



**Test Report No. 9012321870/1  
complementary to SII # 8912311553/1**

**For ALVARION Ltd.**

**Equipment Under Test:**

**BreezeMAX Extreme 5.4 Base station**

**Model: XTRM-BS-2SIS-5.4-Ext**

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



**ACCLASS Accreditation Services**

**Certificate Number: AT-1359**



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**Title:** BreezeMAX Extreme 5.4 Base station

**Model:** XTRM-BS-2SIS-5.4-Ext

**FCC ID:** LKT-EXTR-50

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## 1. Applicant information

|                                     |                                                                 |
|-------------------------------------|-----------------------------------------------------------------|
| <b>Applicant:</b>                   | Alvarion Ltd                                                    |
| <b>Address:</b>                     | 21A Habarzel str, Tel-Aviv, 69710, Israel                       |
| <b>Sample for test selected by:</b> | The customer                                                    |
| <b>The date of test:</b>            | 21- 28 February, 14 – 15 March 2010<br>27 March, 10 April 2011. |

### Equipment under test information.

|                                                   |                                    |
|---------------------------------------------------|------------------------------------|
| <b>Description of Equipment Under Test (EUT):</b> | BreezeMAX Extreme 5.4 Base station |
| <b>Model:</b>                                     | XTRM-BS-2SIS-5.4-Ext               |
| <b>Serial Number:</b>                             | NA                                 |
| <b>Manufactured by:</b>                           | Alvarion Ltd                       |

## 2. Test performance

|                             |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|
| <b>Location:</b>            | SII EMC Section                                                            |
| <b>Purpose of test:</b>     | Apparatus compliance verification in accordance with emission requirements |
| <b>Test specifications:</b> | 47CFR part 15.407, part 1 §1.1310                                          |

### Reference Documents:

|                    |                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>CFR 47 FCC:</b> | Rules and Regulations; Part 15. "Radio frequency devices"; Subpart C: "Intentional radiators", Subpart E: "UNII devices" |
|--------------------|--------------------------------------------------------------------------------------------------------------------------|

**Note:** Test Report # 9012321870 has been superseded by the presented test report # 9012321870/1.

|                                                                  |                                                                                                                     |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| This Test Report contains 50 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 section 15.407

| Transmitter characteristics             | Subclasses                         |
|-----------------------------------------|------------------------------------|
| Peak output power                       | 15.407(a)(2)                       |
| Peak power spectral density             | 15.407(a)(2)                       |
| Spurious emissions at antenna terminal  | 15.407(b)(3)                       |
| Out of band spurious emissions radiated | 15.205, 15.407(b)(3)               |
| Peak excursion test                     | 15.407(a)(6)                       |
| Conducted emissions on AC power line    | see SII test report # 8912311553/1 |
| Unwanted radiated emissions below 1 GHz | see SII test report # 8912311553/1 |

Test performed by: Mr. Michael Feldman test technician

Test report prepared by: Mr. Michael Feldman test technician

Test report approved by: Mr. Yuri Rozenberg. Head of EMC Branch

Measurement uncertainty.

Were relevant, the following measurement uncertainty level have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expended uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| Test description                                                                                                                   | Expanded uncertainty                                         |
|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b><u>Radiated emissions</u></b><br>in the open field test site at 3 m measuring distance:<br>30 MHz – 1.0 GHz<br>1.0 GHz – 18 GHz | <br><br>2 Uc (E) = $\pm 4.32$ dB<br>2 Uc (E) = $\pm 4.47$ dB |

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#### 4. Equipment under test description.

\*The customer provided description.

##### 4.1 General description

The BreezeMAX Extreme 5.4 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 5.4 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                     | 5.470 GHz – 5.725 GHz            |           | -                         |
|                                              | 5.490 GHz – 5.705 GHz            |           | -                         |
| RF channel spacing                           | 20 MHz                           |           | -                         |
| Antenna connection                           | Two N-type for external antennas |           | 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                      |
| External, sector                             | MTI                              | AN1353    | 17 dBi                    |
| External, Omni                               | MTI                              | AN1299    | 9.5 dBi                   |
| Internal dual slant                          | MTI                              | AN1427-01 | 15.5 dBi                  |

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#### 4.1.1 Environmental evaluation and exposure limit according to FCC CFR 47 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:

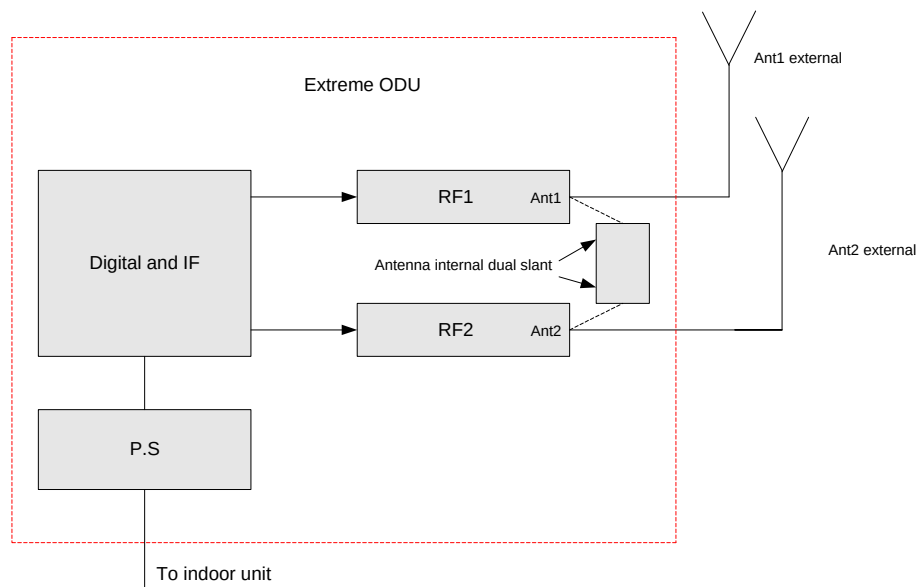
$P_t$ - the transmitted power which is equal to the maximum output power 17.4 dBm plus external antenna gain 9.5 dBi. The maximum EIRP power = 26.9 dBm = 489.8 mW.

Maximum allowed distance “ $r$ ”, where RF exposure limits may not be exceeded =  $\text{SQRT}(489.8/4\pi)$  and is more than 6.5 cm from the antenna main lobe.

Peak power density at worse case distance 20 cm is  $P_t/4\pi r^2 = 0.49 \text{ W}/4\pi * 0.2^2 = 0.97 \text{ W}/\text{m}^2$

That is less than  $10 \text{ W}/\text{m}^2$  power density limit.

## 4.2 EUT configuration



**Fig. 1 XTRM-BS-2SIS-5.4-Ext block diagram.**



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## 5. Test results

### 5.1 Transmitter characteristics

#### 5.1.1 Peak output power test

Method of measurement DA 02-2138  
Operating Frequency Range 5.490 - 5.705 GHz  
Ambient Temperature 21<sup>0</sup> C Relative Humidity 46% Air Pressure 1006 hPa

The peak transmit power shall not exceed the lesser of 250mW (24 dBm) or 11dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. as required in sec. 15.407 (a)(2).

#### Chain 1

| Carrier frequency<br>MHz | Measured<br>26 dB<br>bandwidth,<br>MHz | Measured<br>peak output<br>power,<br>dBm | Limit,<br>dBm | Margin,<br>dBm | Reference to<br>plots ## |
|--------------------------|----------------------------------------|------------------------------------------|---------------|----------------|--------------------------|
| 5490                     | 19.65                                  | 17.3.                                    | 23.9          | 6.6            | ##1, 4                   |
| 5580                     | 20.17                                  | 17.3                                     | 24.0          | 6.7            | ##2, 5                   |
| 5705                     | 19.66                                  | 17.4                                     | 23.9          | 6.5            | ##3, 6                   |

#### Chain 2

| Carrier frequency<br>MHz | Measured<br>26 dB<br>bandwidth,<br>MHz | Measured<br>peak output<br>power,<br>dBm | Limit,<br>dBm | Margin,<br>dBm | Reference to<br>plots |
|--------------------------|----------------------------------------|------------------------------------------|---------------|----------------|-----------------------|
| 5490                     | 20.2                                   | 17.4                                     | 24.0          | 6.6            | ##7, 10               |
| 5580                     | 20.8                                   | 16.8                                     | 24.0          | 7.2            | ##8, 11               |
| 5705                     | 19.9                                   | 17.1                                     | 23.9          | 6.8            | ##9, 12               |

#### **Total output power calculated as sum of chain 1 + chain 2 powers:**

Carrier frequency 5490 MHz = 20.36 dBm.

Carrier frequency 5580 MHz = 20.06 dBm.

Carrier frequency 5705 MHz = 20.26 dBm.



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## TEST PROCEDURE

Test was performed at worse case mode - maximum allowed output power for antenna Omni with directional gain 9.5 dBi. The measurements were performed at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5.490 - 5.705 GHz 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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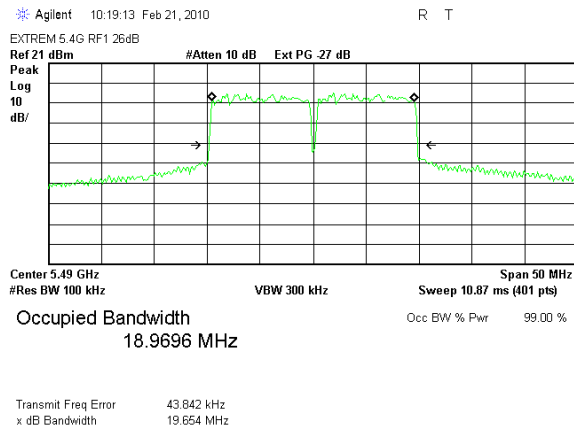
Model: XTRM-BS-2SIS-5.4-Ext

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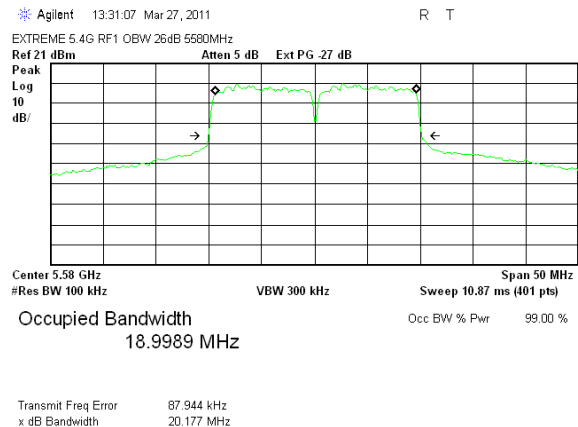
FCC ID: LKT-EXTR-50

### RF chain 1

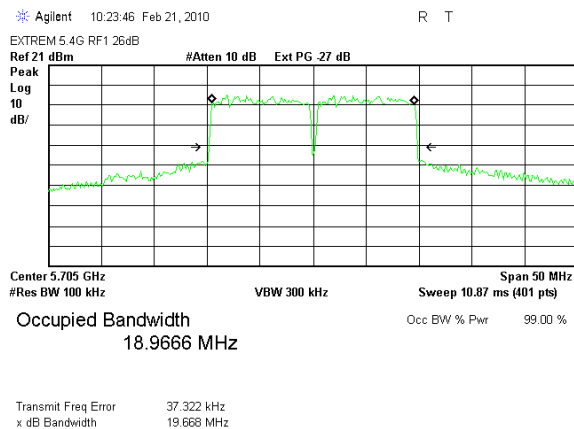
26 dB EBW results.



Plot # 1. Carrier Frequency 5490 MHz



Plot # 2. Carrier Frequency 5580 MHz



Plot # 3. Carrier Frequency 5705 MHz

Insertion loss of external attenuator, directional coupler and cable = 27 dB



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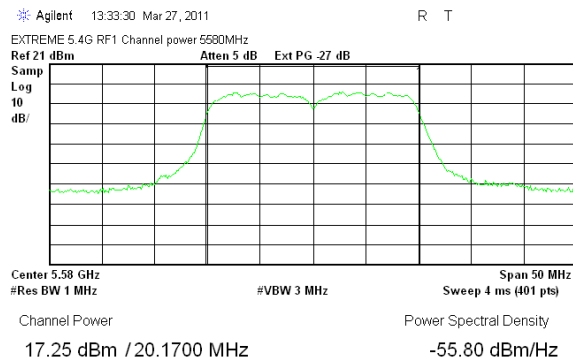
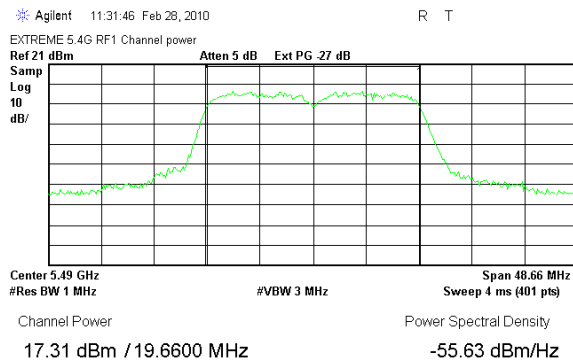
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Model: XTRM-BS-2SIS-5.4-Ext

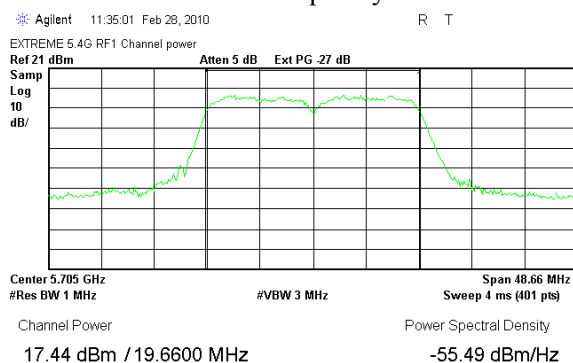
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### Peak output power results



Plot # 4. Carrier Frequency 5490 MHz



Plot # 5. Carrier Frequency 5580 MHz

Plot # 6. Carrier Frequency 5705 MHz

Insertion loss of external attenuator, power splitter and cable = 27 dB.



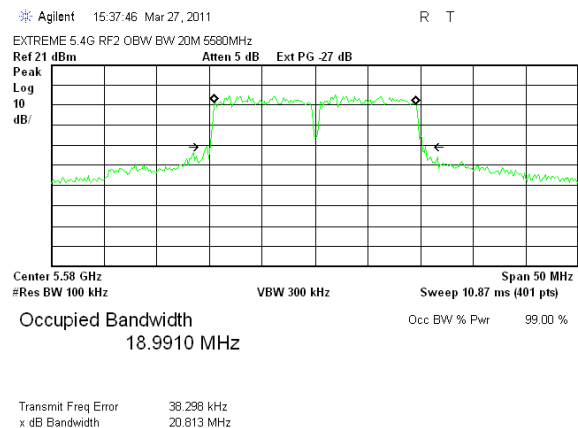
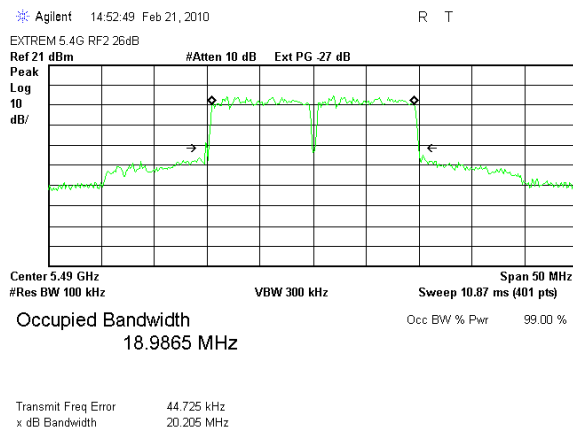
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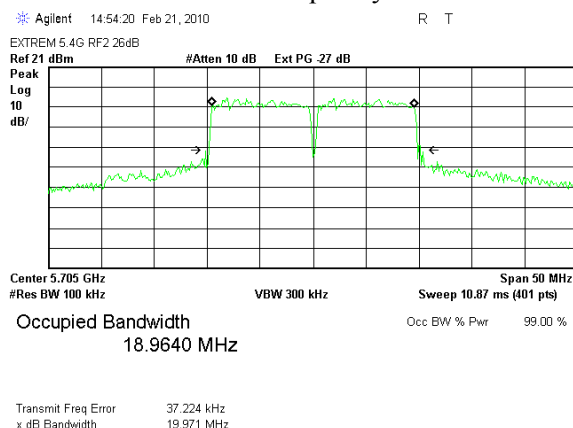
FCC ID: LKT-EXTR-50

## RF chain 2

### 26 dB EBW results.



### Plot # 7. Carrier Frequency 5490 MHz



### Plot # 8. Carrier Frequency 5580 MHz

### Plot # 9. Carrier Frequency 5705 MHz

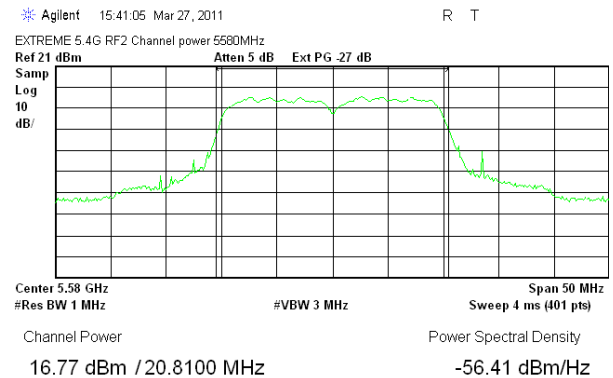
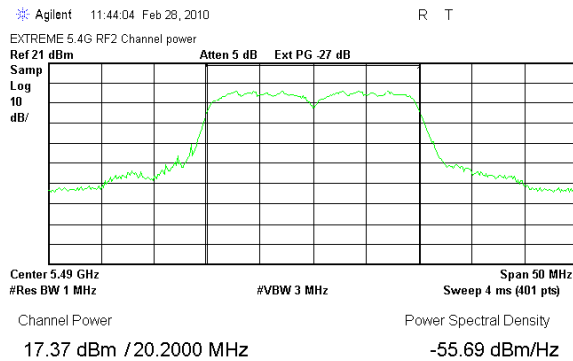


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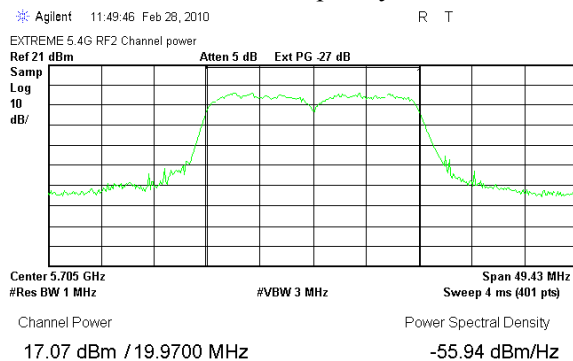
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**Peak output power results.**



**Plot # 10. Carrier Frequency 5490 MHz**



**Plot # 11. Carrier Frequency 5580 MHz**

**Plot # 12. Carrier Frequency 5705 MHz**

**Test report No:** 9012321870/1**Page 12 of 50 Pages****Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**FCC ID:** LKT-EXTR-50**5.1.2 Peak power density test § 15.407(a) (2)**

Method of measurement DA 02-2138  
 Operating Frequency Range 5.490 - 5.705 GHz  
 Ambient Temperature 21<sup>0</sup> C Relative Humidity 46% Air Pressure 1006 hPa

The peak power spectral density shall not exceed 11 dBm in any 1 MHz band.

For antennas with directional gain grater than 6 dBi power spectral density limit was calculated as follow: 11 dBm - (Antenna gain – 6 dBi).

For antenna Omni PSD calculated limit is  $11 - (9.5 - 6) = 7.5$  dBm

| Carrier frequency MHz | PSD, chain 1 dBm | Limit, dBm | Margin dB | PSD, chain 2 dBm | Limit, dBm | Margin dB | Total, ch.1+ ch.2 dBm | Margin dB |
|-----------------------|------------------|------------|-----------|------------------|------------|-----------|-----------------------|-----------|
| 5490                  | -0.32            | 7.5        | 7.82      | -0.58            | 7.5        | 8.08      | 3.82                  | 3.68      |
| 5580                  | -1.37            | 7.5        | 8.87      | -1.54            | 7.5        | 9.04      | 2.87                  | 4.63      |
| 5705                  | -0.35            | 7.5        | 7.85      | -0.93            | 7.5        | 8.43      | 3.97                  | 3.53      |

**TEST PROCEDURE**

The test was performed in MIMO mode at maximum allowed output power for antenna 9.5 dBi gain. The measurements were performed according to procedure DA 02-2138 August 2002 at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5.490 - 5.705 GHz 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. The total power density of chain 1 and chain 2 measured via power splitter connected to both RF outputs.

**TEST SUMMARY**

Transmitter complies with standard requirement.

Test results for chain 1 shown in plots ## 13 – 15 and for chain 2 in plots ## 16 – 18.

The total results for chain 1 + chain 2 in plots ## 19 – 21.

**TEST EQUIPMENT USED:**

|   |   |   |   |  |  |  |
|---|---|---|---|--|--|--|
| 2 | 3 | 4 | 5 |  |  |  |
|---|---|---|---|--|--|--|



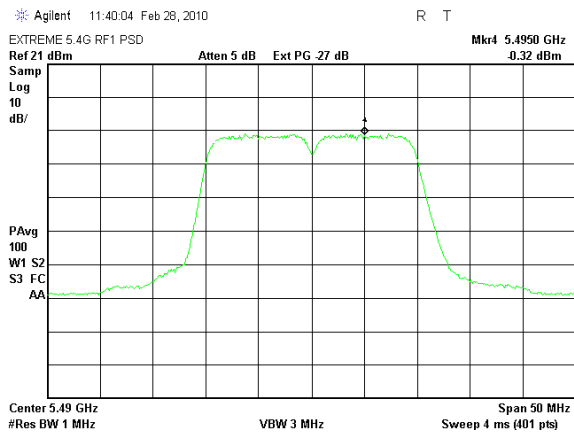
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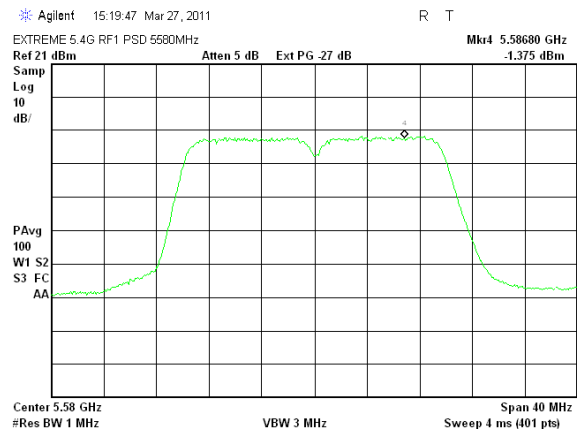
**FCC ID:** LKT-EXTR-50

### Chain 1

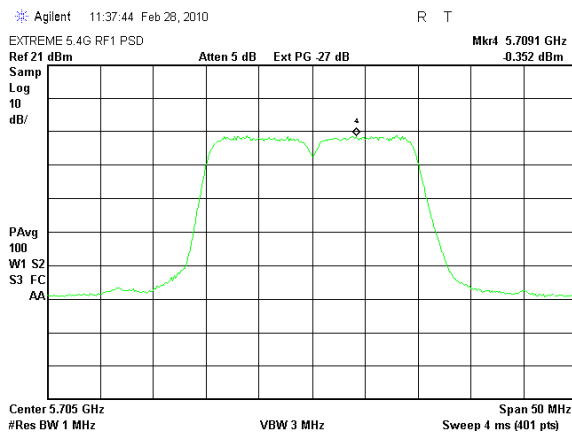
#### Power spectral density test results.



Plot # 13. Carrier Frequency 5490 MHz



Plot # 14. Carrier Frequency 5580 MHz



Plot # 15. Carrier Frequency 5705 MHz

Insertion loss of external attenuator, power splitter and cable = 27 dB





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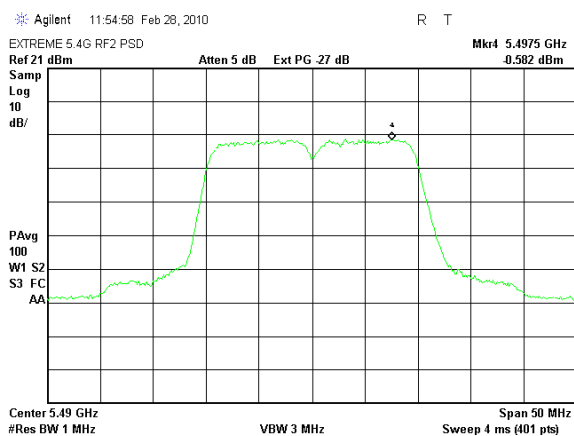
Model: XTRM-BS-2SIS-5.4-Ext

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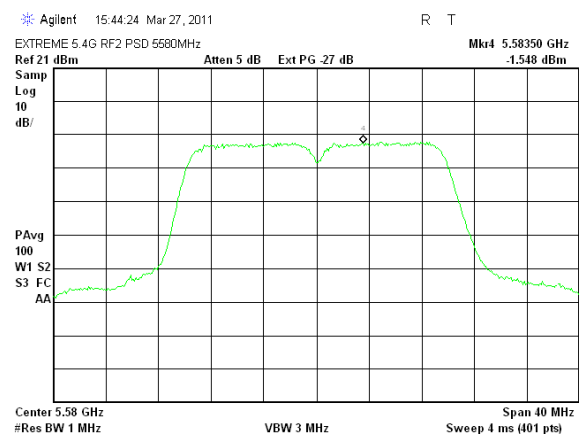
FCC ID: LKT-EXTR-50

## Chain 2

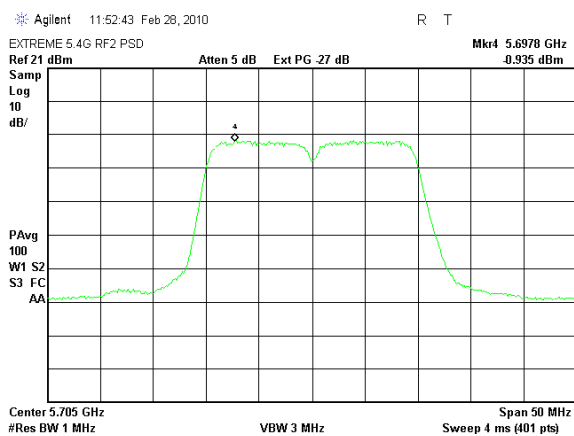
Peak power spectral density test results.



Plot # 16. Carrier Frequency 5490 MHz



Plot # 17. Carrier Frequency 5580 MHz



Plot # 18. Carrier Frequency 5705 MHz



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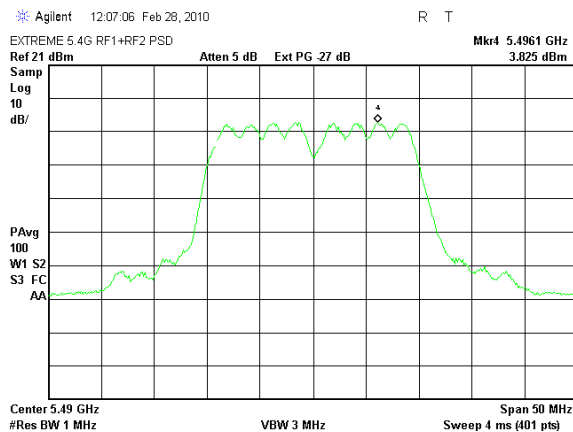
**Title:** BreezeMAX Extreme 5.4 Base station

**Model:** XTRM-BS-2SIS-5.4-Ext

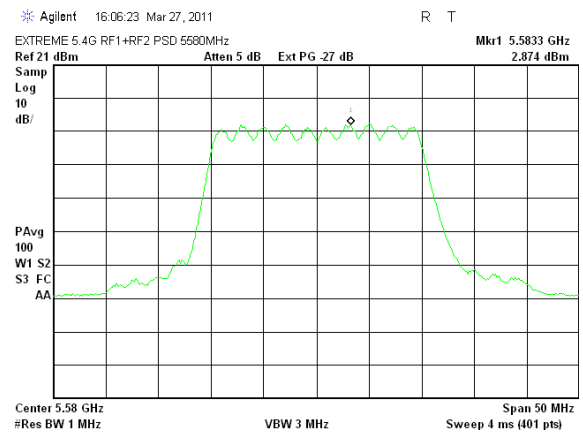
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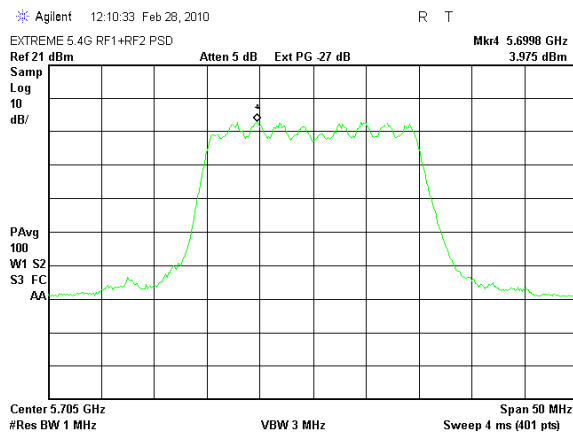
**PSD result chain 1 + chain 2.**



Plot # 19. Carrier Frequency 5490 MHz



Plot # 20. Carrier Frequency 5580 MHz



Plot # 21. Carrier Frequency 5705 MHz

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### 5.1.3 Spurious emissions at antenna terminal § 15.407(b)(3)

Operating Frequency Range      5.490 - 5.705 GHz  
Ambient Temperature    21<sup>0</sup> C      Relative Humidity      46%      Air Pressure      1006 hPa

The frequency spectrum was investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to 40 GHz. The emission levels 20 dB lower than specified limit were not recorded in the tables. No spurious emissions above SA noise floor were found except band-edge point.

| Frequency,<br>MHz | Spurious emission<br>level,<br>dBm | EIRP limit,<br>dBm/MHz | Margin<br>dB | Reference to<br>plot # |
|-------------------|------------------------------------|------------------------|--------------|------------------------|
| 5470              | -35.4                              | -27                    | 8.4          | 23                     |
| 5725              | -34.0                              | -27                    | 7.0          | 30                     |

#### LIMIT

For operation in the band 5470 - 5725 MHz all emissions outside of the band shall not exceed an EIRP of -27dBm/MHz

#### TEST PROCEDURE

The test was performed at worse case mode at maximum allowed for antenna Omni output power. The measurements were performed at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5.490 - 5.705 GHz 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 |  |  |  |
|---|---|---|---|--|--|--|

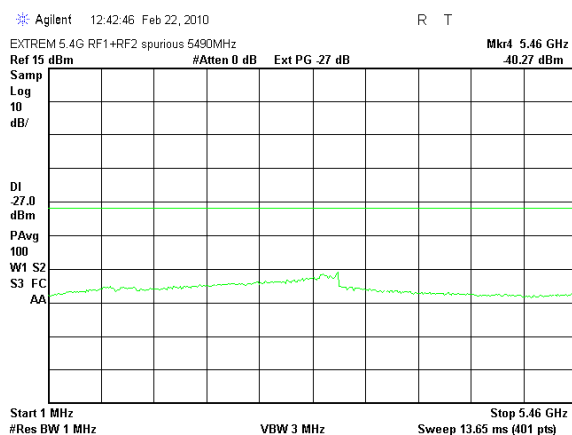


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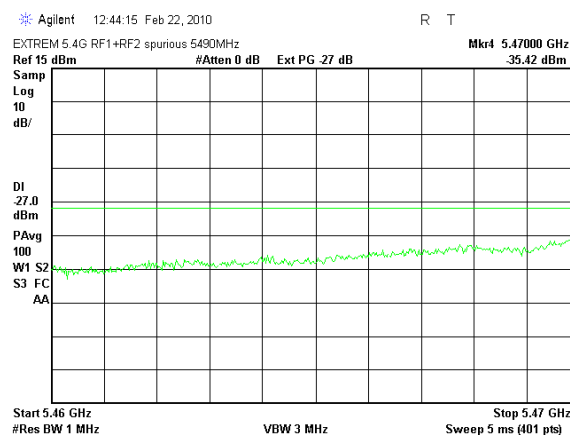
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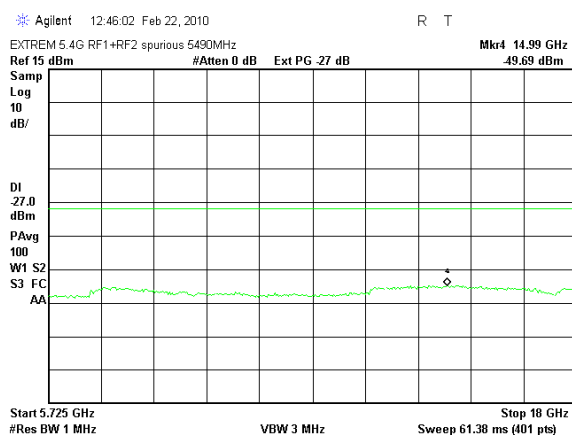
Carrier Frequency 5490 MHz



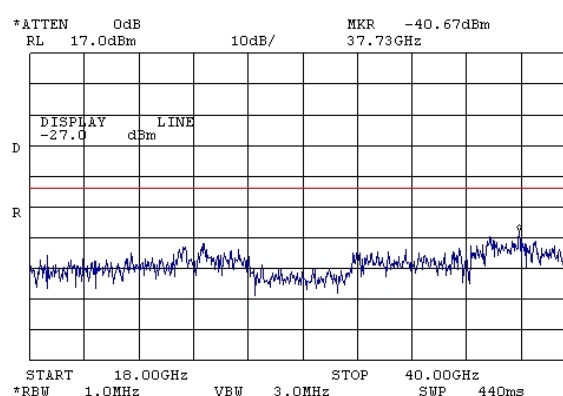
Plot # 22



Plot # 23



Plot # 24



Plot # 25

Insertion loss of external attenuator and cable = 27 dB



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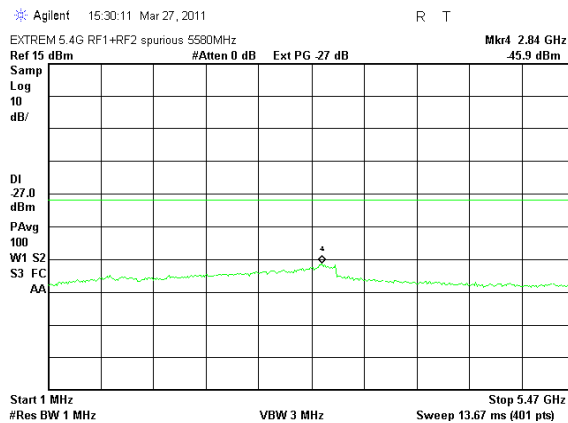
Title: BreezeMAX Extreme 5.4 Base station

Model: XTRM-BS-2SIS-5.4-Ext

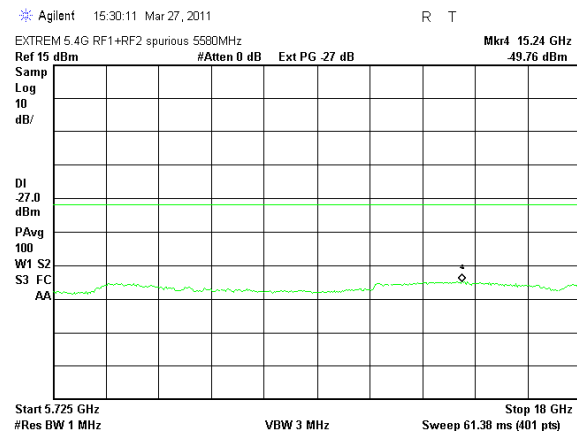
Page 18 of 50 Pages

FCC ID: LKT-EXTR-50

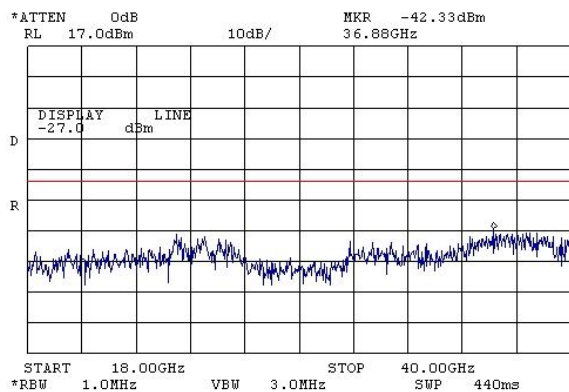
Carrier Frequency 5580 MHz.



Plot # 26



Plot # 27



Plot # 28

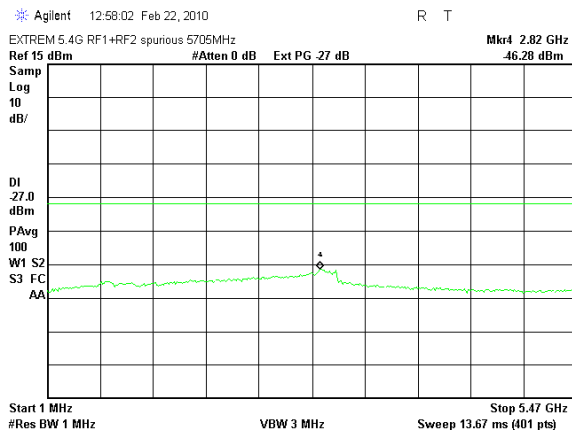


**Test report No: 9012321870/1**  
**Title: BreezeMAX Extreme 5.4 Base station**  
**Model: XTRM-BS-2SIS-5.4-Ext**

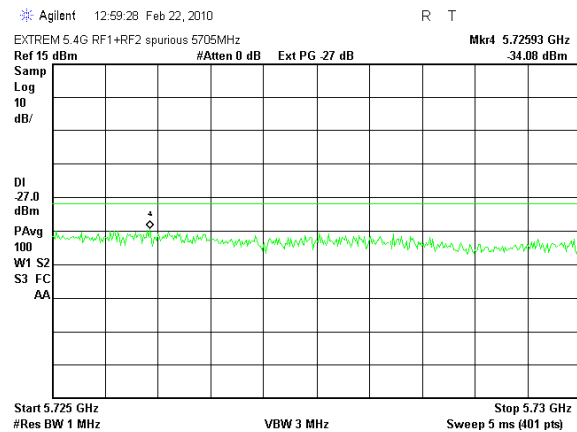
**Page 19 of 50 Pages**

**FCC ID: LKT-EXTR-50**

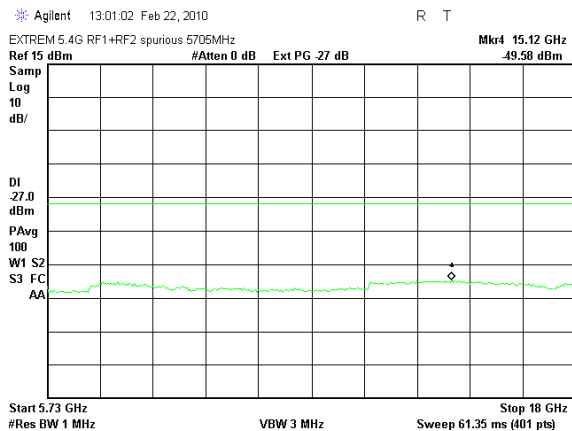
Carrier Frequency 5705 MHz.



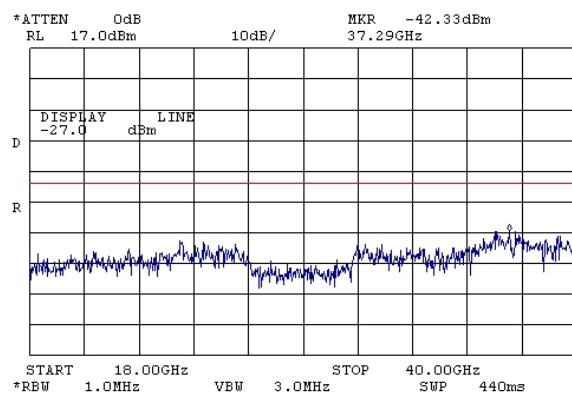
Plot # 29



Plot # 30



Plot # 31



Plot # 32



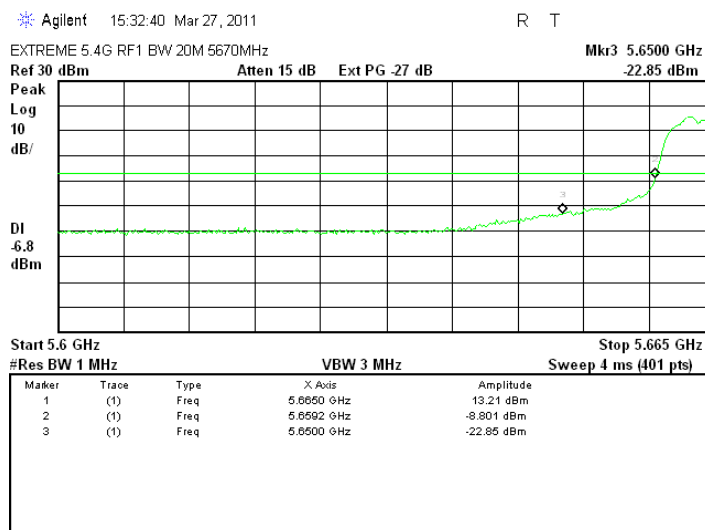
Test report No: 9012321870/1

Title: BreezeMAX Extreme 5.4 Base station

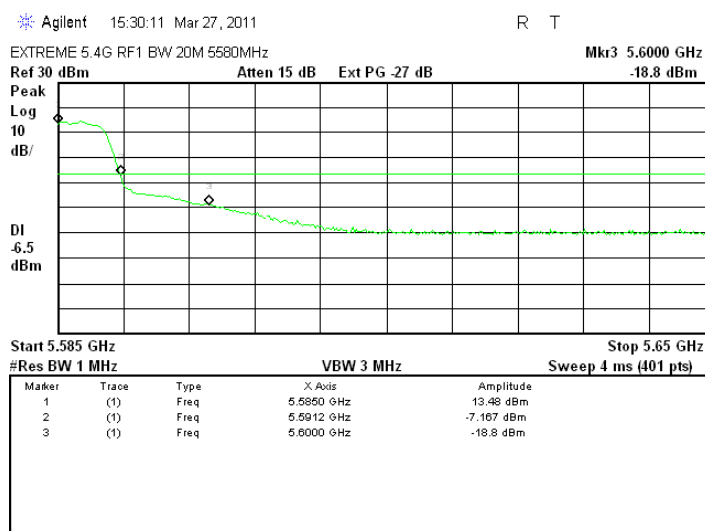
Model: XTRM-BS-2SIS-5.4-Ext

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FCC ID: LKT-EXTR-50



Plot # 33. Carrier frequency – 5670 MHz



Plot # 34. Carrier frequency – 5580 MHz.





**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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**FCC ID: LKT-EXTR-50**

#### 5.1.4 Radiated spurious emissions test § 15.407(b)(3)

Operating Frequency Range 5.490 - 5.705 GHz  
 Ambient Temperature 22<sup>0</sup> C Relative Humidity 51% Air Pressure 1007 hPa

The frequency spectrum was investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz 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 the tables and plots in this section.

##### Antenna integral 15.5 dBi gain

Carrier frequency 5490 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m/dBm | Limit,<br>dBμV/m/dBm | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|--------------------------------------|----------------------|---------------|------------------|------------------------|
| 5369.0            | 65.8                                 | *74.0                | 8.2           | detector peak    | 35                     |
| 5459.7            | 47.1                                 | *54.0                | 6.9           | detector average | 36                     |
| 5468.9            | -31.0                                | -27.0                | 6.0           | MIMO mode        | 38                     |

Carrier frequency 5580 MHz

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m | Limit,<br>dBμV/m | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|----------------------------------|------------------|---------------|------------------|------------------------|
| 5436              | 58.3                             | *74.0            | 15.7          | detector peak    | 42                     |
| 5458.9            | 46.7                             | *54.0            | 11.2          | detector average | 43                     |

Carrier frequency 5705 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m/dBm | Limit,<br>dBμV/m/dBm | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|--------------------------------------|----------------------|---------------|------------------|------------------------|
| 5381              | 66.8                                 | *74.0                | 14.8          | detector peak    | 47                     |
| 5396.5            | 45.5                                 | *54.0                | 2.6           | detector average | 48                     |
| 5725.0            | -29.9                                | -27.0                | 3.1           | MIMO mode        | 50                     |

\*Requirement of section 15.205(b).

**Test report No:** 9012321870/1**Page 22 of 50 Pages****Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**FCC ID:** LKT-EXTR-50**Antenna Omni 9.5 dBi gain**

Carrier frequency 5490 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dB $\mu$ V/m/dBm | Limit,<br>dB $\mu$ V/m/dBm | Margin,<br>dB | Note        | Reference<br>to plot # |
|-------------------|--------------------------------------------|----------------------------|---------------|-------------|------------------------|
| 5371              | 64.0                                       | *74.0                      | 10.0          |             | 54                     |
| 5459.2            | 46.9                                       | *54.0                      | 7.1           | Noise floor | 55                     |
| 5469.6            | -35.0                                      | -27.0                      | 8.0           | MIMO mode   | 57                     |
| 6453.5            | -34.8                                      | -27.0                      | 7.8           | Noise floor | 58                     |

Carrier frequency 5580 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dB $\mu$ V/m/dBm | Limit,<br>dB $\mu$ V/m/dBm | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|--------------------------------------------|----------------------------|---------------|------------------|------------------------|
| 5381              | 57.2                                       | *74.0                      | 16.8          | detector peak    | 61                     |
| 5457              | 46.1                                       | *54.0                      | 7.9           | detector average | 62                     |
| 6199.7            | -35.4                                      | -27.0                      | 8.4           | Noise floor      | 63                     |

Carrier frequency 5705 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dB $\mu$ V/m/dBm | Limit,<br>dB $\mu$ V/m/dBm | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|--------------------------------------------|----------------------------|---------------|------------------|------------------------|
| 5414              | 63.9                                       | *74                        | 10.1          | detector peak    | 66                     |
| 5444.5            | 46.5                                       | *54                        | 2.2           | detector average | 67                     |
| 5725.2            | -35.7                                      | -27                        | 8.7           | MIMO mode        | 69                     |

\*Requirement of section 15.205(b).

**Test report No: 9012321870/1****Page 23 of 50 Pages****Title: BreezeMAX Extreme 5.4 Base station****Model: XTRM-BS-2SIS-5.4-Ext****FCC ID: LKT-EXTR-50****Antenna 17 dBi gain**

Carrier frequency 5490 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m/dBm | Limit,<br>dBμV/m/dBm | Margin,<br>dB | Note             | Reference<br>to Plot number |
|-------------------|--------------------------------------|----------------------|---------------|------------------|-----------------------------|
| 5314              | 65.4                                 | *74.0                | 1.4           | detector peak    | 73                          |
| 5459.2            | 49.0                                 | *54.0                | 10.2          | detector average | 74                          |
| 5469.6            | -30.9                                | -27.0                | 3.9           | MIMO mode        | 76                          |

Carrier frequency 5580 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m | Limit,<br>dBμV/m | Margin,<br>dB | Note             | Reference<br>to plot |
|-------------------|----------------------------------|------------------|---------------|------------------|----------------------|
| 5403              | 58.2                             | *74.0            | 15.8          | detector peak    | 80                   |
| 5460              | 47.7                             | *54.0            | 6.3           | detector average | 81                   |

Carrier frequency 5705 MHz.

| Frequency,<br>MHz | Radiated<br>emissions,<br>dBμV/m/dBm | Limit,<br>dBμV/m/dBm | Margin,<br>dB | Note             | Reference<br>to plot # |
|-------------------|--------------------------------------|----------------------|---------------|------------------|------------------------|
| 5470              | 67.2                                 | *74.0                | 6.8           | detector peak    | 85                     |
| 5458              | 46.6                                 | *54.0                | 7.4           | detector average | 86                     |
| 5725.1            | -32.0                                | -27.0                | 5.0           | MIMO mode        | 88                     |
| 6195              | -37.1                                | -27.0                | 10.1          | Noise floor      | 89                     |

\*Requirement of section 15.205(b).

**Test report No:** 9012321870/1**Page 24 of 50 Pages****Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**FCC ID:** LKT-EXTR-50

## 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 results founded for different antennas in SM-MIMO and in SISO modes were noted in the tables above. Transmitter output power was changed according to antenna configuration and standard requirements:

| Antenna configuration           | Output power dBm |       |
|---------------------------------|------------------|-------|
|                                 | SISO             | MIMO  |
| Internal slant antenna 15.5 dBi | 20.5             | 20.5  |
| Antenna Omni 9.5 dBi            | *27.2            | *24.2 |
| Antenna sector 17 dBi           | *19.7            | *16.7 |

\* Calculation includes an external antenna cable loss 0.7 dB.

## Substitution method.

The measurements were performed according to ANSI/TIA-603-C-2004 section 2.2.12 test method. Investigation of transmitter spurious emissions was performed. EUT was replaced by generator and substitution antenna. Result calculated from generator output level, substitution antenna gain and loss of connected cable was compared with the limit. Transmitter was operated at bottom, middle and top of the 5.490 - 5.705 GHz frequency band.

## LIMIT

For transmitters operating in the 5.47 – 5.725 GHz band: all emissions outside of the 5.47 – 5.725 GHz band shall not exceed an EIRP limit of -27 dBm/MHz.

The emissions in restricted bands shall comply with provision of Section 15.205.

## TEST EQUIPMENT USED:

|   |   |   |   |   |   |    |    |
|---|---|---|---|---|---|----|----|
| 1 | 5 | 6 | 7 | 8 | 9 | 10 | 14 |
|---|---|---|---|---|---|----|----|



**Test report No: 9012321870/1**

**Title: BreezeMAX Extreme 5.4 Base station**

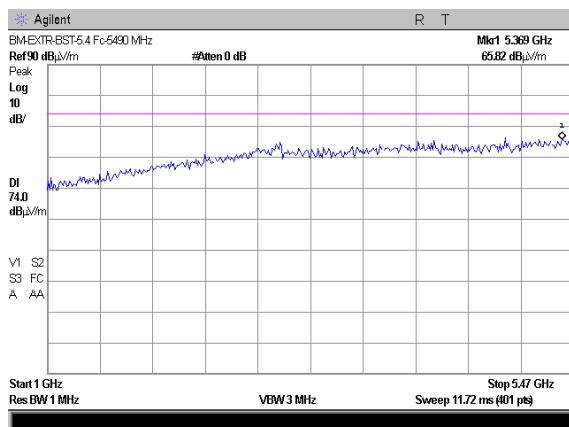
**Model: XTRM-BS-2SIS-5.4-Ext**

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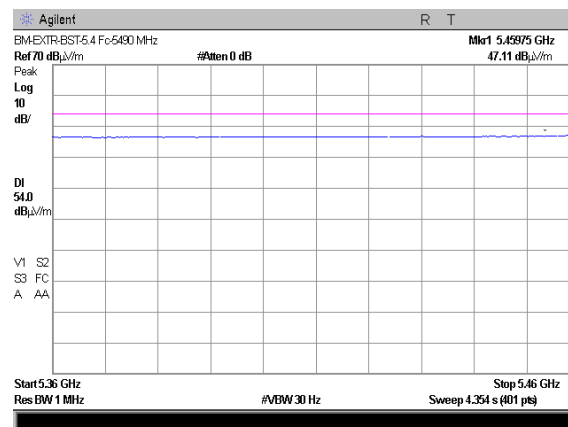
**FCC ID: LKT-EXTR-50**

Antenna internal 15.5 dBi.

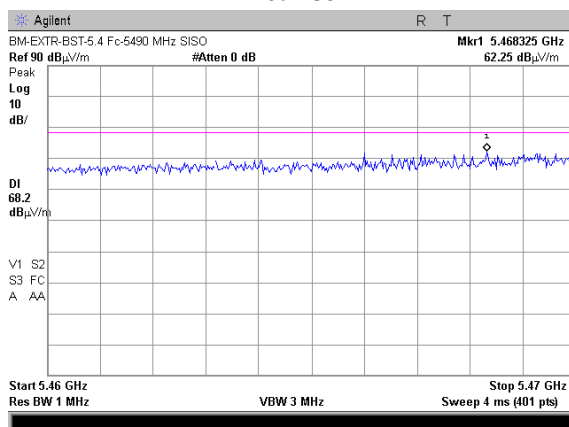
Carrier frequency 5490 MHz.



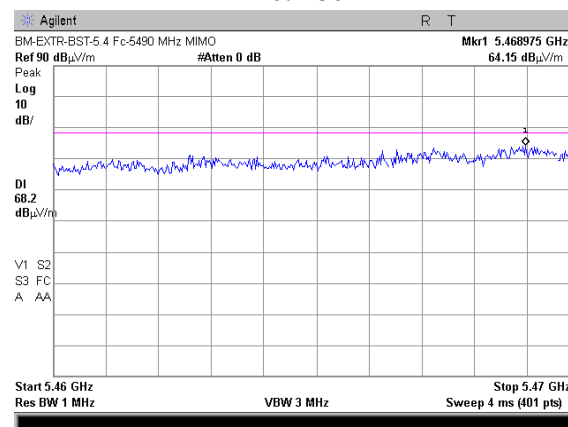
Plot # 35



Plot # 36



Plot # 37



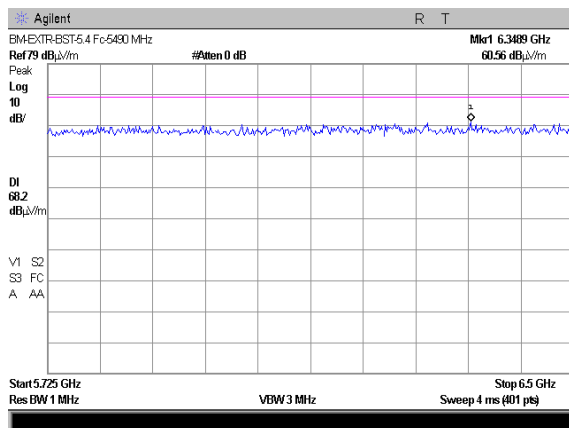
Plot # 38



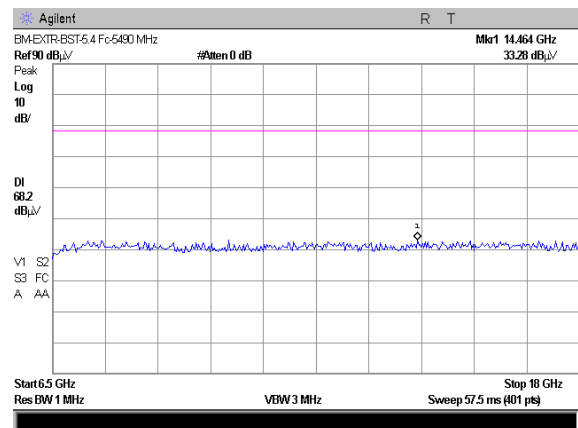
**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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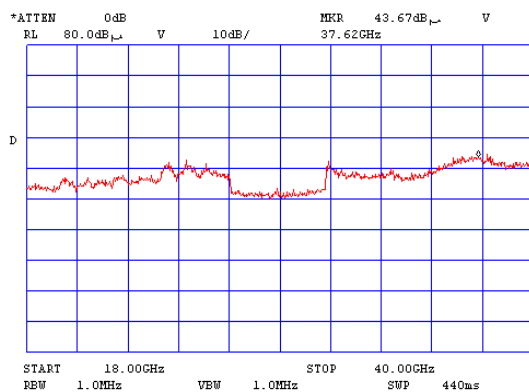
FCC ID: LKT-EXTR-50



Plot # 39



Plot # 40



Plot # 41

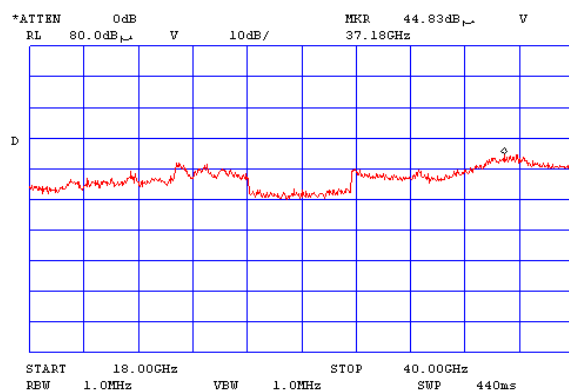
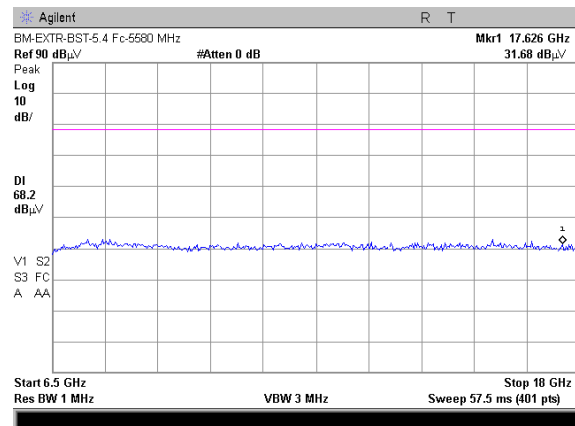
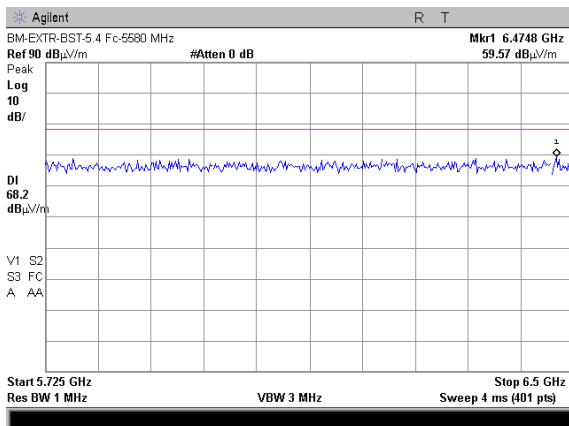
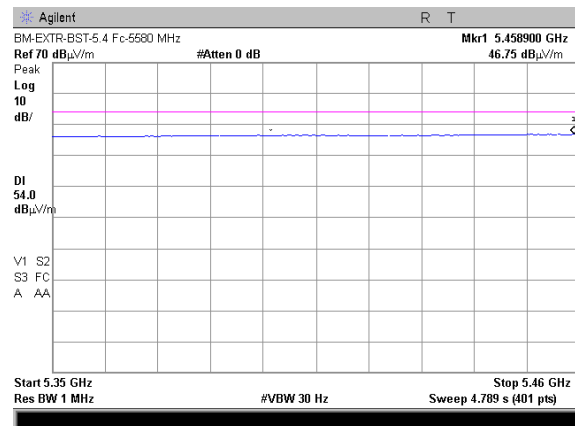
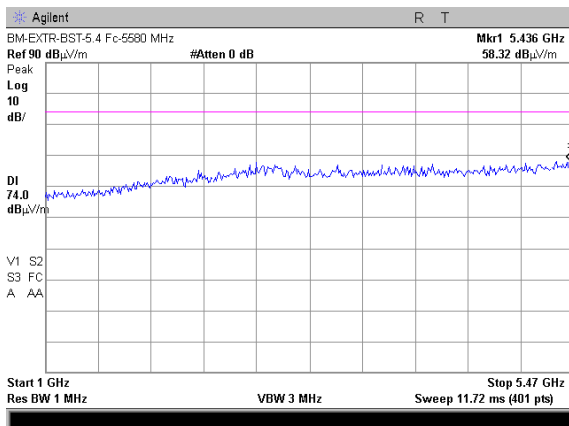


**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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FCC ID: LKT-EXTR-50

**Carrier frequency 5580 MHz.**





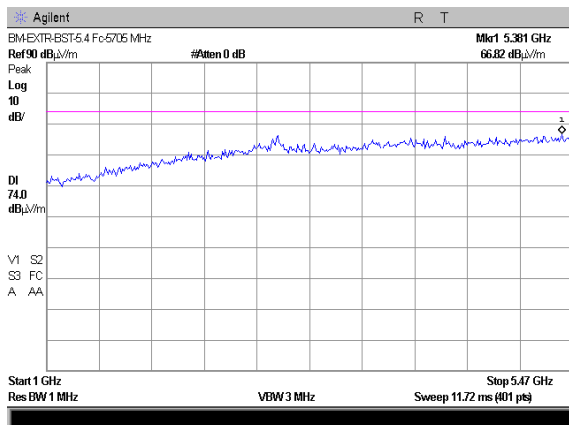


**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

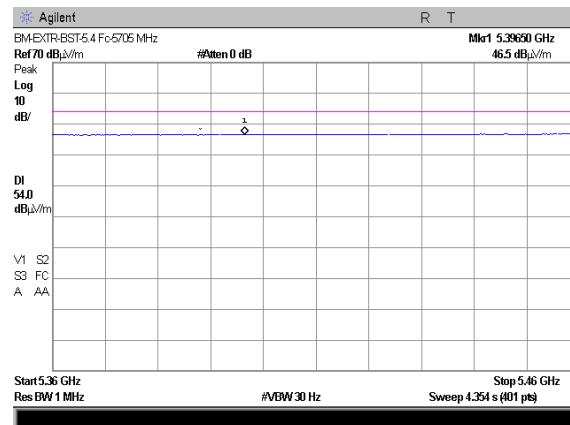
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FCC ID: LKT-EXTR-50

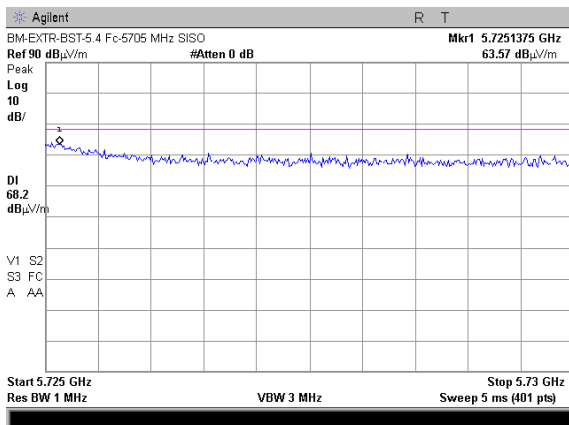
**Carrier frequency 5705 MHz.**



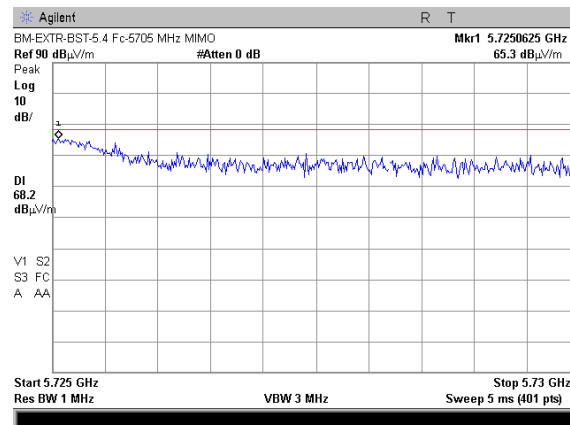
Plot # 47



Plot # 48



Plot # 49



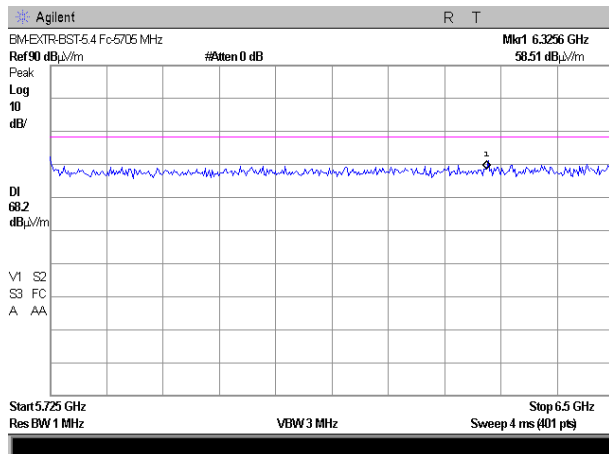
Plot # 50



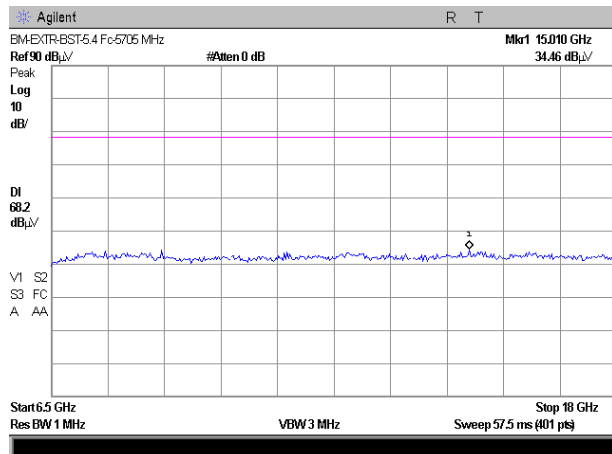
**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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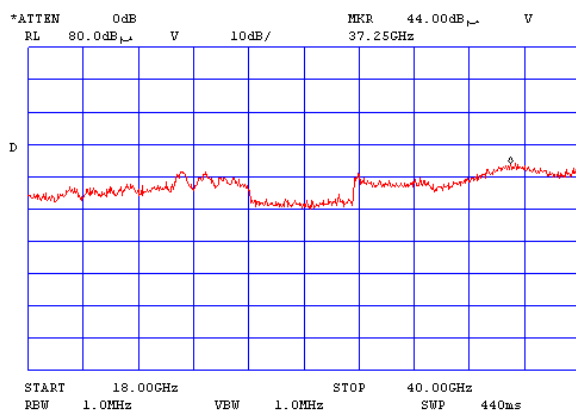
FCC ID: LKT-EXTR-50



Plot # 51



Plot # 52



Plot # 53



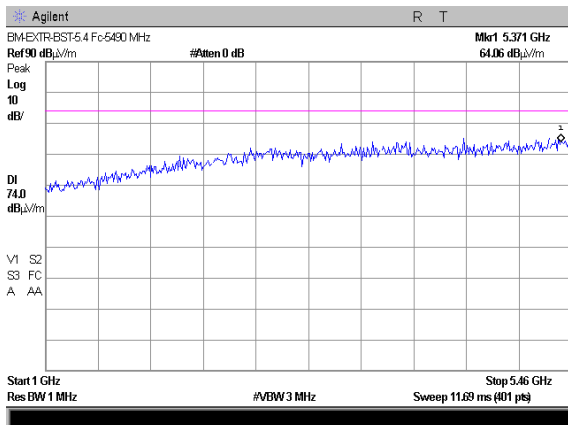
**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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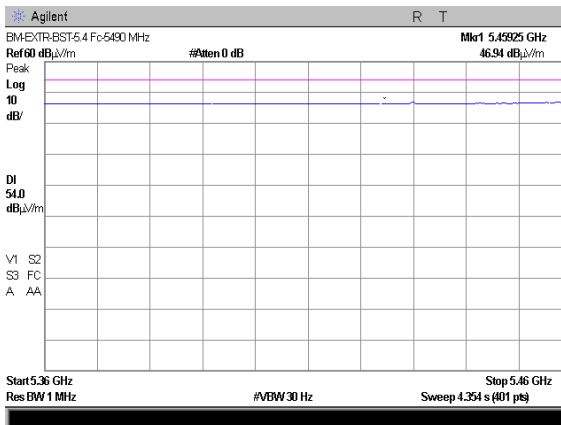
**FCC ID:** LKT-EXTR-50

**Antenna Omni.**

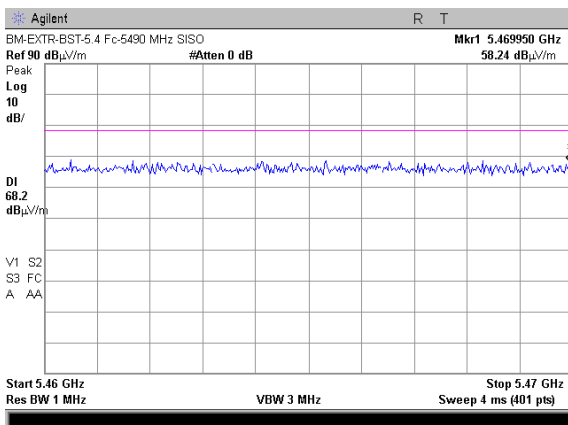
**Carrier frequency 5490 MHz.**



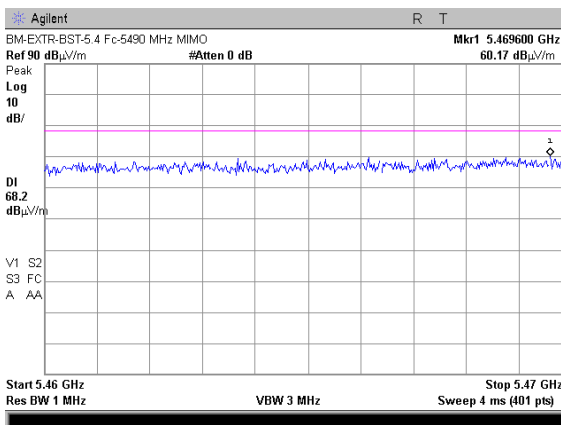
Plot # 54



Plot # 55



Plot # 56



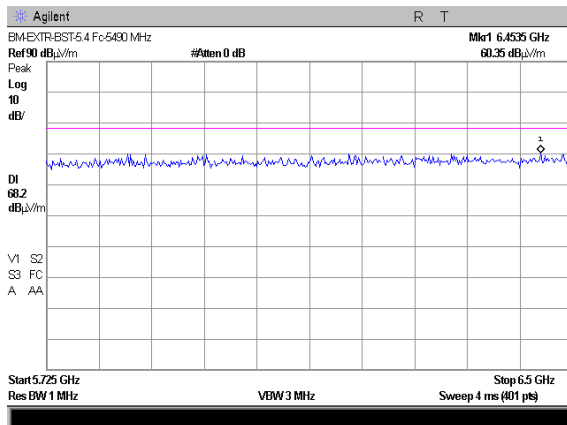
Plot # 57



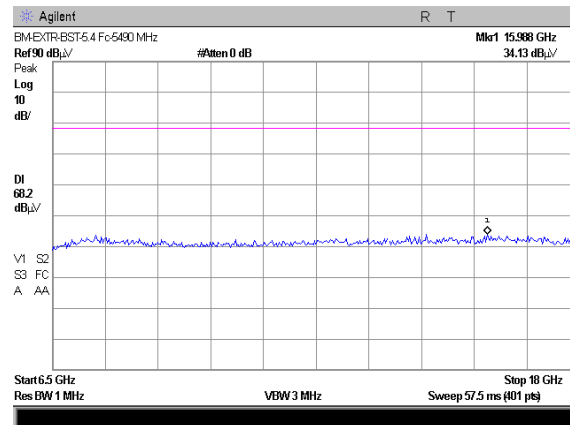
**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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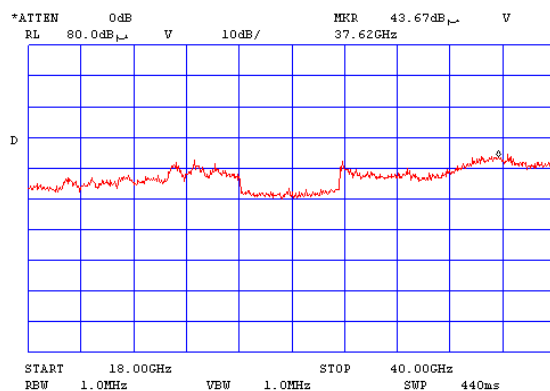
**FCC ID:** LKT-EXTR-50



Plot # 58



Plot # 59



Plot # 60



Test report No: 9012321870/1

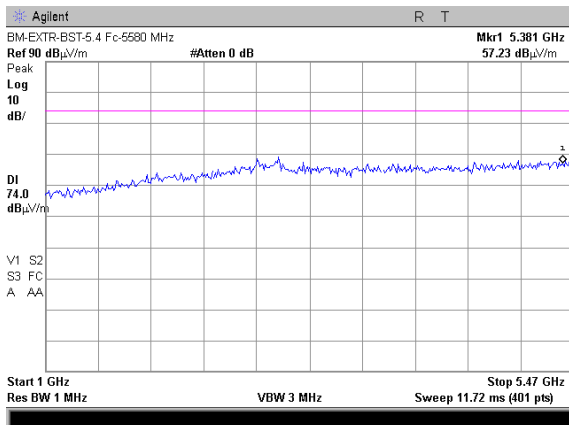
Title: BreezeMAX Extreme 5.4 Base station

Model: XTRM-BS-2SIS-5.4-Ext

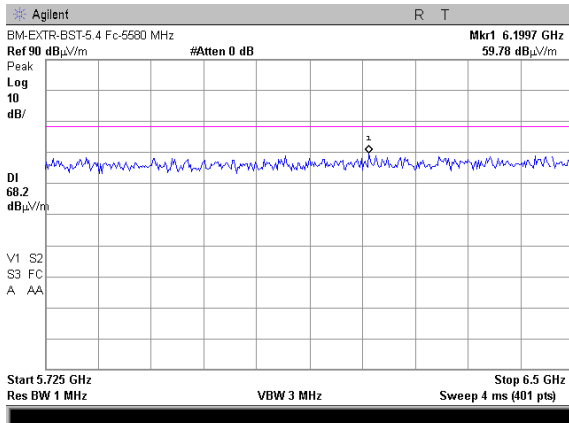
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FCC ID: LKT-EXTR-50

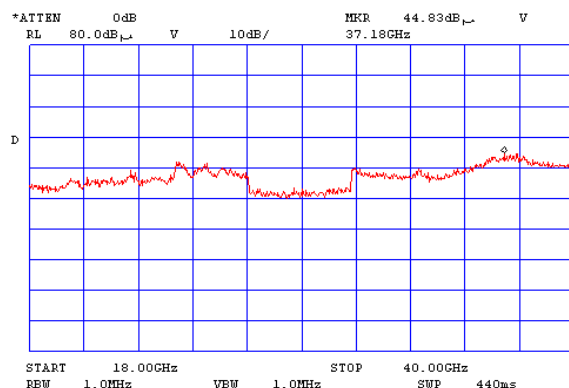
Carrier frequency 5580 MHz.



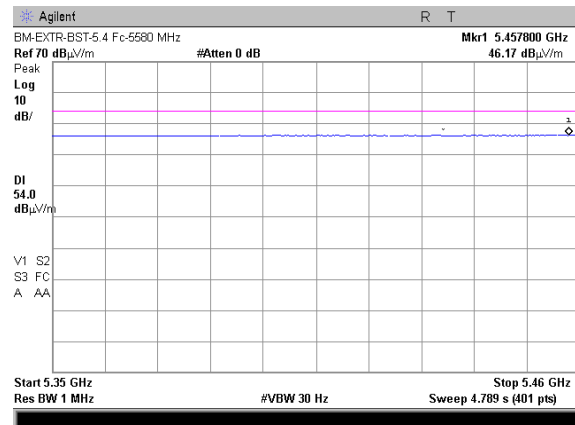
Plot # 61



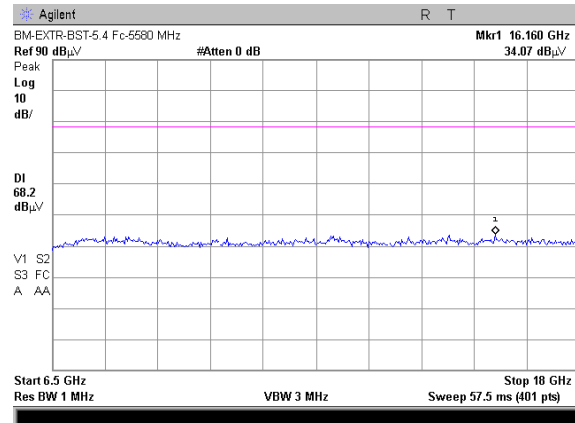
Plot # 63



Plot # 65



Plot # 62



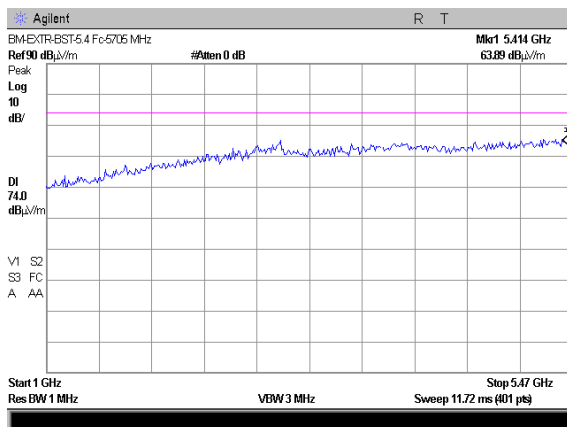
Plot # 64



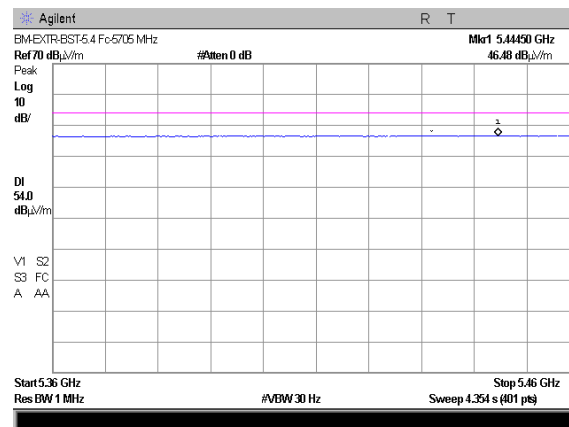
**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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**FCC ID:** LKT-EXTR-50

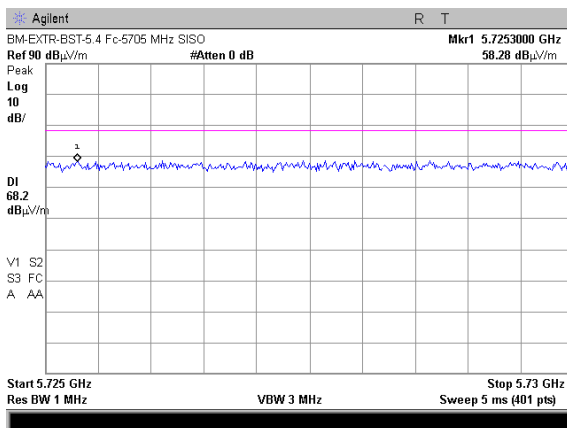
**Carrier frequency 5705 MHz.**



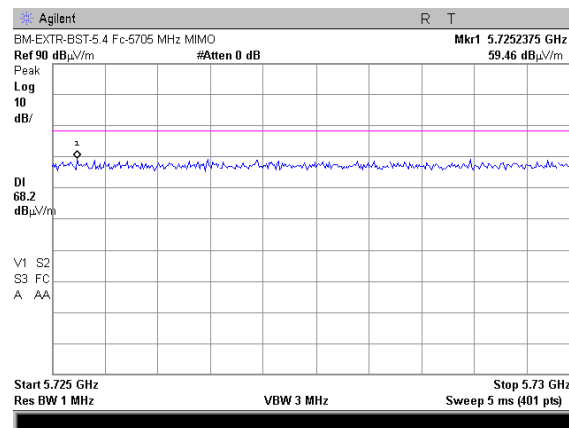
Plot # 66



Plot # 67



Plot # 68



Plot # 69



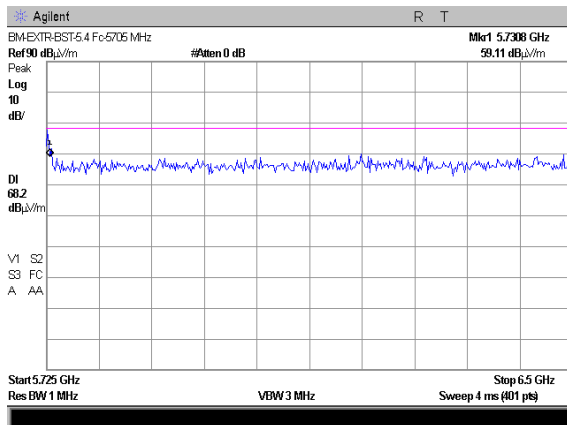
Test report No: 9012321870/1

Title: BreezeMAX Extreme 5.4 Base station

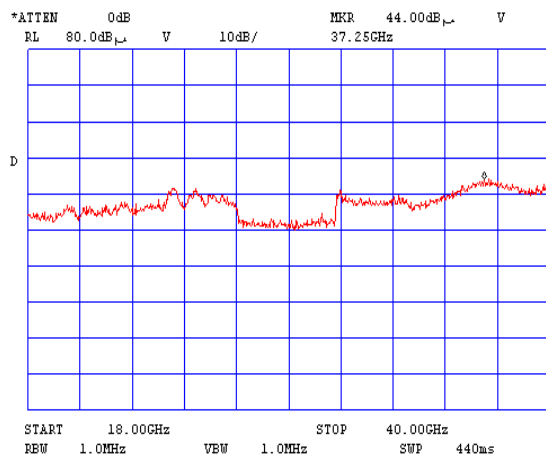
Model: XTRM-BS-2SIS-5.4-Ext

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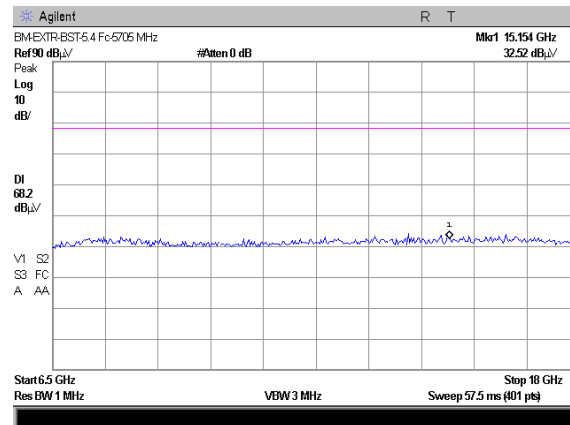
FCC ID: LKT-EXTR-50



Plot # 70



Plot # 72



Plot # 71





Test report No: 9012321870/1

Title: BreezeMAX Extreme 5.4 Base station

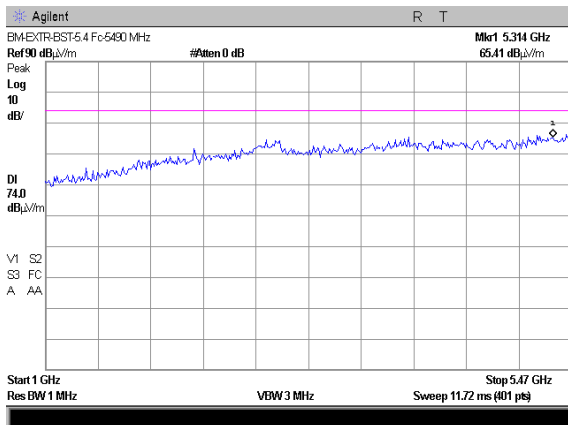
Model: XTRM-BS-2SIS-5.4-Ext

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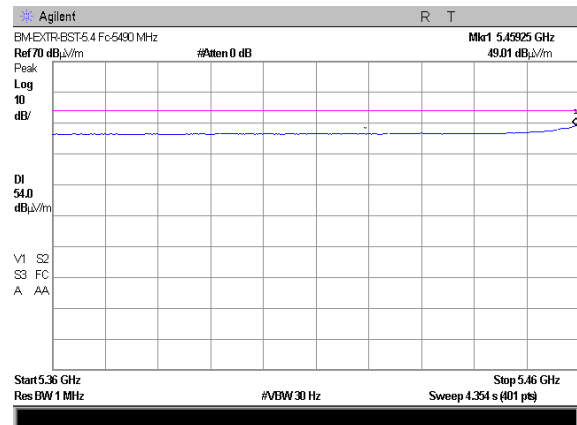
FCC ID: LKT-EXTR-50

Antenna sector 17 dBi.

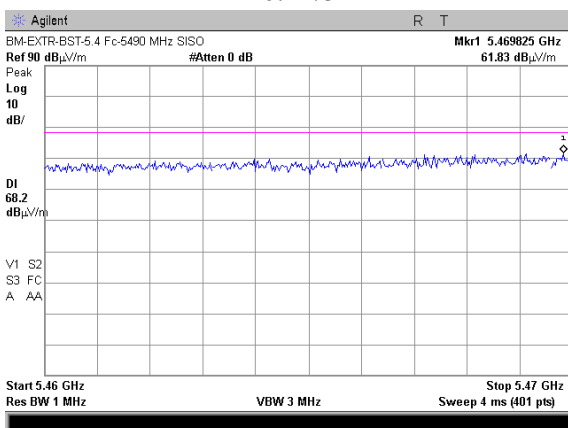
Carrier frequency 5490 MHz.



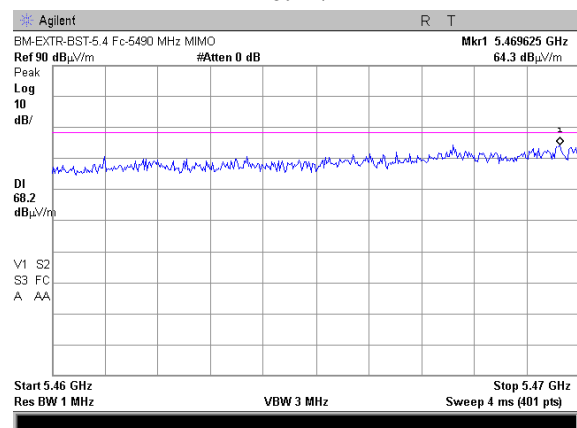
Plot # 73



Plot # 74



Plot # 75



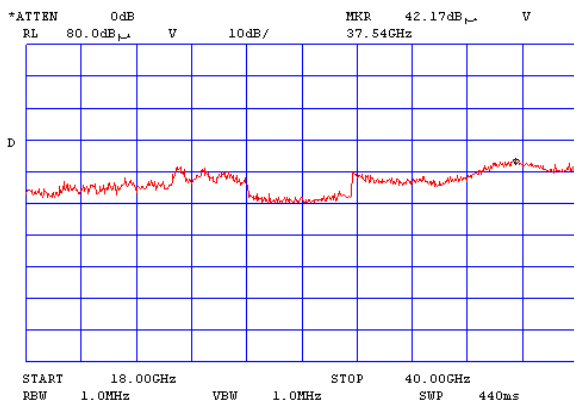
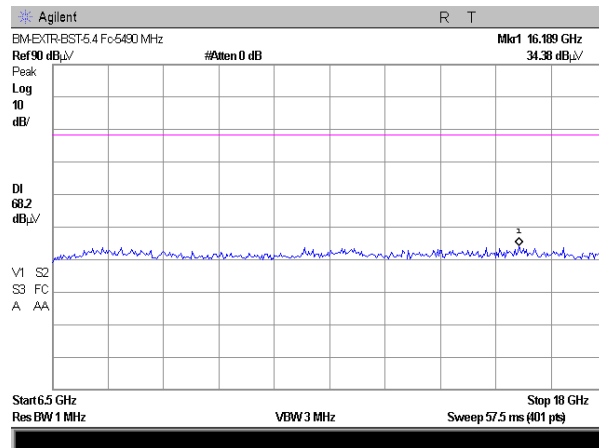
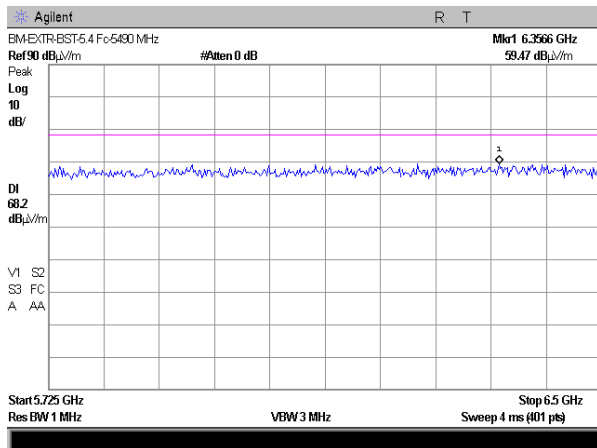
Plot # 76



**Test report No:** 9012321870/1  
**Title:** BreezeMAX Extreme 5.4 Base station  
**Model:** XTRM-BS-2SIS-5.4-Ext

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FCC ID: LKT-EXTR-50





Test report No: 9012321870/1

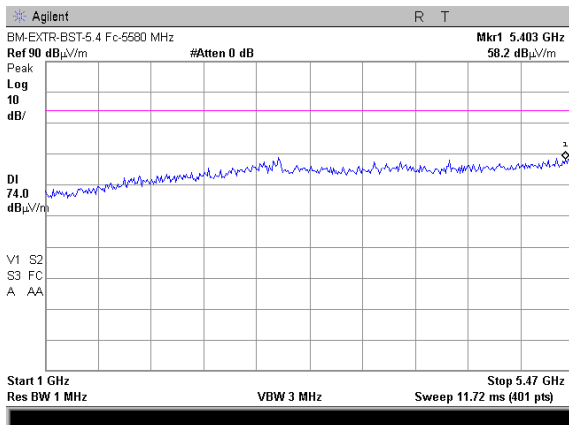
Title: BreezeMAX Extreme 5.4 Base station

Model: XTRM-BS-2SIS-5.4-Ext

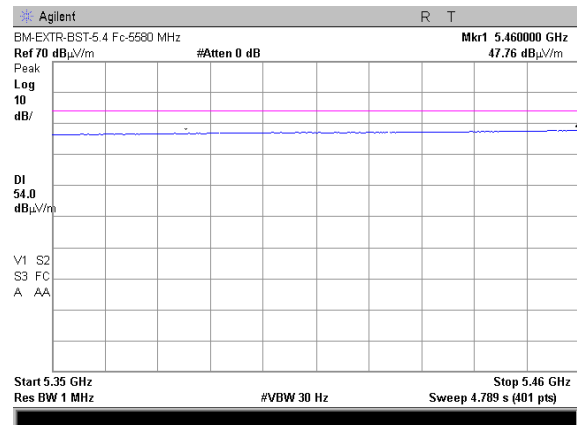
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FCC ID: LKT-EXTR-50

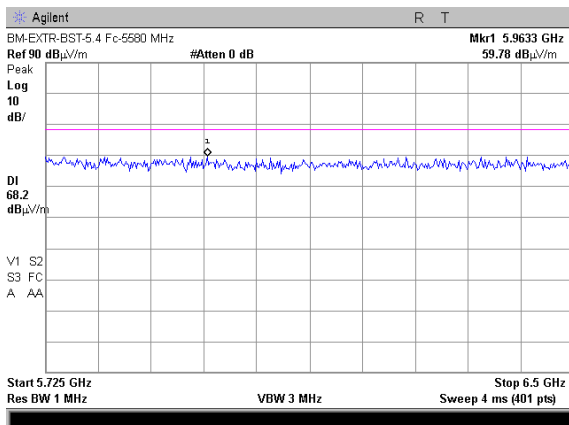
Carrier frequency 5580 MHz.



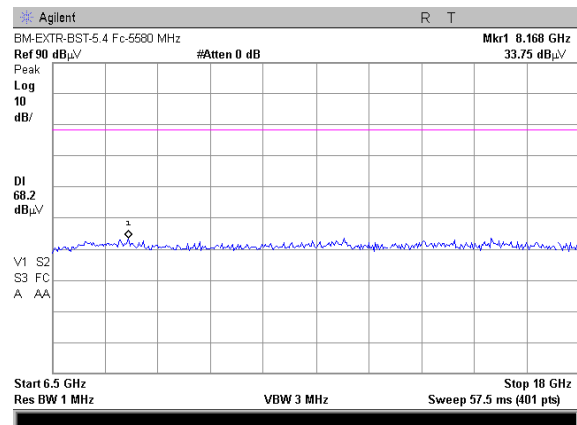
Plot # 80



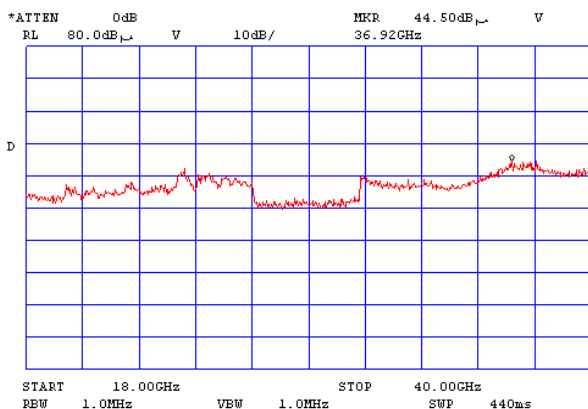
Plot # 81



Plot # 82



Plot # 83



Plot # 84



Test report No: 9012321870/1

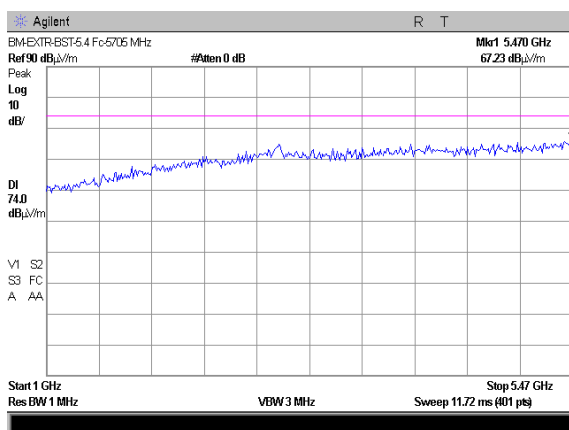
Title: BreezeMAX Extreme 5.4 Base station

Model: XTRM-BS-2SIS-5.4-Ext

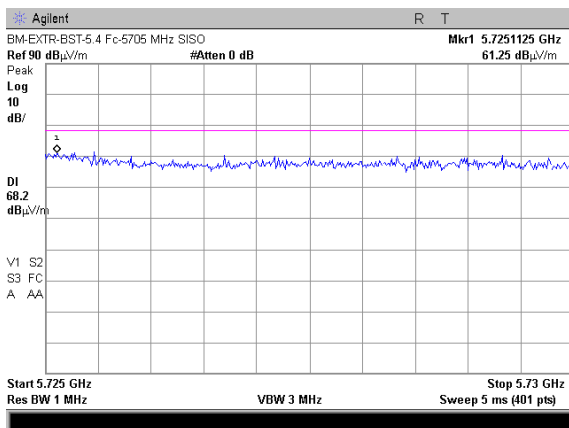
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FCC ID: LKT-EXTR-50

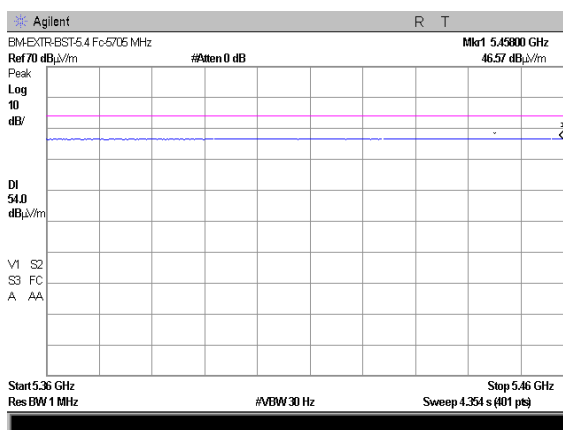
Carrier frequency 5705 MHz.



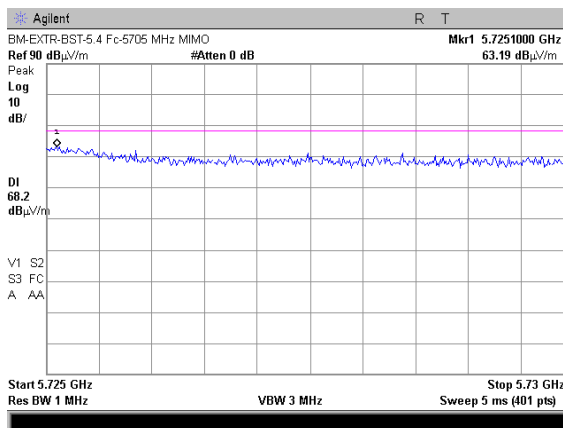
Plot # 85



Plot # 87



Plot # 86



Plot # 88



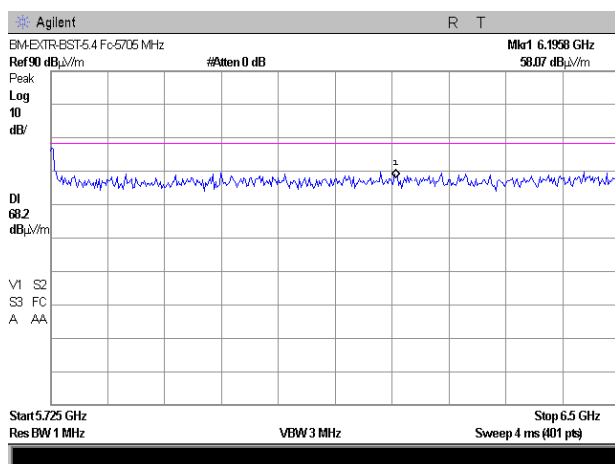
**Test report No:** 9012321870/1

**Title:** BreezeMAX Extreme 5.4 Base station

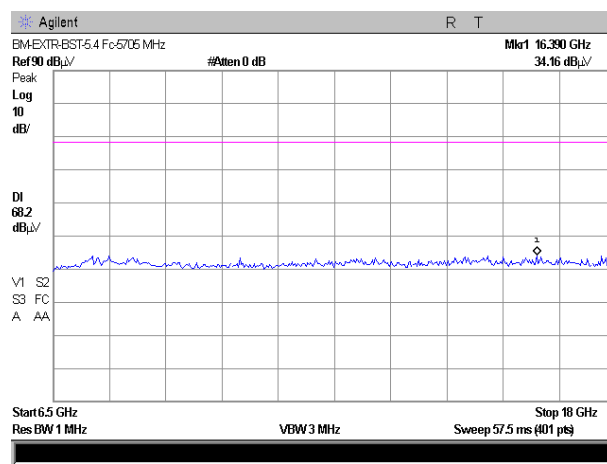
**Model:** XTRM-BS-2SIS-5.4-Ext

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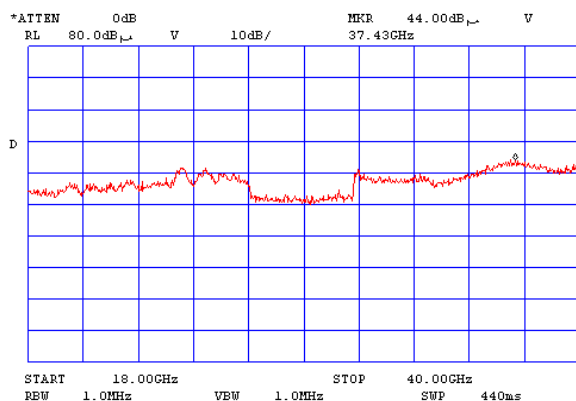
**FCC ID:** LKT-EXTR-50



Plot # 89



Plot # 90



Plot # 91

**Test report No:** 9012321870/1**Page 40 of 50 Pages****Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**FCC ID:** LKT-EXTR-50

### 5.1.5 Peak excursion test

Method of measurement DA 02-2138  
 Operating Frequency Range 5.490 - 5.705 GHz  
 Ambient Temperature 23<sup>0</sup> C Relative Humidity 49% Air Pressure 1009 hPa

The measurements were performed at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5.490 - 5.705 GHz frequency band under maximum data transfer bit rate.

| RF chain | Carrier frequency, MHz | Measured ratio, dB | Limit, dB | Margin, dB | Reference to plot # |
|----------|------------------------|--------------------|-----------|------------|---------------------|
| 1        | 5490                   | 11.9               | 13        | 1.1        | 92                  |
|          | 5580                   | 11.9               | 13        | 1.1        | 93                  |
|          | 5705                   | 11.9               | 13        | 1.1        | 94                  |
| 2        | 5490                   | 10.8               | 13        | 1.2        | 95                  |
|          | 5580                   | 10.7               | 13        | 1.3        | 96                  |
|          | 5705                   | 10.8               | 13        | 1.2        | 97                  |

### REQUIREMENT

The ratio of the peak excursion of the modulation envelope to the peak transmit power shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less as required in sec. 15.407 (a) (6).

### TEST PROCEDURE

The test was performed at worse case mode at maximum allowed output power.

The measurements were performed at three transmitted carrier (channel) frequencies at bottom, middle and top of the 5.490 - 5.705 GHz frequency band under maximum data transfer bit rate.

Test was conducted with the follow SA settings:

Trace #1 – RBW = 1 MHz VBW = 3 MHz Max hold mode.

Trace #2 – RBW = 1 MHz VBW = 1 kHz were VBW was calculated from transmission time duration T. (plot # 98).  $VBW = 1 \text{ kHz} > 1/T = 1/2.84 \text{ ms} = 0.35 \text{ kHz}$

### TEST SAMMARY

Transmitter meets standard requirement.

### TEST EQUIPMENT USED:

|   |   |   |   |  |  |  |
|---|---|---|---|--|--|--|
| 2 | 3 | 4 | 5 |  |  |  |
|---|---|---|---|--|--|--|

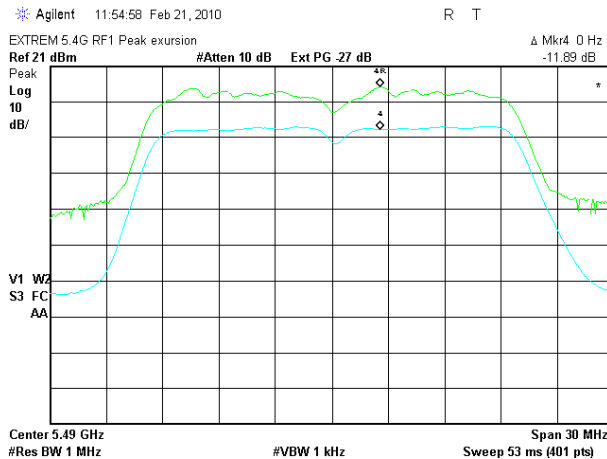


**Test report No:** 9012321870/1  
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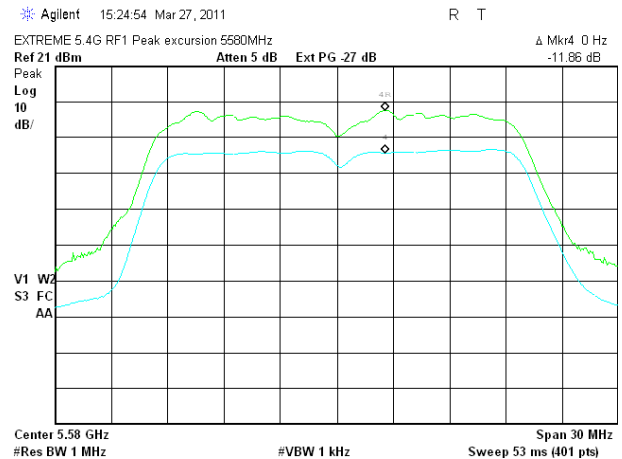
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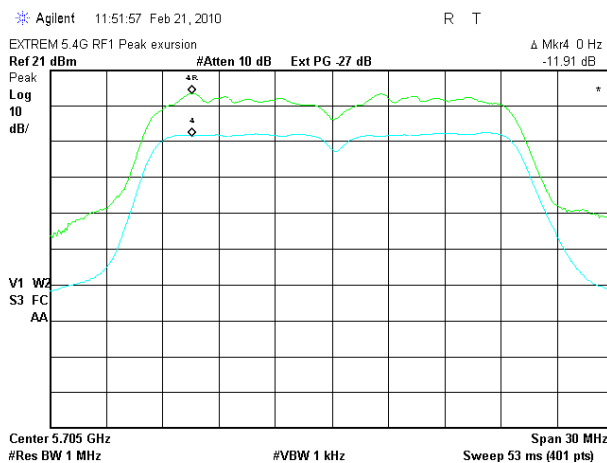
### RF chain #1



Plot # 92. Carrier Frequency 5490 MHz



Plot # 93. Carrier Frequency 5580 MHz



Plot # 94. Carrier Frequency 5705 MHz



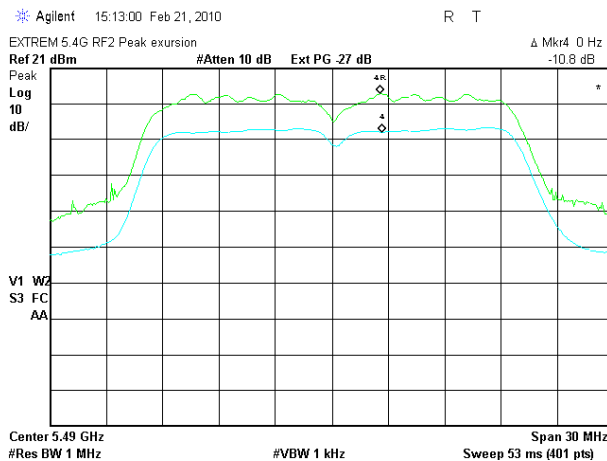


**Test report No:** 9012321870/1  
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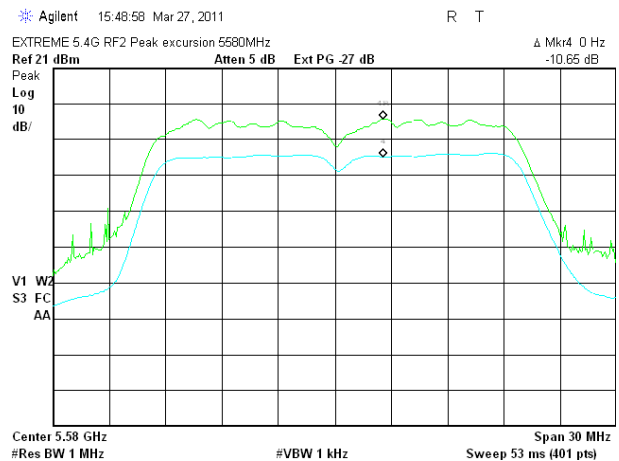
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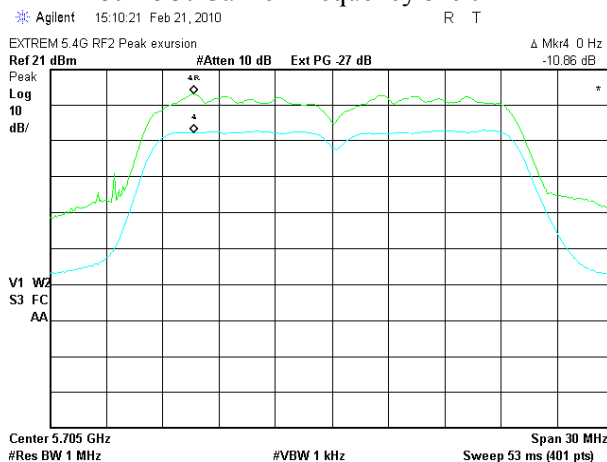
**RF chain # 2**



**Plot # 95. Carrier Frequency 5490 MHz**



**Plot # 96. Carrier Frequency 5580 MHz**



**Plot # 97. Carrier Frequency 5705 MHz**



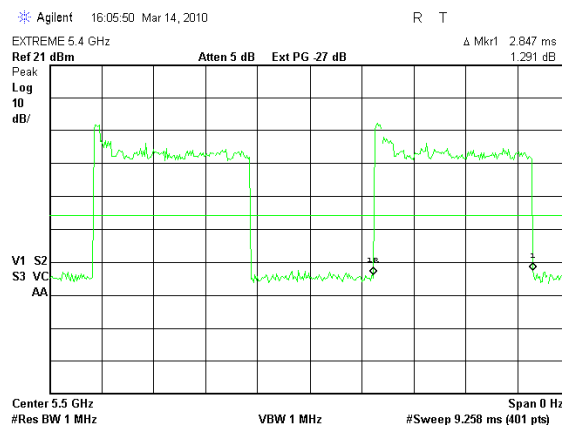
**Test report No: 9012321870/1**

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**Model: XTRM-BS-2SIS-5.4-Ext**

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Plot # 98. Measurement of transimtion time duration T.

Video bandwidth was calculated from transimtion time duration T.

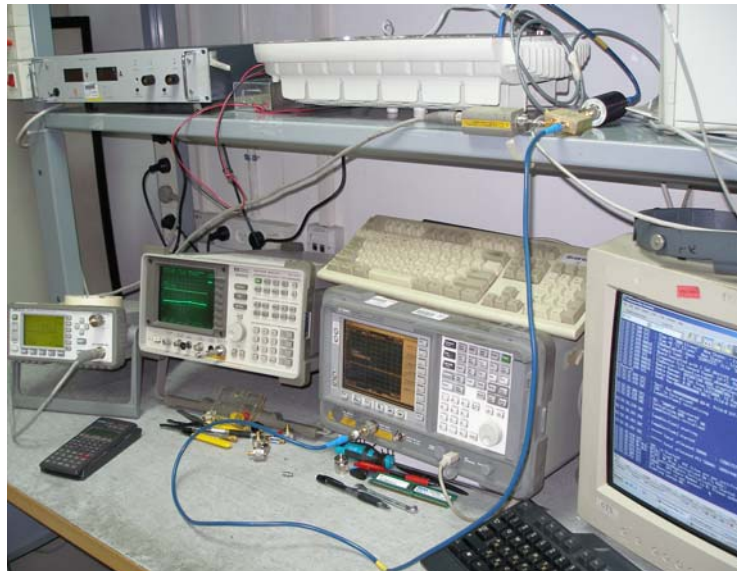
Calculated VBW = 1 kHz > 1/T = 1/2.84 ms = 0.35 kHz.

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## APPENDIX A      Photographs



**Photo 1. Conducted measurements. Test setup.**

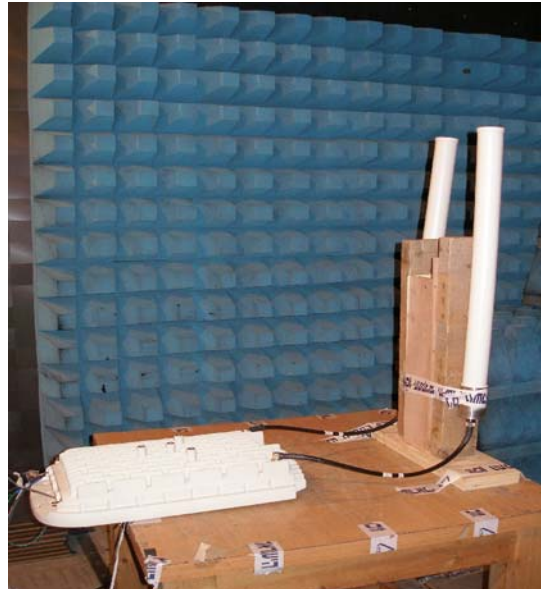


**Photo 2. Test setup with internal antenna.**

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**Photo 4. RE test setup with external Omni antennas.**



**Photo 5. RE test setup with external sector antennas.**

**Test report No:** 9012321870/1**Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**Page 46 of 50 Pages****FCC ID:** LKT-EXTR-50**APPENDIX B Test equipment used****Test equipment used**

| No | Description                               | Manufacturer information       |                  |            | Due Calibration date |
|----|-------------------------------------------|--------------------------------|------------------|------------|----------------------|
|    |                                           | Name                           | Model No         | Serial No  |                      |
| 1  | Spectrum Analyzer<br>9 kHz - 40 GHz       | HP                             | 8565E            | 3835A01359 | June 2011            |
| 2  | Spectrum Analyzer<br>9 kHz - 26.5 GHz     | Agilent                        | 4407B            | US40241729 | June 2011            |
| 3  | Attenuators 20 dB<br>DC – 8.5 GHz         | Aeroflex/<br>Weinshel          | 33-30-34         | A3451      | June 2011            |
| 4  | Power splitter 1.7 – 9 GHz                | Mini-Circuits                  | ZN2PD-9G         | 0142       | June 2011            |
| 5  | Cable RF 1m                               | Huber-Suhner                   | Sucoflex 104     | 21324/4PE  | October 2011         |
| 6  | Double Ridged Guide Antenna<br>1 – 18 GHz | EMCO                           | 3115             | 5802       | Aug 2011             |
| 7  | Broadband Horn antenna<br>15 – 40 GHz     | Schwarzbeck<br>Mess-Electronik | BBHA 9170        | 9170-341   | Aug 2011             |
| 8  | Antenna Biconilog<br>30 – 2000 MHz        | Schaffner-Chase                | CBL6112B         | S/N 23181  | Aug 2011             |
| 9  | Spectrum analyzer<br>10 KHz-26.5 GHz      | HP                             | E7405A           | SII 4944   | April 2011           |
| 10 | EMI Receiver 9 kHz-6.5 GHz                | HP                             | 8546A+85460A     | SII 4068   | April 2011           |
| 11 | Spectrum analyzer<br>20 Hz - 13.6 GHz     | Agilent                        | MXA 9020A        | MY48010501 | June 2011            |
| 12 | LISN 9 kHz – 30 MHz                       | FCC                            | LISN 250-32-4-16 | SII5023    | October 2011         |
| 13 | Transient limiter<br>0.009-200 MHz        | HP                             | 11947A           | 3107105    | October 2011         |
| 14 | Cable RF 4m                               | Huber-Suhner                   | Sucoflex 104PE   | 21329/4PE  | October 2011         |
| 15 | Cable RF 0.5m                             | Huber-Suhner                   | Multiflex 141    | 520201     | October 2011         |
| 16 | Active Loop antenna<br>10 kHz – 30 MHz    | EMCO                           | 6502             | SII 4874   | October 2011         |



**Test report No:** 9012321870/1**Page 47 of 50 Pages****Title:** BreezeMAX Extreme 5.4 Base station**Model:** XTRM-BS-2SIS-5.4-Ext**FCC ID:** LKT-EXTR-50**Cable Loss (10m cable + Mast)**

| 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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| 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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| 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.21329/4PE; 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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**Title:** BreezeMAX Extreme 5.4 Base station

**Model:** XTRM-BS-2SIS-5.4-Ext

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**FCC ID:** LKT-EXTR-50

## APPENDIX C General information.

### 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( $\mu$ V)   | decibel referred to one microvolt             |
| dB( $\mu$ 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                             |
| rms            | root mean square                              |

### Specification references

|                      |                                                                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47 CFR part 15: 2009 | Radio Frequency Devices                                                                                                                                             |
| 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 |
| ANSI/TIA-603-C: 2004 | Land Mobile FM or PM Communication Equipment Measurement and Performance.                                                                                           |