

Contention Based Protocol Verification

1. Description

The product complies with the requirements of an unrestricted contention based protocol. It is scheduled by a master device which employs spectrum sensing to determine if other devices are transmitting based on thresholds which can be configured by the operator. When the energy detection feature is enabled at the master device, transmission of the product will be disabled within a certain time when detected interference levels at the master device is above the higher threshold; similarly transmission of the product will be enabled after a certain time when detected interference levels at the master device is below the lower threshold. This test is to verify the transmission status of the product followed by energy detection functionality of the master device.

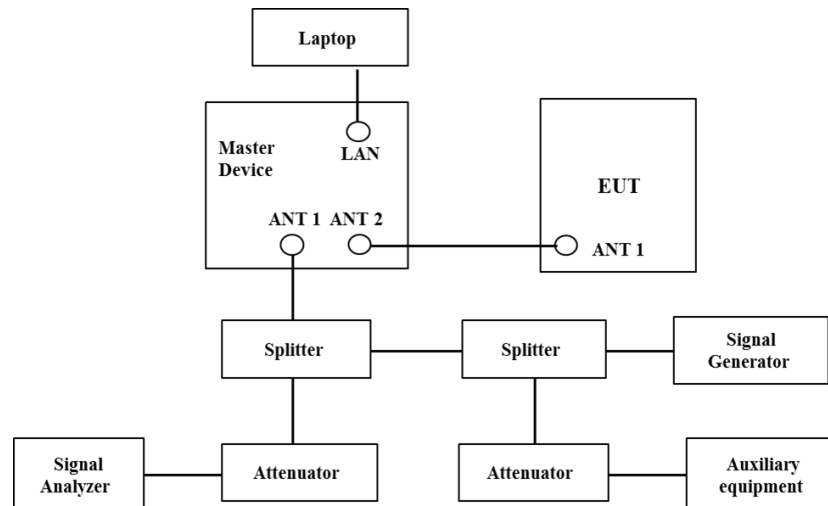
2. Applicant Information

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|-----------------|--|
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3. EUT Information

| | |
|--------------------|---------------------------|
| Product Name: | LTE Indoor CPE |
| Model number: | CN6671 |
| Frequency range: | 3650MHz ~ 3700MHz |
| Channel Bandwidth: | 5MHz, 10MHz, 15MHz, 20MHz |
| Modulation: | BPSK/QPSK/16QAM |
| TX&RX | 1TX & 2RX |

4. Test Setup Block



5. Test Equipment List

| Manufacturer | Description | Model | Serial Number |
|---------------|-------------------------|--------------|---------------|
| Agilent | Signal Analyzer | N9020A | MY49100419 |
| Agilent | Vector Signal Generator | N5182A | MY50141276 |
| Weinschel | Attenuator | 24-20-34 | BN8715 |
| Lenovo | Laptop | T420 | R8-WZ3DF |
| Mini-Circuits | Splitter | ZN2PD2-63-S+ | SF846201431 |

Master device (eNB) details:

| | |
|--------------------|-----------------------|
| Product Name: | LTE-TDD Base Station |
| Model number: | mBS1100 |
| Frequency range: | 3650MHz ~ 3700MHz |
| Channel Bandwidth: | 10MHz & 20MHz |
| Modulation: | BPSK/QPSK/16QAM/64QAM |
| Equipment Type | Fixed |

6. Test Result

Higher threshold = -85dBm

Lower Threshold = -90dBm

CPE will transmit when the master device (eNB) schedules UL transmissions.

| Master Device Signal | | Interference signal | | CPE Test Results | |
|----------------------|---------------|---------------------|-----------|------------------|---------------------------|
| Bandwidth MHz | Frequency MHz | Frequency MHz | Level dBm | When eNB ON | When eNB OFF |
| 10 | 3655 | 3650.5 | -84 | OFF within 40ms. | OFF |
| | 3655 | 3650.5 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3655 | 3655 | -84 | OFF within 40ms. | OFF |
| | 3655 | 3655 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3655 | 3659.5 | -84 | OFF within 40ms. | OFF |
| | 3655 | 3659.5 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3670.5 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3670.5 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3675 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3675 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3679.5 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3679.5 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3695 | 3690.5 | -84 | OFF within 40ms. | OFF |
| | 3695 | 3690.5 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3695 | 3695 | -84 | OFF within 40ms. | OFF |
| | 3695 | 3695 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3695 | 3699.5 | -84 | OFF within 40ms. | OFF |
| | 3695 | 3699.5 | -91 | ON in UL time. | ON in UL time after 40ms. |

| Master Device Signal | | Interference signal | | CPE Test Results | |
|----------------------|---------------|---------------------|-----------|------------------|---------------------------|
| Bandwidth MHz | Frequency MHz | Frequency MHz | Level dBm | When eNB ON | When eNB OFF |
| 20 | 3660 | 3651.1 | -84 | OFF within 40ms. | OFF |
| | 3660 | 3651.1 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3660 | 3660 | -84 | OFF within 40ms. | OFF |
| | 3660 | 3660 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3660 | 3668.9 | -84 | OFF within 40ms. | OFF |
| | 3660 | 3668.9 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3666.1 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3666.1 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3675 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3675 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3675 | 3683.9 | -84 | OFF within 40ms. | OFF |
| | 3675 | 3683.9 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3690 | 3681.1 | -84 | OFF within 40ms. | OFF |
| | 3690 | 3681.1 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3690 | 3690 | -84 | OFF within 40ms. | OFF |
| | 3690 | 3690 | -91 | ON in UL time. | ON in UL time after 40ms. |
| | 3690 | 3698.9 | -84 | OFF within 40ms. | OFF |
| | 3690 | 3698.9 | -91 | ON in UL time. | ON in UL time after 40ms. |