NF-TA-R060013

NEX1 Future Co., Ltd.

FCC TEST REPORT

The Reputation of LG Defense Industry Continues with NEX1 Future.

Locations & Offices



July 13, 2006 NEX 1 Future Co., Ltd.

Revision No: 1.0 Page: 1 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

TEST REPROT CERTIFICATION

Applicant : Dream Technology Co., Led.

Adderss : 340-5, yang-dang Ri, jik-san Eup, Cheon-an si, Chung-Nam, Korea

EUT Name : MONO HEADSET

Model No. : WEP20X

Serial No. : Engineering Sample

FCCID : UD5WEP20X

Testing location : Nex1 Future Co., Ltd.

133, Kongdan-Dong, Gumi-City, Kyeongsangbuk-Do, 730-030, R.O.K

Applied : FCC Part 15

specification

Test result : The above mentioned test item passed.

Test Date July 13, 2006 Review Date July 13, 2006

Tested by Hyo-Jeung, Cho Reviewed by Jeong-Hi, Jin

Title Engineer Title EMC Manager

Signature // Signature

I HEREBY CERTIFY THAT the data shown in this report were made in accordance with the procedures given in the applied specification and I assume full responsibility for accuracy and completeness of these data.

Note: This test report relates to the a. m. test item. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products.

Revision No: 1.0 Page: 2 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Contents

| 1. GENERAL INFORMATION | 5 |
|---|----|
| 1.1 Product Description | 5 |
| 1.2 Project data | 5 |
| 1.3 APPLICANT | 5 |
| 1.4 MANUFACTURER | 5 |
| 2. EUT Information | 6 |
| 2.1 GENERAL EUT INFORMATION | 6 |
| 2.2 CENTER FREQUENCY OF TESTED CHANNEL | 6 |
| 2.3 Test Environment | 6 |
| 2.4 ACCESSORIES AND ANCILLARY EQUIPMENT | 6 |
| 3. TESTING FACILITIES | 7 |
| 4. EUT DESCRIPTION AND OPERATIONAL DESCRIPTION | 7 |
| 5. Test Set-up | 8 |
| 5.1 PRINCIPLE OF CONFIGURATION | 8 |
| 5.2 OPERATIONAL MODES | 8 |
| 5.3 APPLIED SPECIFICATION | 8 |
| 6. TEST REPORT SUMMARY | 9 |
| 7. TEST RESULTS | 10 |
| 7.1 ANTENNA CONNECTOR REQUIREMENTS | 10 |
| 7.2 AC CONNECTED EMISSION | 11 |
| 7.3 CARRIER FREQUENCY SEPARATION | 12 |
| 7.4 TIME OF OCCUPANCY(DWELL TIME) | 14 |
| 7.5 20dB Bandwidth | 16 |
| 7.6 NUMBER OF HOPPING FREQUENCIES REQUIREMENTS | 20 |
| 7.7 PSEUDORANDOM FHS AND EQUAL HOPPING FREQUENCY USE REQUIREMENTS | 22 |
| 7.8 RECEIVER INPUT BANDWIDTH REQUIREMENTS | 23 |



NF-TA-R060013

NEX1 Future Co., Ltd.

| 7.9 PEAK OUTPUT POWER | 24 |
|---|----|
| 7.10 BAND-EDGE COMPLIANCE | 28 |
| 7.11 Spurious Conducted Emissions | 32 |
| 7.12 Spurious Radiated emissions | 43 |
| 8. LIST OF TEST AND MEASUREMENT INSTRUMENTS | 46 |
| 9. Notes | 47 |

Revision No: 1.0



NF-TA-R060013

NEX1 Future Co., Ltd.

1. General Information

1.1 Product Description

Product Name : MONO HEADSET

Product ID : WEP20X
Serial No. : Prototype
FCC ID : UD5WEP20X

1.2 Project data

Receipt of EUT : July 3, 2006

Date of Test : July 13, 2006

Data of report : July 13, 2006

1.3 Applicant

Company Name : Dream Technology Co., Led.

Address : 340-5, yang-dang Ri, jik-san Eup, Cheon-an si,

Chung-Nam, Korea

Contact Person : Mr. Jay Kang

1.4 Manufacturer

Company Name : Dream Technology Co., Led.

Address : 340-5, yang-dang Ri, jik-san Eup, Cheon-an si,

Chung-Nam, Korea

Contact Person : Mr. Jay Kang

Revision No: 1.0 Page: 5 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

2. EUT Information

2.1 General EUT Information

| Туре | Transmitter | Receiver | |
|---------------------------|---------------------------------|----------------------|--|
| FCC Classification | FHSS Sequence Spread | FHSS Sequence Spread | |
| | Spectrum (FHSS) Spectrum (FHSS) | | |
| Operating frequency range | 2402 – 2480 MHz 2402 – 2480 MHz | | |
| Bands of operation | 2.400 - 2.4835 GHz | 2.400 – 2.4835 GHz | |
| Number of Channels | 79 | 79 | |
| Channel Separation | 1MHz | 1MHz | |
| Type of Antenna | Chip Antenna | Chip Antenna | |
| Power Supply | DC 3.7 V Lithum Ion | DC 3.7 V Lithum Ion | |
| | Battery | Battery | |

2.2 Center Frequency of Tested Channel

| Frequency | Tx (MHz) | Rx (MHz) |
|-----------|------------|-----------|
| Lowest | 2402 | 2402 |
| Middle | 2441 | 2441 |
| Highest | 2480 | 2480 |

2.3 Test Environment

| Temperature | 25°C | |
|-------------------|----------|--|
| Relative Humidity | 30 ~ 60% | |
| DC Voltage | DC 3.7V | |

2.4 Accessories and Ancillary Equipment

| Equipment | Model No. Serial Number | | Maker |
|-----------|-------------------------|-----------|---------|
| Laptop PC | PS428L-OE142 | 30014068J | Toshiba |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Revision No : 1.0 Page: 6 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

3. Testing Facilities

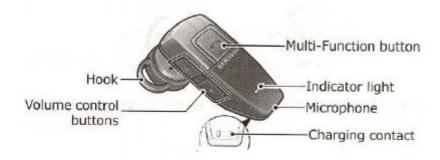
Nex1 Future Co., Ltd.

133, Kongdan-Dong, Gumi-City, Kyeongsangbuk-Do, 730-030, R.O.K

4. EUT Description and Operational Description

* BASIC DESCRIPTION

Your headset is compatible with most Bluetooth phones that are compliant with Bluetooth specification and support the headset and/or hands-free profile(s). Ensure that your phone has Bluetooth capability by visiting your phone manufacturer's web site.



* Equipment under test description

| Data | Entries |
|--|-----------------------|
| Power Control? | No |
| Normal operation during battery charging? | No |
| Serial Number if any | N/A |
| Hardware Version | VER 1.0 |
| Software Version | VER 1.0 |
| Voltage (Min, Nom , Max) | 3.0, 3.7, 4.0 |
| Temperature (Min, Nom , Max) | -10, 25, 50 |
| Battery Type if any (ex. Lithium Ion) | Li-ion Battery |
| Antenna Gain (maximum) | 0 dBi |
| Antenna Type (ex. Surface mounting type) | Surface mounting type |
| LSP(Largest supported packet)? | DH5 |

Revision No: 1.0 Page: 7 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

5. Test Set-up

5.1 Principle of configuration

Conducted: The equipment under test (EUT) was configured with a temporary SMA Connector and EUT transmits the related packet type with PRBS 9 as payload.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes and test settings were adapted accordingly in reference to the instructions for use.

For details, please refer to the Operation mode in chapter 7.

5.2 Operational Modes

Page Scan, Inquiry Scan Hopping Mode Fixed mode (2402Mhz, 2441Mhz and 2480Mhz)

5.3 Applied Specification

FCC Part 15

Revision No: 1.0 Page: 8 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

6. Test Report Summary

| Related | Test Cases | FCC Part | Result |
|---------|--------------------------------|----------|---------|
| Clause | | Sections | (Note1) |
| 7.1 | Antenna Connector Requirements | 15.203 | С |
| | | 15.204 | |
| 7.2 | AC Connected Emission | 15.207 | N/A |
| 7.3 | Carrier Frequency Separation | 15.247 | Pass |
| 7.4 | Time of Occupancy(Dwell time) | 15.247 | Pass |
| 7.5 | 20dB Bandwidth | 15.247 | Pass |
| 7.6 | Number of Hopping Frequencies | 15.247 | С |
| | Requirements | | |
| 7.7 | Pseudorandom Frequency Hopping | 15.247 | С |
| | Sequence and Equal Hopping | | |
| | Frequency use Requirements | | |
| 7.8 | Receiver Input Bandwidth | 15.247 | С |
| | Requirements | | |
| 7.9 | Peak Output Power | 15.247 | Pass |
| 7.10 | Band-edge Compliance | 15.247 | Pass |
| 7.11 | Spurious Conducted emissions | 15.247 | Pass |
| 7.12 | Spurious Radiated emissions | 15.247 | Pass |

^{*} Note1: C: Complies, Pass: Passed, Fail : Failed and NA : Not Applicable

Revision No : 1.0 Page: 9 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7. Test Results

7.1 Antenna Connector Requirements

Requirements

Subclause 15.203 and 15.204(c)

According to the Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. And according to the Part 15.204(c), only the antenna with which an intentional radiator is authorized may be used with the intentional radiator.

Test results

RESULT: Complies

The antenna is permanently attached on the PCB.

The EUT has a Chip Antenna soldered to the circuit board.

For more information on the antenna:

Antenna gain : 0 dBi

Manufacturer : AMOTECH Co., Ltd.

Model No. : 931C5

Type : Surface Chip Antenna

Revision No: 1.0 Page: 10 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.2 AC Connected Emission

Test Mode and conditions

The power is supplied by a DC 3.7 V Li-ion Polymer and EUT doesn't operate during charging.

Requirements

Subclause15.207(a)

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a $50 \, \mu H/50$ ohms line impedance stabilization network (LISN).

| Frequency of Emission (M | Conducted Limit (dBµV) | | |
|--------------------------|------------------------|---------|--|
| Hz) | Quasi-peak | Average | |
| 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 results

N/A

Revision No: 1.0 Page: 11 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.3 Carrier Frequency Separation

Test Mode and conditions

Mode of operation : Tx mode (hopping on), DH1 packet with PRBS9 payload

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 100kHz/300kHz

Requirements

Subclause 15.247(a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

Test results

| Reference frequency | Channel Separation | Limit | Results |
|---------------------|--------------------|---------------------|---------|
| (MHz) | (kHz) | | |
| 2441.000 | 996.0 | Minimum of 25kHz or | Pass |
| | | the 20dB bandwidth | |

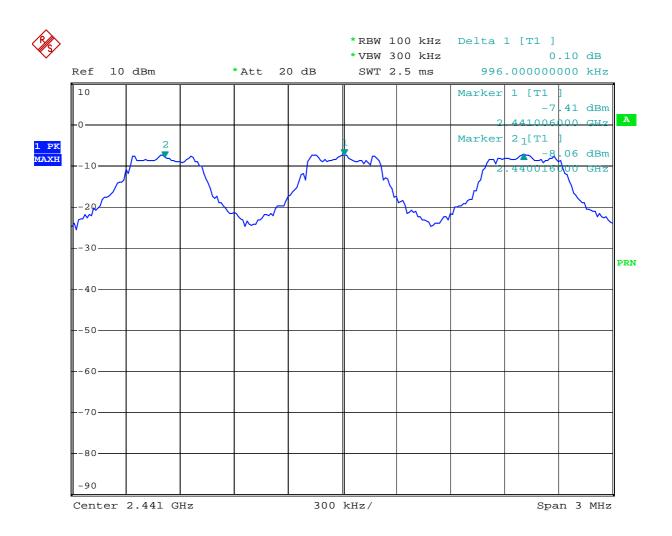
Revision No: 1.0 Page: 12 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Carrier Frequency Separation Plot



Date: 12.JUL.2006 10:23:56

Revision No: 1.0 Page: 13 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.4 Time of Occupancy(Dwell time)

Test Mode and conditions

Mode of operation : Hopping on , DH5 packet with PRBS9 payload

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 1MHz/300kHz

Requirements

Subclause 15.247(a)(1)(iii)

Frequency hopping systems in the 2400 - 2483.5 MHz band shall use at least 75 hopping frequencies. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

Test results

The system makes 1600 hops per second or has a length of 625us.

Let take DH5 packet in worst case. A DH5 packet has 5 slots for transmitting and 1 slot for receiving. It means it can have maximum 266.67 (=1600/6) hops per second.

Therefore it has 3.38 hops(=266.67/79) per second for each channel.

And it has 106.81hops appearance for 31.6 seconds (= 0.4x79channels).

| Length per | Number slots | Dwell Time | Limit | Results |
|------------|--------------|-------------|-------------|---------|
| slot(L) | (N) | (=L*N) | | |
| 2.93ms | 106.81 | 312.9533 ms | 0.4 seconds | Pass |

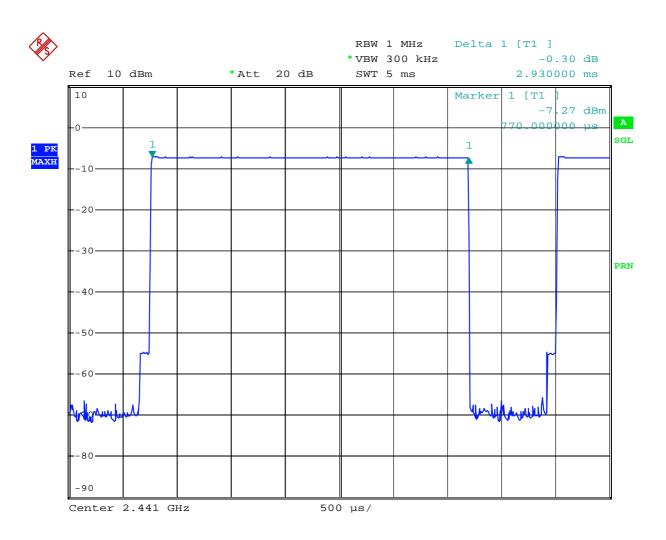
Revision No: 1.0 Page: 14 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Time of Occupancy Plot



Date: 12.JUL.2006 10:18:58

Revision No: 1.0 Page: 15 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.5 20dB Bandwidth

Test Mode and conditions

Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz),

DH5 packet with PRBS9 payload

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 30kHz/100kHz

Requirements Subclause 15.247(a)(1)

It is mentioned implicitly as the maximum 20dB bandwidth of the hopping channel is 1Mhz.

Test results

| Operating frequency (MHz) | 20dB Bandwidth (MHz) | Limit | Results |
|---------------------------|----------------------|---------|---------|
| 2402 | 0.928 | < 1 Mhz | Pass |
| 2441 | 0.936 | < 1 Mhz | Pass |
| 2480 | 0.928 | < 1 Mhz | Pass |

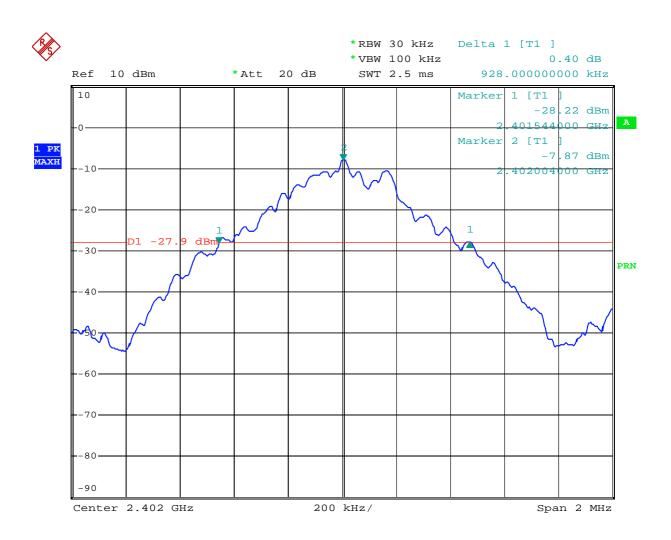
Revision No: 1.0 Page: 16 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

20dB Bandwidth Plot - 2402Mhz



Date: 12.JUL.2006 10:27:50

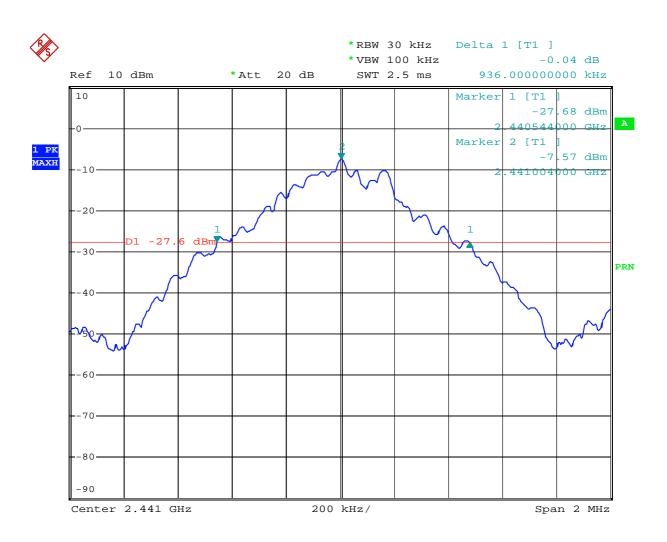
Revision No: 1.0 Page: 17 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

20dB Bandwidth Plot - 2441Mhz



Date: 12.JUL.2006 10:29:09

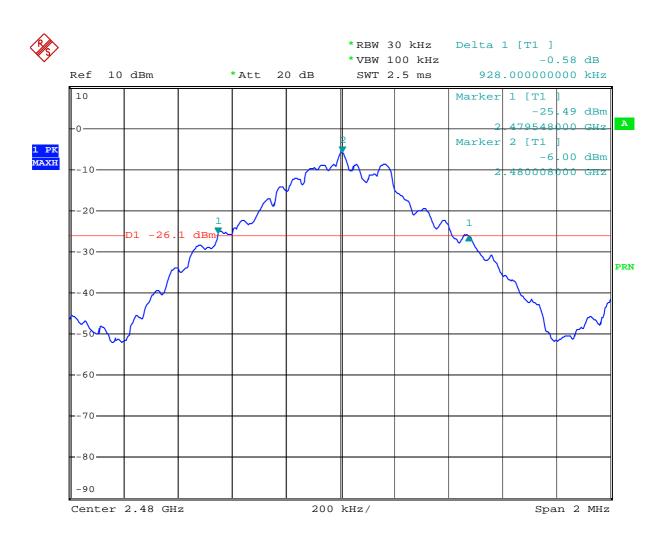
Revision No: 1.0 Page: 18 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

20dB Bandwidth Plot - 2480Mhz



Date: 12.JUL.2006 10:30:51

Revision No: 1.0 Page: 19 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.6 Number of Hopping Frequencies Requirements

Test Mode and conditions

Mode of operation : Hopping, DH1 with PRBS9 payload

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 100kHz/100kHz

Requirements 15.247(a)(1)(iii)

Frequency hopping systems in the 2400-2483.5 Mhz band shall use at least 15 non-overlapping Channels.

Test results

| Operating frequency (MHz) | Number of Hopping | Limit | Results |
|---------------------------|-------------------|-------|---------|
| 2402~2480 | 79 | ≥ 15 | Pass |

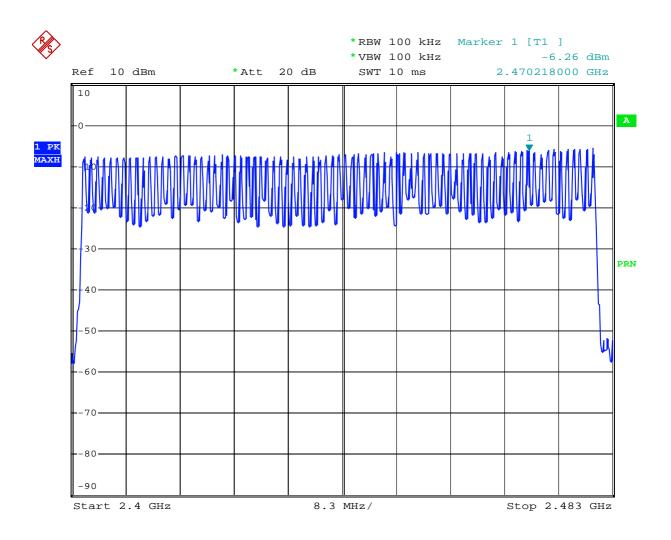
Revision No: 1.0 Page: 20 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Number of Hopping Frequencies Plot



Date: 12.JUL.2006 10:33:52

Revision No: 1.0 Page: 21 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.7 Pseudorandom FHS and Equal Hopping Frequency use Requirements

Requirements

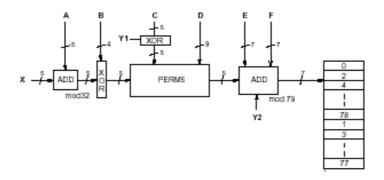
Subclause 15.247 (a)(1)

The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter.

<u>RESULT</u> Complies

The channel is represented by a pseudo-random hopping sequence hopping throug h the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master. For details, refer to the figure 1. The X input determines the phase in the 32-hop segment, whereas Y1 and Y2 selects between master-to-slave and slave-to-master transmission. The inputs A to D determine the ordering within the segment, the inputs E and F determine the mapping onto thehop frequencies.

The algorism in the Bluetooth specifications shows the each of its hoping channels Is used equally on average also.



< Figure 1 : Block diagram of hop selection kernel for 79 hop system >

Revision No: 1.0 Page: 22 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.8 Receiver Input Bandwidth Requirements

Requirements

Subclause 15.247 (a)(1)

The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in the synchronization with the transmitted signals.

<u>RESULT</u> Complies

The receiver bandwidth is equal to the receiver bandwidth in the 79 hopping channel mode, which is 1 MHz. The receiver bandwidth is indirectly verified during Bluetooth RF conformance testing.

Revision No: 1.0 Page: 23 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.9 Peak Output Power

Test Mode and conditions

Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz),

DH1 packet with PRBS 9 payload

Measurement Method: Conducted

Detector : PK

Trace : Max hold RBW/VBW : 1MHz/3MHz

Requirements

Subclause 15.247(b)(1)

For frequency hopping systems operating in the 2400~2483.5 Mhz band employing at least 75hopping channels, the maximum output power of the intentional radiator shall not exceeded 1 watt.

Test results

| Operating | Reading | Cable | Actual | Limit | Results |
|-----------|---------|-------------|-------------|-------|---------|
| Frequency | (dBm) | attenuation | Value | (W) | |
| (MHz) | | (dB) | (W) | | |
| 2402 | -7.38 | 1.80 | 0.000276694 | <1.0 | Pass |
| 2441 | -6.99 | 1.83 | 0.000304800 | <1.0 | Pass |
| 2480 | -5.43 | 1.85 | 0.000438531 | <1.0 | Pass |

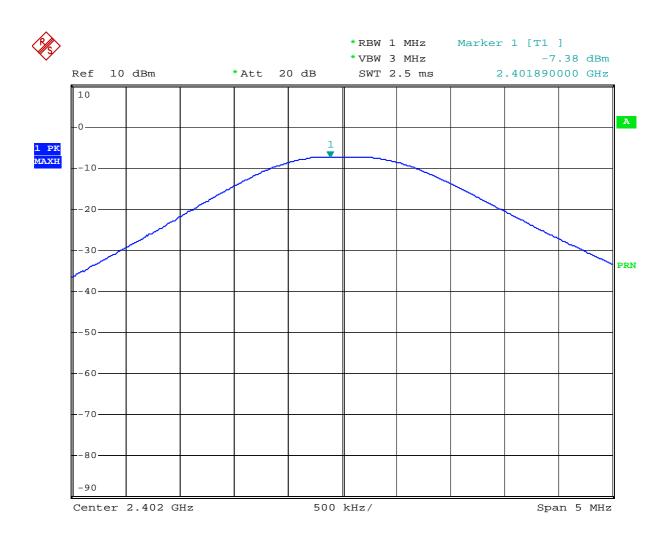
Revision No: 1.0 Page: 24 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Peak Output Power Plot - 2402



Date: 12.JUL.2006 10:35:08

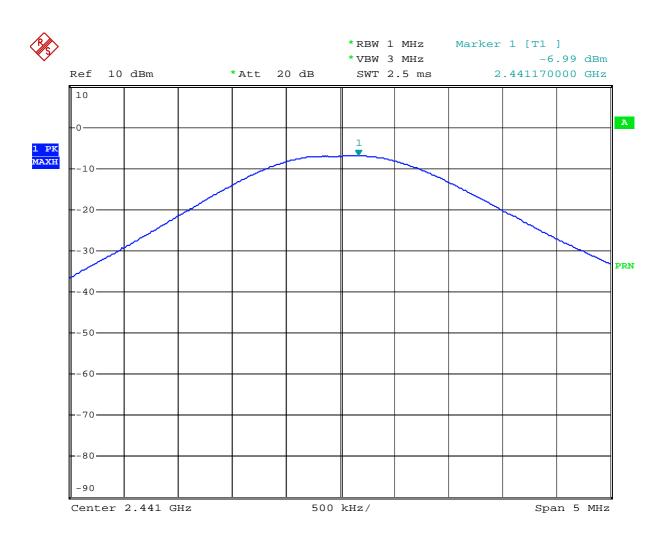
Revision No: 1.0 Page: 25 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Peak Output Power Plot - 2441



Date: 12.JUL.2006 10:35:37

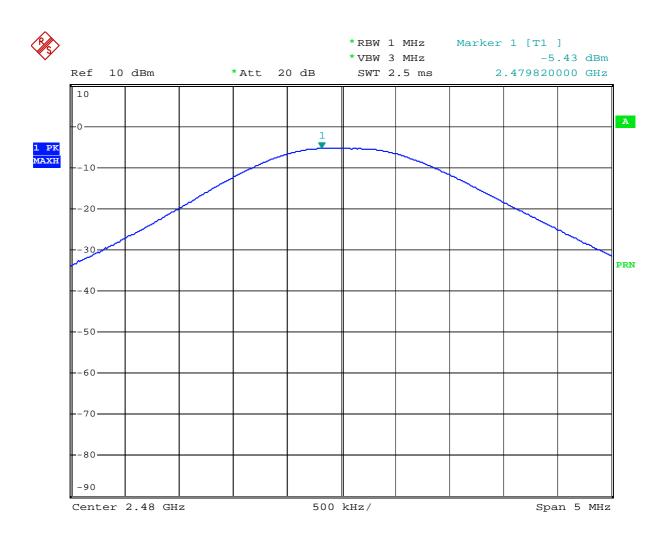
Revision No: 1.0 Page: 26 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Peak Output Power Plot - 2480



Date: 12.JUL.2006 10:36:08

Revision No: 1.0 Page: 27 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.10 Band-edge Compliance

Test Mode and conditions

Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 300kHz/1.0MHz

<u>Requirements</u>

Subclause 15.247(c)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100k Hz bandwidth within the band that contains the highest level of the desired power, b ased on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

Test results

There is no peak found outside any 100kHz bandwidth of the operating frequency band in the three transmit frequency.

| Tx Frequency (| RF power outside | Limit | Results |
|----------------|--------------------|------------|---------|
| MHz) | 100kHz BW (MHz) | Lillin | results |
| 2402 | No peak above 20dB | 20dB below | Pass |
| 2441 | No peak above 20dB | 20dB below | Pass |
| 2480 | No peak above 20dB | 20dB below | Pass |

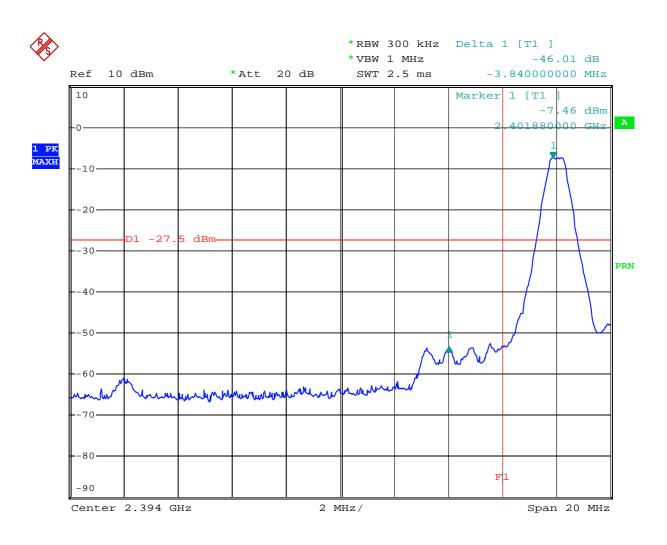
Revision No: 1.0 Page: 28 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Band-edge Compliance Plot - 2402



Date: 12.JUL.2006 10:40:27

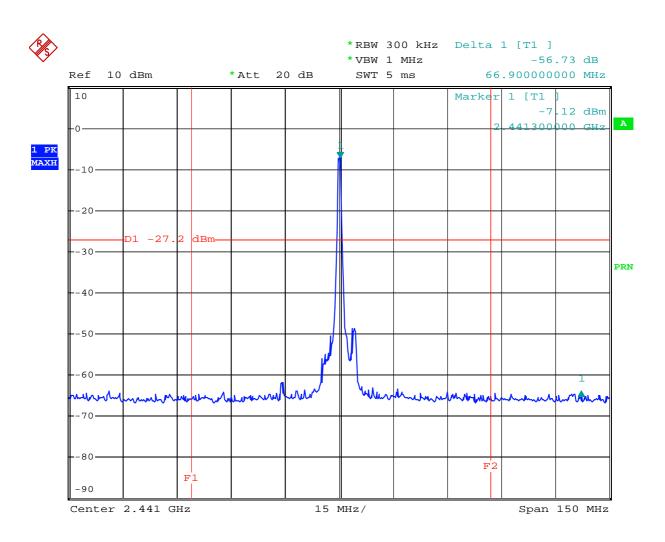
Revision No: 1.0 Page: 29 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Band-edge Compliance Plot - 2441



Date: 12.JUL.2006 10:42:10

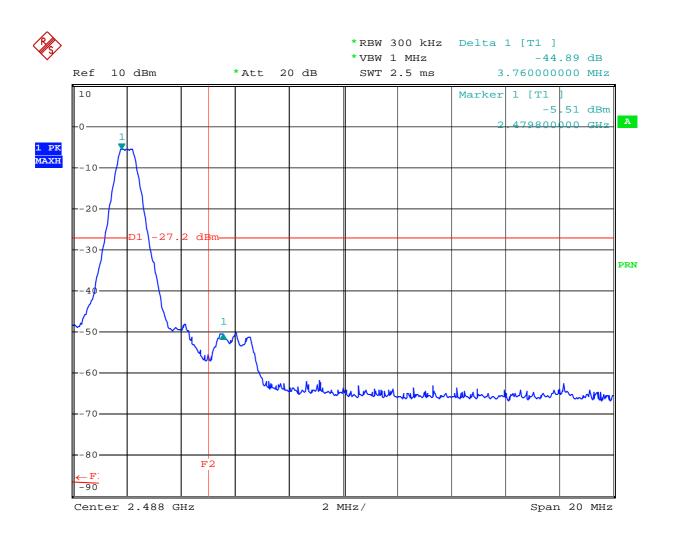
Revision No: 1.0 Page: 30 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Band-edge Compliance Plot - 2480



Date: 12.JUL.2006 10:43:21

Revision No: 1.0 Page: 31 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.11 Spurious Conducted emissions

Test Mode and conditions

Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz), DH1 packet

Measurement Method: Conducted

Detector : PK

Trace : Max hold

RBW/VBW : 100kHz/300kHz

Requirements Subclause 15.247(c)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100k Hz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required.

Test results

| Frequency (MHz) | Reading Value (dBm) | Correction Factor (dB) | Results (dBm) | Reference Value (dBm) | Delta to Reference (dB) |
|--------------------|---------------------------|------------------------------|------------------|--------------------------|-------------------------------|
| | (| Operating frequ | iency : 2402M | Hz | |
| 4795.66 | -50.38 | 3.4 | -46.98 | -27.380 | 19.6 |
| 15160 | -52.15 | 6.0 | -46.15 | -27.380 | 18.77 |
| 20050 | -46.61 | 6.7 | -39.91 | -27.380 | 12.53 |
| | | | | | |
| | | | | | |

Revision No: 1.0 Page: 32 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

| Frequency (MHz) | Reading Value (dBm) | Correction Factor (dB) | Results (dBm) | Reference Value (dBm) | Delta to Reference (dB) |
|--------------------|---------------------------|------------------------------|------------------|--------------------------|-------------------------------|
| | (| Operating frequ | iency : 2441Mi | Hz | |
| 4875.42 | -47.81 | 3.4 | -44.41 | -26.990 | 17.42 |
| 13620 | -51.82 | 6.0 | -45.82 | -26.990 | 18.83 |
| 20000 | -47.85 | 6.7 | -41.15 | -26.990 | 14.16 |
| | | | | | |
| | | | | | |

| Frequency (MHz) | Reading Value (dBm) | Correction Factor (dB) | Results (dBm) | Reference Value (dBm) | Delta to Reference (dB) |
|--------------------|---------------------------|------------------------------|------------------|--------------------------|-------------------------------|
| | (| Operating frequ | iency : 2480Mi | Hz | |
| 4955.18 | -49.12 | 3.4 | -45.72 | -25.430 | 20.29 |
| 15000 | -52.19 | 6.0 | -46.19 | -25.430 | 20.76 |
| 20060 | -46.68 | 6.7 | -39.98 | -25.430 | 14.55 |
| | | | | | |
| | | | | | |

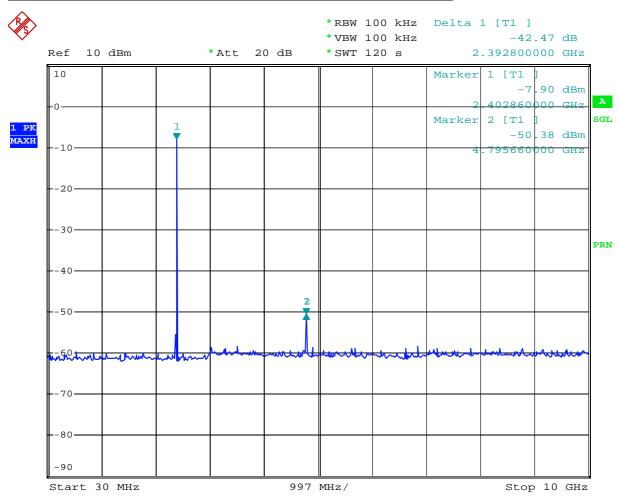
Revision No : 1.0 Page: 33 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2402 (30MHz~10GHz)



Date: 12.JUL.2006 09:51:23

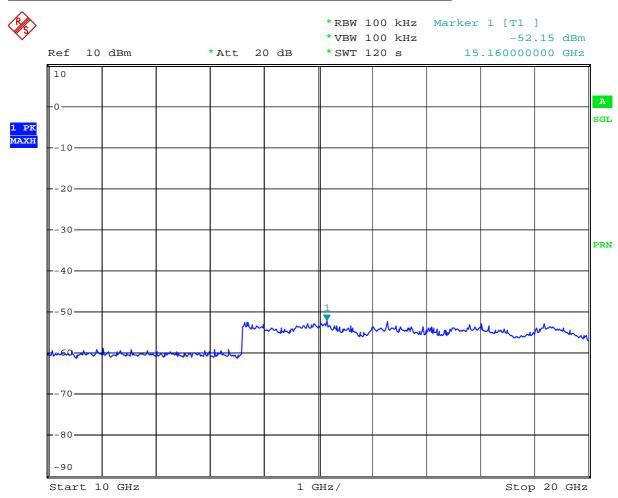
Revision No : 1.0 Page: 34 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2402 (10GHz~20GHz)



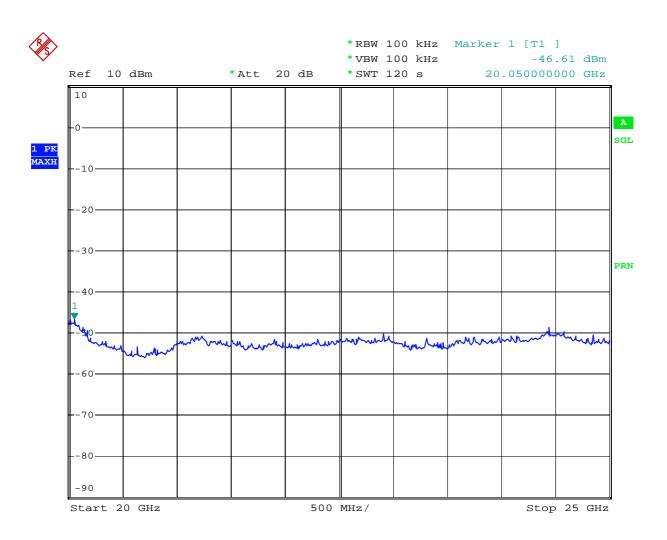
Date: 12.JUL.2006 09:54:11

Revision No: 1.0 Page: 35 of 47

NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2402 (20GHz~25GHz)



Date: 12.JUL.2006 09:57:05

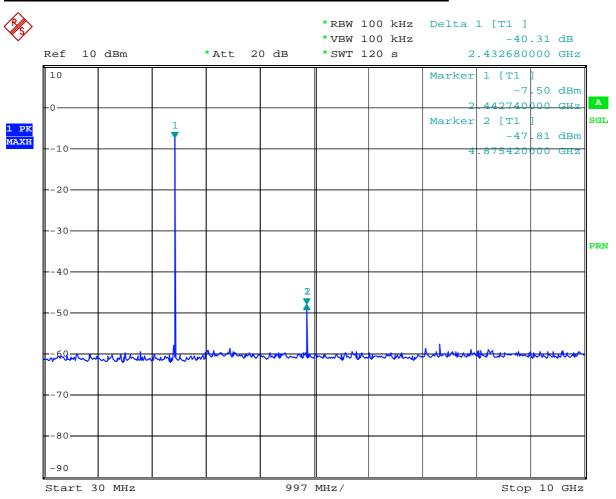
Revision No: 1.0 Page: 36 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2441 (30MHz~10GHz)



Date: 12.JUL.2006 09:48:43

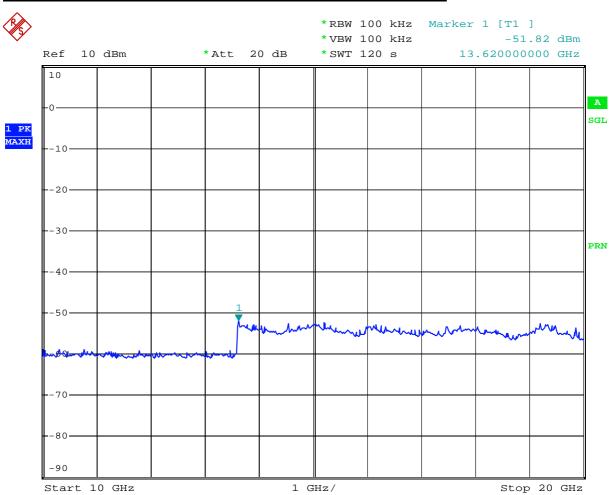
Revision No: 1.0 Page: 37 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2441 (10GHz~20GHz)



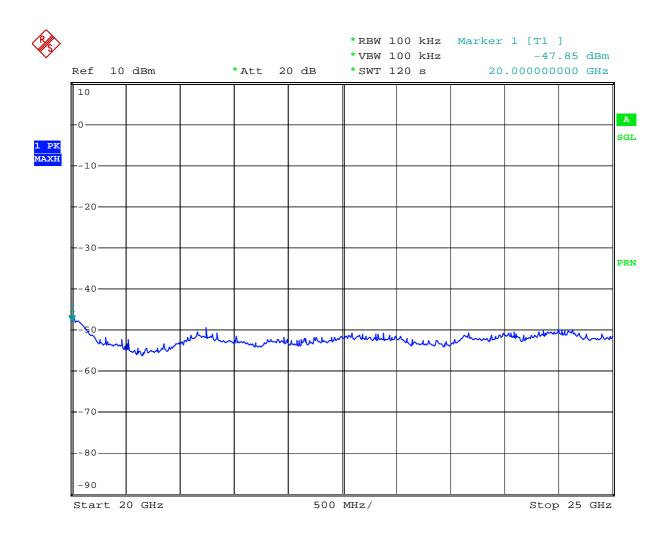
Date: 12.JUL.2006 09:41:57

Revision No: 1.0 Page: 38 of 47

NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2441 (20GHz~25GHz)



Date: 12.JUL.2006 09:45:39

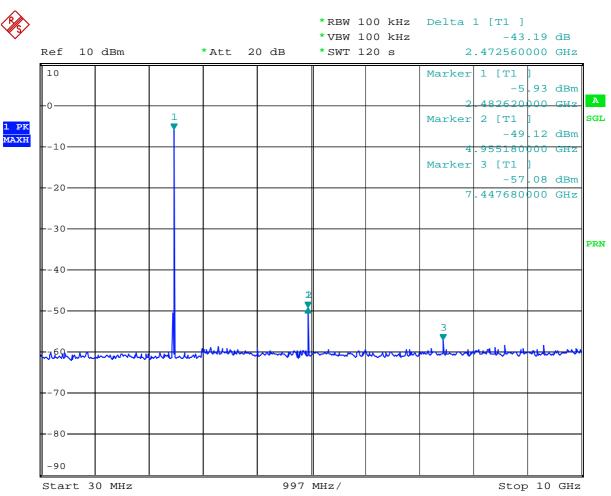
Revision No: 1.0 Page: 39 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2480 (30MHz~10GHz)



Date: 12.JUL.2006 10:00:12

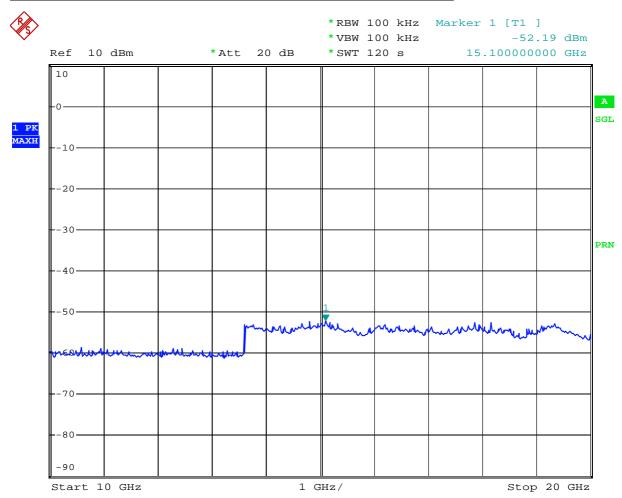
Revision No: 1.0 Page: 40 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2480 (10GHz~20GHz)



Date: 12.JUL.2006 10:11:31

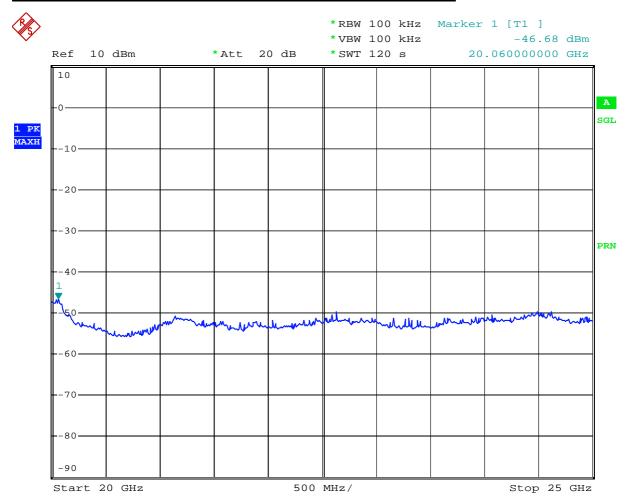
Revision No: 1.0 Page: 41 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

Spurious Conducted emissions plot- 2480 (20GHz~25GHz)



Date: 12.JUL.2006 10:07:12

Revision No: 1.0 Page: 42 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

7.12 Spurious Radiated emissions

Test Mode and conditions

Mode of operation : Tx mode (2402MHz, 2441MHz, 2480MHz),

DH1 packet

Detector : PK

Trace : Max hold

Measurement Method : Radiated- Enclosure

Measurement Distance: 3m

Measurement BW : 1 MHz for $f \ge 1$ GHz, 100kHz for f < 1 GHz

Requirements

Subclause 15.247(c)

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

According to Section 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency | Field strength | Field strength | Measurement |
|-----------|--------------------|-----------------------|-------------|
| (MHz) | (microvolts/meter) | (dBμV/m) | distance |
| | | | (meters) |
| 30-88 | 100** | $20*\log(100) = 40.0$ | 3 |
| 88-216 | 150** | $20*\log(150) = 43.5$ | 3 |
| 216-960 | 200 | $20*\log(200) = 46.0$ | 3 |
| 960-2500 | 500 | $20*\log(500) = 54.0$ | 3 |

^{**} Except as provided in paragraph(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72Mhz, 76-88Mhz, 174-216Mhz or 470-806Mhz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241. According to section 15.35(b), on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission

Revision No: 1.0 Page: 43 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

measurements are specified in this part, including emission measurements below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated

Test results

| Frequ- | Polariz- | Corr. | Re | sult | Lir | nit | Ma | rgin | Table | Ant. |
|--------|----------|--------|---------|---------|-------------|-------|-----------|------|--------|--------|
| ency | ation | Factor | (dBu | V/m) | (dBuV | /m) | (d | B) | Angle | Height |
| (MHz) | (H/V) | (dB) | Α | Р | Α | Р | Α | Р | (Deg.) | (m) |
| | | | Dperati | na fred | l quency | : 240 | L 2Mhz | | | |
| | | | - | | · · | ı | | | | |
| 4804 | V | 16.3 | 45.2 | 55.3 | 54 | 74 | 8.8 | 18.7 | 120 | 1.6 |
| 4804 | Н | 16.3 | 44.6 | 55.0 | 54 | 74 | 9.4 | 19.0 | 275 | 1.8 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| Frequ- | Polariz- | Corr. | Re | sult | Lir | nit | Ма | rgin | Table | Ant. |
|--------|----------|--------|---------|---------|--------|-------|------|------|--------|--------|
| ency | ation | Factor | (dBu | V/m) | (dBuV | /m) | (d | B) | Angle | Height |
| (MHz) | (H/V) | (dB) | Α | Р | А | Р | А | Р | (Deg.) | (m) |
| | | (| Operati | ng fred | quency | : 244 | 1Mhz | | | |
| 4882 | V | 16.4 | 44.7 | 54.8 | 54 | 74 | 9.3 | 19.2 | 120 | 1.6 |
| 4882 | Н | 16.4 | 43.8 | 53.7 | 54 | 74 | 10.2 | 20.3 | 275 | 1.8 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Revision No: 1.0 Page: 44 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

| Frequ- | Polariz- | Corr. | Re | sult | Lir | nit | Ма | rgin | Table | Ant. |
|--------|----------|--------|---------|---------|--------|-------|-------|------|--------|--------|
| ency | ation | Factor | (dBu | V/m) | (dBuV | /m) | (d | B) | Angle | Height |
| (MHz) | (H/V) | (dB) | A | Р | Α | Р | А | Р | (Deg.) | (m) |
| | | (| Operati | ng free | quency | : 248 | 80Mhz | | | |
| 4960 | V | 16.4 | 43.3 | 56.4 | 54 | 74 | 10.7 | 17.6 | 120 | 1.6 |
| 4960 | Н | 16.4 | 43.0 | 55.6 | 54 | 74 | 11.0 | 18.4 | 275 | 1.8 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Note:

- 1. Remark "*" means that the emission frequency is produced by local oscillator.
- 2. Remark"- " means that the emission level is too low to be measured.
- 3. The measurement uncertainty of the radiated emission test is $\pm 3 dB$
- 4. "A" and "P" mean average and peak measurement respectively.
- 5. There are no spurious emissions found between the lowest internal oscillating frequency and 30 MHz.

Revision No: 1.0 Page: 45 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

8. List of Test and Measurement Instruments

| | Kind of Equipment | Туре | Manufacturer | S/N |
|-------------|------------------------|----------|--------------|--------------|
| | EMI Test Receiver | ESI26 | R/S | 8340.0010.02 |
| | Spectrum Analyzer | FSP30 | R/S | 1093.4495.30 |
| | Tracking Generator | ESMI-B1 | R/S | 1033.3240.52 |
| | Spectrum Analyzer | 8566B | HP | 3638A0857E |
| | Spectrum Analyzer | E4407B | HP | MY41310181 |
| | Wave Dipole Antenna | HZ-12 | R/S | 842006/0012 |
| | Wave Dipole Antenna | HZ-12 | R/S | 846556/0004 |
| | Biconical Antenna | 3104C | EMCO | 9408-4667 |
| | Biconical Antenna | 3109 | EMCO | 9405-2812 |
| | Log-Periodic Antenna | 3146A | EMCO | 1064 |
| | Biconilog Antenna | HLP2603 | EMC | 080100 |
| | V-Network | ESH3-Z5 | R/S | 847265/030 |
| | V-Network | ESH3-Z6 | R/S | 847250/016 |
| | T-Network | E-Z10 | R/S | 84480/011 |
| | LISN | 3825/2 | EMCO | 9502-2334 |
| | Turn Table | 2081 | EMCO | |
| | Antenna Tower | 1072-5 | EMCO | 9202-1651 |
| | Positioning Controller | 1090 | EMCO | |
| | Printer | C4569A | HP | SG78K1H1FS |
| | Absorbing Clamp | MDS 21 | R/S | 847905/005 |
| | Signal Generator | 2023 | MARCONI | 112246067 |
| | Swept Signal Generato | 83620B | HP | 3722A00549 |
| | 10dB Attenuator | 23-10-34 | Weinschel co | BD4316 |
| | 10dB Attenuator | 33-10-34 | Weinschel co | BB9784 |
| | Loop Antenna | 6507 | EMCO | 9408-1327 |
| \boxtimes | Antenna | 3142 | EMCO | 9710-1220 |
| \boxtimes | Antenna | 3115 | EMCO | 9202-3820 |
| \boxtimes | Antenna | 3160-08 | EMCO | 1168 |
| \boxtimes | Antenna | 3160-09 | EMCO | 1304 |
| | Amplifier | HP8447F | HP | 3113A06911 |
| | Amplifier | HP83006 | HP | 3104A00611 |

Revision No: 1.0 Page: 46 of 47



NF-TA-R060013

NEX1 Future Co., Ltd.

| Amplifier | HP8449B | HP | 3008A00859 |
|--------------------------|----------|---------------|------------|
| EMI test receiver | ESCS30 | R&S | 839809/003 |
| Artificial mains network | ESH2-Z5 | R&S | 829991/009 |
| | | | |
| Artificial hand | FCC-AH-1 | Fischer custo | 2008 |
| | | m communicat | |
| | | ions Inc. | |

9. Notes

N/A

Revision No : 1.0 Page: 47 of 47