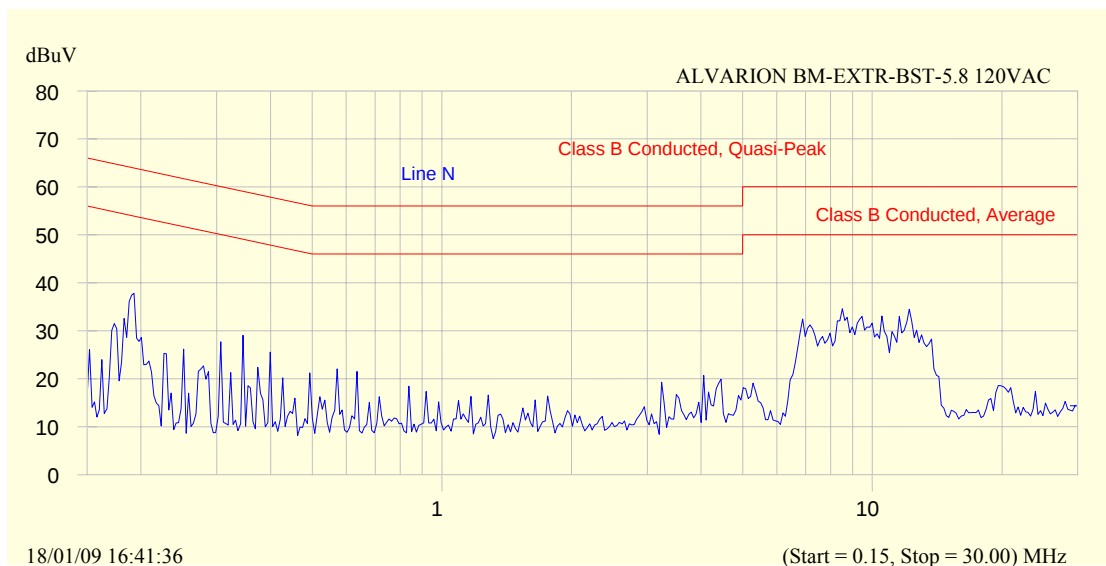
Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58



Frequency MHz	Peak dBμV	QP dBμV	QP Limit dB	QP-QP Limit dB	Avg dBμV	Avg Limit dB	Avg-Avg Limit dB
8.602	36.7	30.6	60.0	-29.4	20.9	50.0	-29.1
9.736	35.7	30.1	60.0	-29.9	21.1	50.0	-28.9

Plot # 171. CE test on auxiliary AC/DC P.S. Line Phase.



Plot # 172. CE test on auxiliary AC/DC P.S. Line Neutral.

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10. APPENDIX A



Photo #1. RF conducted emissions test setup.



Photo #2. Radiated emissions test setup on OATS.

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Photo #3. Radiated emissions test setup with internal antenna.

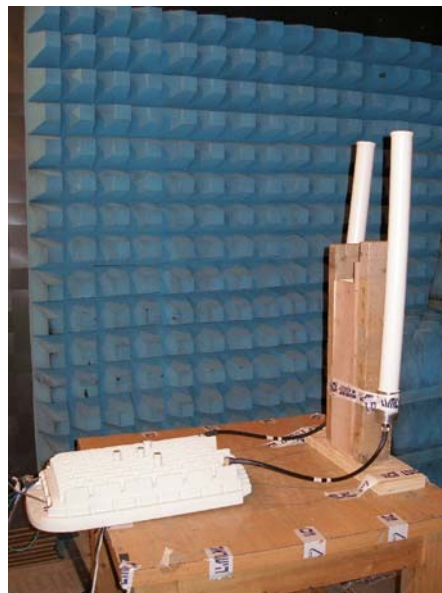


Photo #4. Test setup with external Omni antennas.

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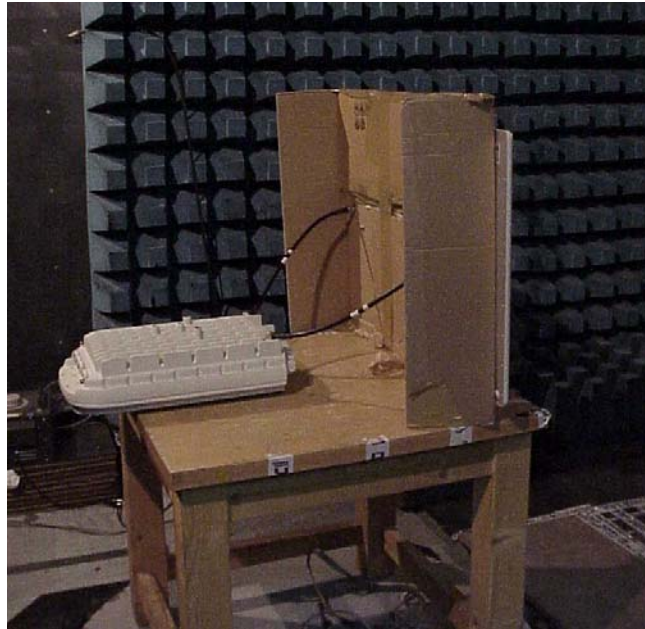


Photo #5. Test setup with external sector antennas.



Photo #6. Outdoor unit. Internal view.

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No	Description	Manufacturer information			Due Calibration date
		Name	Model No	Serial No	
1	Spectrum Analyzer 9 kHz - 40 GHz	HP	8565E	3835A01359	June 2009
2	Spectrum Analyzer 9 kHz - 26.5 GHz	Adjilent	4407B	US40241729	June 2009
3	Attenuators 20 dB DC – 8.5 GHz	Aeroflex/ Weinshel	33-30-34	A3451	June 2009
4	Power splitter 1.7 – 9 GHz	Mini-Circuits	ZN2PD-9G	0142	June 2009
5	Cable RF 1m	Huber-Suhner	Sucoflex 104	21324/4PE	December 2009
6	Double Ridged Guide Antenna 1 – 18 GHz	EMCO	3115	5802	Aug 2009
7	Broadband Horn antenna 15 – 40 GHz	Schwarzbeck Mess-Electronik	BBHA 9170	9170-341	Aug 2009
8	Antenna Biconilog 30 – 2000 MHz	Schaffner-Chase	CBL6112B	S/N 23181	Aug 2009
9	Spectrum analyzer 10 KHz-26.5 GHz	HP	E7405A	SII 4944	April 2010
10	EMI Receiver 9 kHz-6.5 GHz	HP	8546A+85460A	SII 4068	April 2010
11	LISN 9 kHz – 30 MHz	FCC	LISN 250-32-4-16	SII5023	October 2009
12	Transient limiter 0.009-200 MHz	HP	11947A	3107105	October 2009
13	Cable RF 4m	Huber-Suhner	Sucoflex 104PE	21328/4PE	December 2009

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Point	Frequency (MHz)	Cable Loss (dB)	Point	Frequency (MHz)	Cable Loss (dB)
1	30	0.53	21	1000	3.68
2	50	0.75	22	1100	3.82
3	100	1.08	23	1200	4.07
4	150	1.39	24	1300	4.24
5	200	1.61	25	1400	4.43
6	250	1.752	26	1500	4.6
7	300	2.00	27	1600	4.7
8	350	2.15	28	1700	4.85
9	400	2.26	29	1800	4.98
10	450	2.383	30	1900	5.19
11	500	2.52	31	2000	5.34
12	550	2.606	32	2100	5.51
13	600	2.75	33	2200	5.69
14	650	2.856	34	2300	5.89
15	700	3.06	35	2400	6.07
16	750	3.201	36	2500	6.22
17	800	3.27	37	2600	6.28
18	850	3.38	38	2700	6.41
19	900	3.46	39	2800	6.53
20	950	3.55	40	2900	6.84



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Title: BreezeMax Extreme 5.8 Base station

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Biconilog Antenna, Model Number: CBL-6112D, S/N: 23181.

No.	f / MHz)	AF / dB/m	f / MHz)	AF / dB/m	f / MHz)	AF / dB/m	f / MHz)	AF / dB/m
1	30	17.90	170	9.40	530	17.70	1040	22.20
2	32	16.70	175	9.00	540	18.25	1060	22.50
3	34	15.55	180	8.50	550	18.60	1080	22.50
4	36	14.35	185	8.45	560	14.45	1100	22.40
5	38	13.30	190	8.60	570	18.40	1120	22.60
6	40	12.20	195	8.85	580	18.50	1140	22.45
7	42	11.05	200	8.95	590	18.60	1160	22.50
8	44	9.95	205	8.80	600	18.60	1180	22.40
9	46	8.90	210	8.50	610	18.80	1200	22.80
10	48	8.05	215	8.20	620	18.99	1220	22.95
11	50	7.30	220	8.50	630	19.05	1240	23.10
12	52	6.80	225	9.00	640	19.23	1260	23.40
13	54	6.45	230	9.65	650	19.10	1280	23.35
14	56	6.00	235	10.30	660	19.13	1300	23.62
15	58	5.70	240	11.00	670	19.04	1320	23.64
16	60	5.45	245	11.60	680	19.00	1340	23.86
17	62	5.30	250	12.00	690	19.17	1360	23.95
18	64	5.20	255	12.45	700	19.28	1380	23.90
19	66	5.30	260	12.85	710	19.25	1400	24.45
20	68	5.30	265	12.50	720	19.45	1420	24.74
21	70	5.35	270	12.45	730	19.75	1440	24.93
22	72	5.50	275	12.40	740	19.95	1460	25.03
23	74	5.80	280	12.55	750	20.07	1480	25.45
24	76	6.00	285	12.65	760	19.85	1500	25.30
25	78	6.60	290	12.75	770	19.80	1520	25.25
26	80	6.70	295	12.95	780	19.85	1540	25.36
27	82	7.15	300	13.00	790	19.95	1560	25.58
28	84	7.60	310	13.35	800	20.05	1580	25.50
29	86	8.10	320	13.75	810	20.10	1600	25.65
30	88	8.50	330	13.85	820	20.35	1620	25.60
31	90	8.90	340	14.10	830	20.40	1640	25.70
32	92	9.20	350	14.50	840	20.35	1660	25.83
33	94	9.75	360	14.70	850	20.46	1680	25.97
34	96	9.95	370	14.90	860	20.39	1700	26.10
35	98	10.20	380	15.10	870	20.29	1720	26.25
36	100	10.50	390	15.45	880	20.24	1740	26.04
37	105	11.25	400	16.00	890	20.35	1760	26.14
38	110	11.70	410	16.40	900	20.55	1780	26.20
39	115	11.70	420	16.70	910	20.45	1800	26.40
40	120	11.80	430	16.35	920	20.60	1820	26.64
41	125	11.80	440	16.30	930	20.60	1840	26.86
42	130	11.70	450	16.30	940	20.66	1860	27.12
43	135	11.35	460	16.70	950	20.88	1880	27.00
44	140	10.95	470	17.05	960	21.11	1900	27.25
45	145	10.35	480	17.20	970	20.93	1920	27.36
46	150	10.05	490	17.30	980	21.03	1940	27.68
47	155	9.70	500	17.40	990	21.05	1960	27.10
48	160	9.70	510	17.50	1000	21.10	1980	27.06
49	165	9.45	520	17.60	1020	21.40	2000	27.25



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Title: BreezeMax Extreme 5.8 Base station

Model: EXTR-BS-2SIS-5.8-Ext

FCC ID: LKT-EXTR-58

Antenna Factor**Double Ridged Guide Antenna mfr EMCO model 3115 1m calibration**

Point	Frequency (MHz)	Antenna Factor (dB/m)
1	1000	23.9
2	2000	28.3
3	3000	31.0
4	4000	33.1
5	4500	32.5
6	5000	32.4
7	6000	53.7
8	6500	35.6
9	7000	36.4
10	7500	36.9
11	8000	37.0
12	8500	38.0
13	9000	38.6
14	9500	38.4
15	10000	38.4
16	10500	38.4
17	11000	38.9
18	11500	39.6
19	12000	39.4
20	12500	39.2
21	13000	40.3
22	13500	41.0
23	14000	41.2
24	14500	41.3
25	15000	40.0
26	15500	38.0
27	16000	38.1
28	16500	40.3
29	17000	42.2
30	17500	44.6
31	18000	46.2

Cable Loss**Type: Sucoflex 104PE; Ser.No.21328/4PE; 4 m length**

Point	Frequency (GHz)	Cable Loss (dB)
1	0.0-1.0	1.7
2	1.0- 3.5	3.2
3	3.5- 5.5	4.0
4	5.5 - 7.5	4.7
5	7.5 - 9.5	5.3
6	9.5 - 10.5	5.6
7	10.5 - 12.5	6.2
8	12.5 - 14.5	6.8
9	14.5 - 16.5	7.5
10	16.5 - 18.0	8.1

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Antenna Factor
Broadband Horn Antenna model BBHA 9170 1m calibration

Point	Frequency (GHz)	Antenna Factor (dB/m)
1	15.0	38.5
2	16.0	37.7
3	17.0	38.1
4	18.0	37.9
5	19.0	38.0
6	20.0	38.0
7	21.0	37.9
8	22.0	38.2
9	23.0	39.6
10	24.0	39.6
11	25.0	39.3
12	26.0	39.5
13	27.0	39.6
14	28.0	39.6
15	30.0	40.1
16	32.0	41.2
17	34.0	41.5
18	35.0	41.9
19	36.0	42.2
20	38.0	43.8
21	40.0	43.2

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12. APPENDIX C

Abbreviations and acronyms

The following abbreviations and acronyms are applicable to this test report:

AC	alternating current
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μ V)	decibel referred to one microvolt
dB(μ V/m)	decibel referred to one microvolt per meter
EMC	electromagnetic compatibility
EUT	equipment under test
GHz	gigahertz
H	height
Hz	hertz
kHz	kilohertz
L	length
LNA	low noise amplifier
m	meter
Mbps	megabit per second
MHz	megahertz
NA	not applicable
OFDM	Orthogonal Frequency Division Multiple Access
PRBS	pseudo random binary sequence
QP	quasi-peak
RF	radio frequency
RE	radiated emission
SA	spectrum analyzer
rms	root mean square
W	width

Specification references

47 CFR part 15: 2008	Radio Frequency Devices
ANSI C63.2: 1996	American National Standard for Instrumentation Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz Specifications.
ANSI C63.4: 2003	American National Standard for Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz