

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.

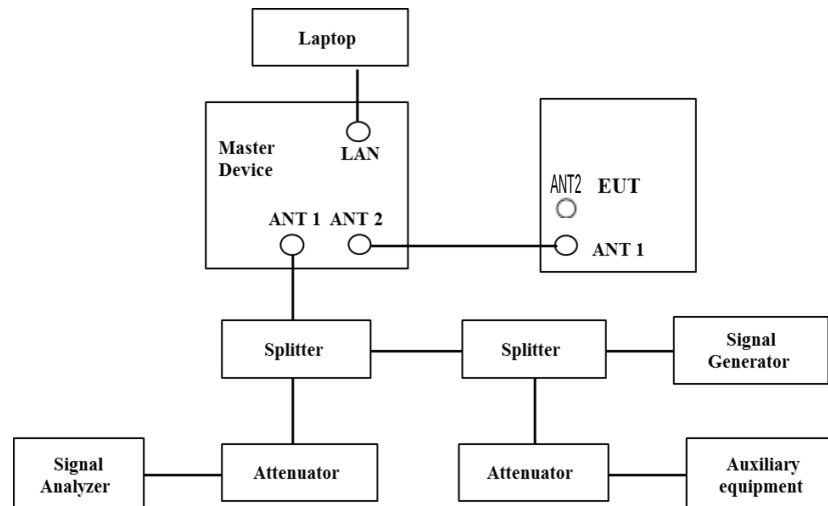
2. Applicant Information

Applicant:	Nokia Shanghai Bell Co. Ltd.
Address:	No. 388, Ningqiao Rd. Pilot Free Trade Zone, Shanghai, China 201206
Telephone:	+86-21-38434963
Contact person:	Leng Ligu
Email	liguo.leng@nokia-sbell.com

3. EUT Information

Product Name:	FastMile ABA
Model number:	3FE75114AAAA
Frequency range:	3650MHz ~ 3700MHz
Channel Bandwidth:	5MHz, 10MHz, 15MHz, 20MHz
Modulation:	QPSK/16QAM
TX&RX	2TX & 2RX

4. Test Setup Block



5. Test Equipment List

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSV40	101116	2018-07-23	2019-07-22
Rohde & Schwarz	Vector Signal Generator	SMBV100A	261558	2018-07-22	2019-07-21
Narda	Attenuator	10690812-2	26850-6	2018-01-10	2019-01-09
DELL	Notebook	GX620	D65874152	2018-02-03	2019-02-02
Mini-Circuits	Splitter	ZN2PD2-63-S+	SF846201466	2018-01-10	2019-01-09

Master device (eNB) details:

Product Name:	LTE-TDD Base Station
Model number:	3FE75113BBBB
Frequency range:	3650MHz ~ 3700MHz
Channel Bandwidth:	5MHz, 10MHz, 15MHz, 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
5	3652.5	3650.2	-84	OFF within 40ms.	OFF
	3652.5	3650.2	-91	ON in UL time.	ON in UL time after 40ms.
	3652.5	3652.5	-84	OFF within 40ms.	OFF
	3652.5	3652.5	-91	ON in UL time.	ON in UL time after 40ms.
	3652.5	3654.8	-84	OFF within 40ms.	OFF
	3652.5	3654.8	-91	ON in UL time.	ON in UL time after 40ms.
	3675	3672.7	-84	OFF within 40ms.	OFF
	3675	3672.7	-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	3677.3	-84	OFF within 40ms.	OFF
	3675	3677.3	-91	ON in UL time.	ON in UL time after 40ms.
	3697.5	3695.2	-84	OFF within 40ms.	OFF
	3697.5	3695.2	-91	ON in UL time.	ON in UL time after 40ms.
	3697.5	3697.5	-84	OFF within 40ms.	OFF
	3697.5	3697.5	-91	ON in UL time.	ON in UL time after 40ms.
	3697.5	3699.8	-84	OFF within 40ms.	OFF
	3697.5	3699.8	-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
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
15	3657.5	3655.2	-84	OFF within 40ms.	OFF
	3657.5	3655.2	-91	ON in UL time.	ON in UL time after 40ms.
	3657.5	3657.5	-84	OFF within 40ms.	OFF
	3657.5	3657.5	-91	ON in UL time.	ON in UL time after 40ms.
	3657.5	3659.8	-84	OFF within 40ms.	OFF
	3657.5	3659.8	-91	ON in UL time.	ON in UL time after 40ms.
	3675	3672.7	-84	OFF within 40ms.	OFF
	3675	3672.7	-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	3677.3	-84	OFF within 40ms.	OFF
	3675	3677.3	-91	ON in UL time.	ON in UL time after 40ms.
	3692.5	3690.2	-84	OFF within 40ms.	OFF
	3692.5	3690.2	-91	ON in UL time.	ON in UL time after 40ms.
	3692.5	3692.5	-84	OFF within 40ms.	OFF
	3692.5	3692.5	-91	ON in UL time.	ON in UL time after 40ms.
	3692.5	3694.8	-84	OFF within 40ms.	OFF
	3692.5	3694.8	-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.