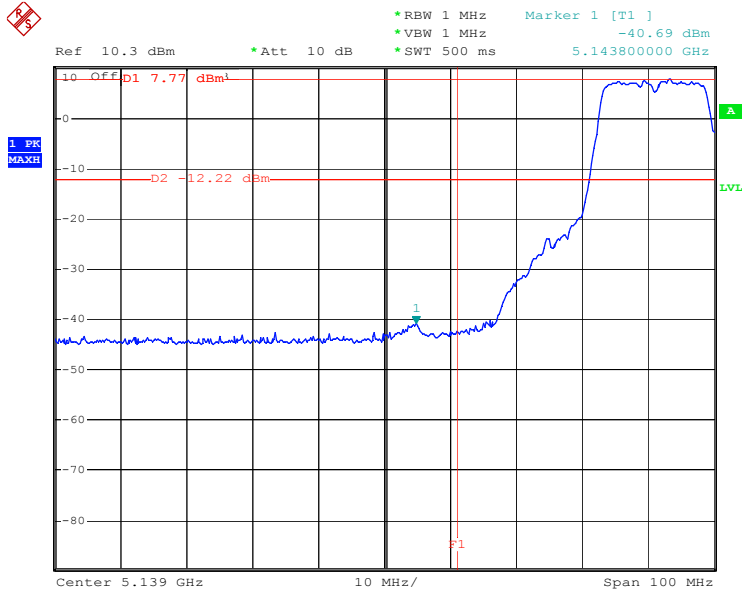
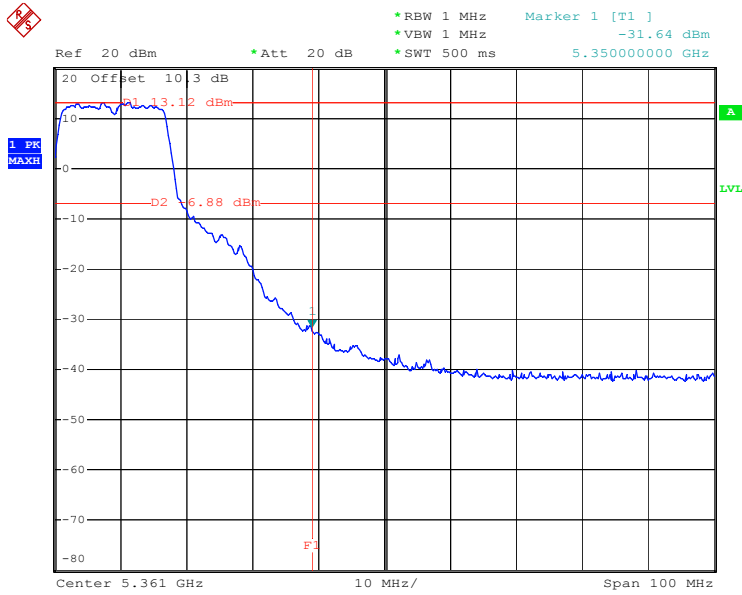


Ant 9



802.11a CH36



802.11a CH64

5.8 Peak Excursion Ratio Measurement

5.8.1 Measuring Instruments :

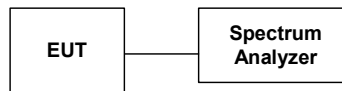
As described in chapter 6 of this test report.

5.8.2 Test Procedure :

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to and maintained at 1 MHz. First the video bandwidth is set to 1 MHz, Trace A is set to Max Hold, then to View. Then the video bandwidth is readjusted to 300 KHz, and the signal under this measurement condition is captured in Trace B.

The difference between the traces is investigated. The marker is placed at the frequency which shows the largest difference. The amplitude delta between the traces at this frequency is the peak excursion.

5.8.3 Test Setup Layout :



5.8.4 Test Result :

- Temperature : 24°C
- Relative Humidity :52%
- ◆ Test Antenna: Antenna 6
- Application: 802.11a

Channel	Frequency (MHz)	Peak Excursion (dB)	Limits (dB)	Mode Ref. No.
36	5180	8.88	13	6-1
48	5240	7.82	13	6-2
52	5260	8.09	13	6-3
64	5320	6.82	13	6-4

◆ Test Antenna: Antenna 7

➤ Application: 802.11a

Channel	Frequency (MHz)	Peak Excursion (dB)	Limits (dB)	Mode Ref. No.
36	5180	8.45	13	7-1
48	5240	8.96	13	7-2
52	5260	8.30	13	7-3
64	5320	8.08	13	7-4

◆ Test Antenna: Antenna 8

➤ Application: 802.11a

Channel	Frequency (MHz)	Peak Excursion (dB)	Limits (dB)	Mode Ref. No.
36	5180	8.72	13	8-1
48	5240	8.60	13	8-2
52	5260	7.64	13	8-3
64	5320	7.55	13	8-4

◆ Test Antenna: Antenna 9

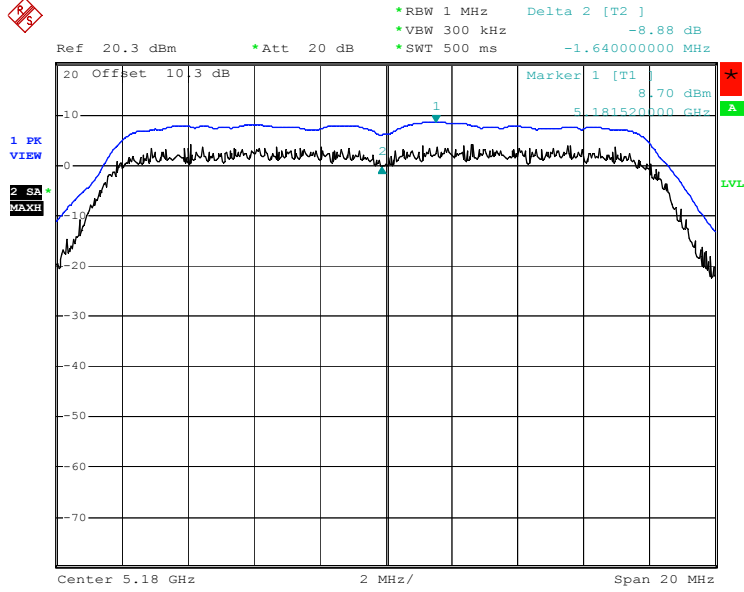
➤ Application: 802.11a

Channel	Frequency (MHz)	Peak Excursion (dB)	Limits (dB)	Mode Ref. No.
36	5180	8.67	13	9-1
48	5240	7.05	13	9-2
52	5260	7.19	13	9-3
64	5320	7.58	13	9-4

5.8.5 Test Data

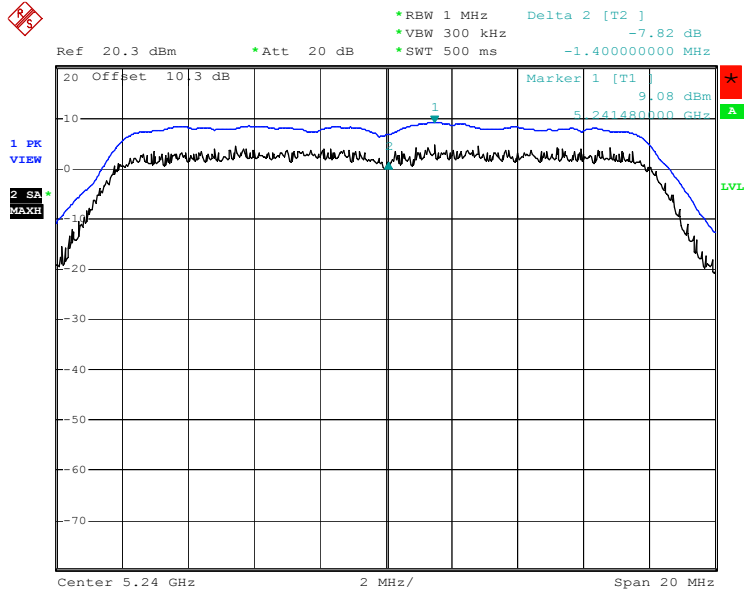
Mode Ref. No.

6-1



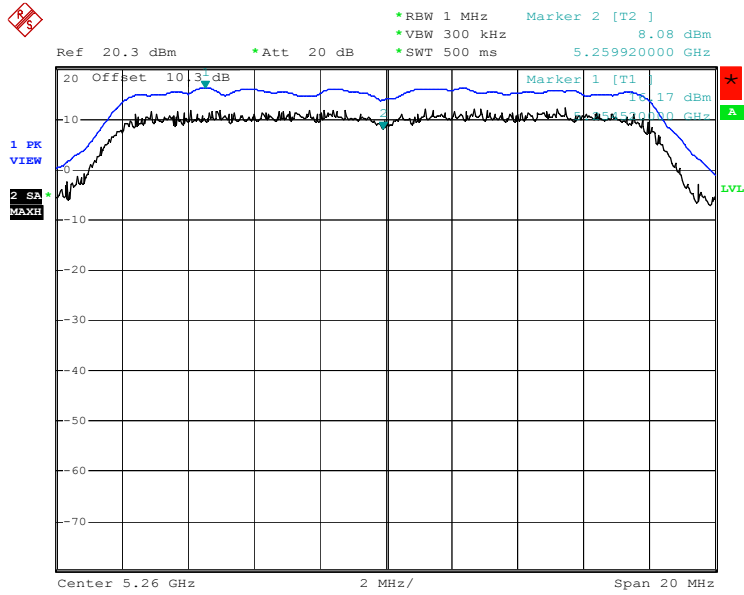
Date: 17.NOV.2005 23:06:39

6-2



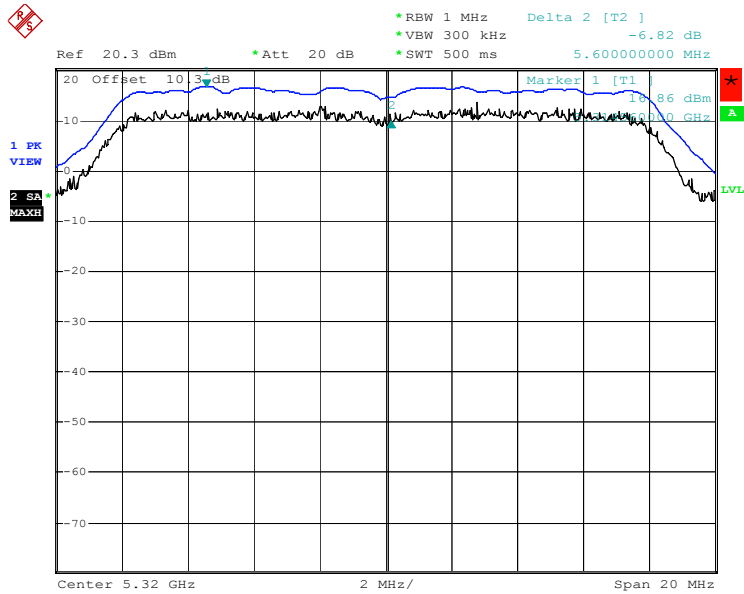
Date: 17.NOV.2005 23:07:43

6-3



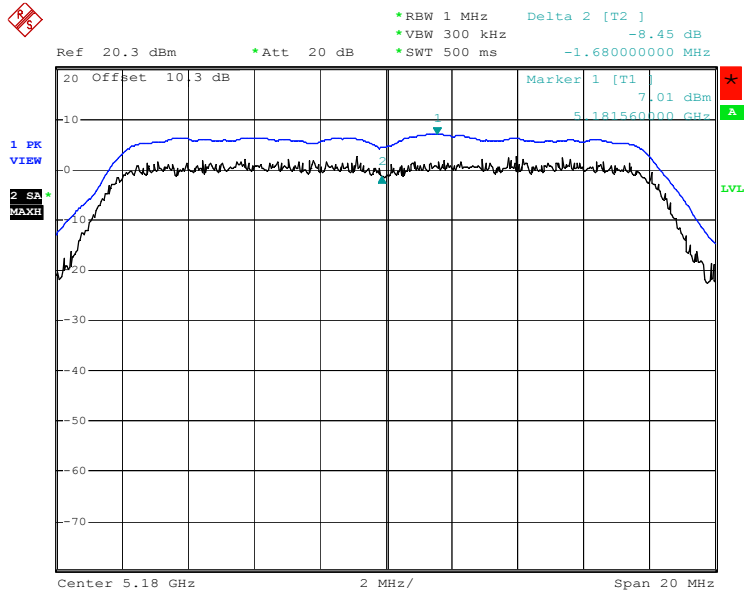
Date: 17.NOV.2005 23:17:04

6-4



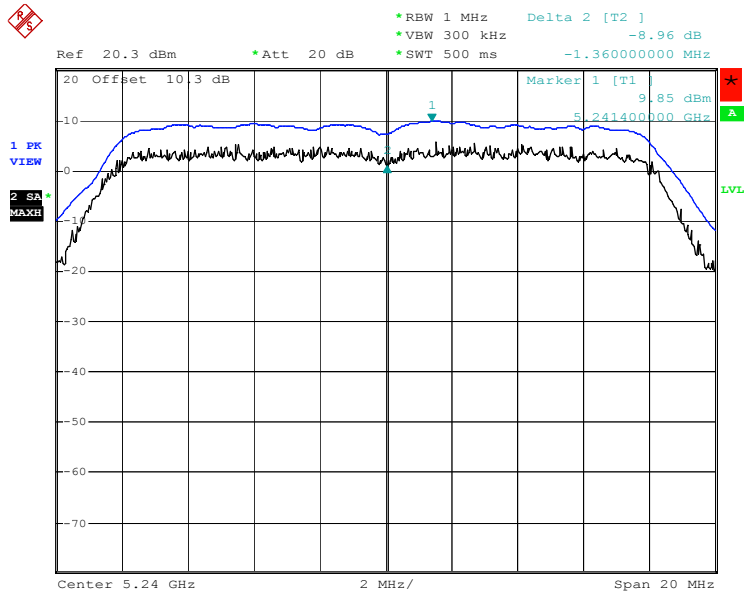
Date: 17.NOV.2005 23:44:27

7-1



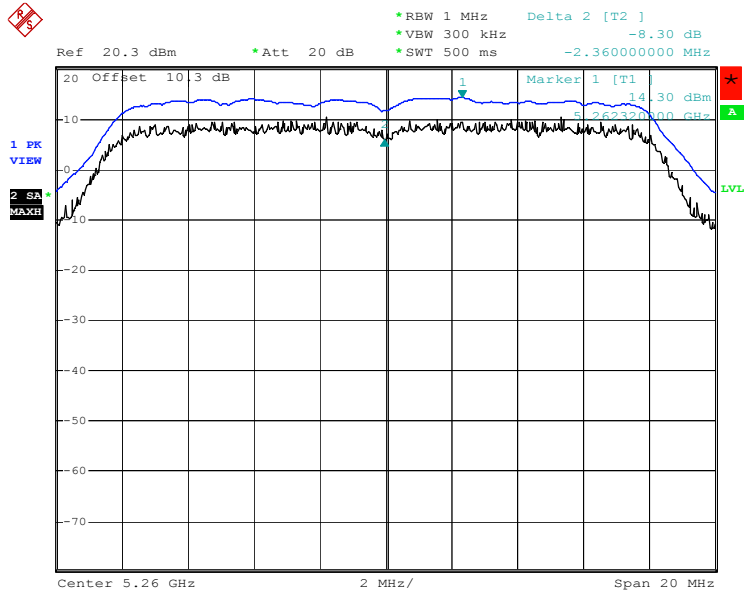
Date: 17.NOV.2005 22:55:53

7-2



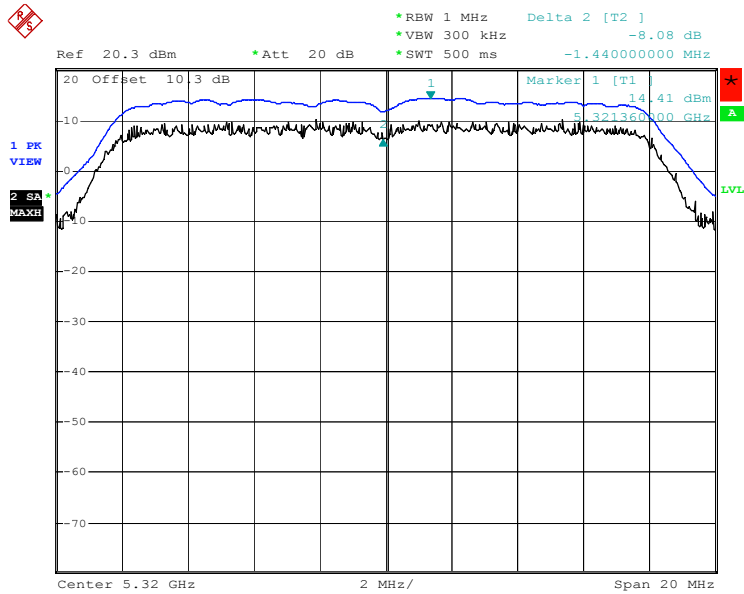
Date: 17.NOV.2005 22:54:44

7-3



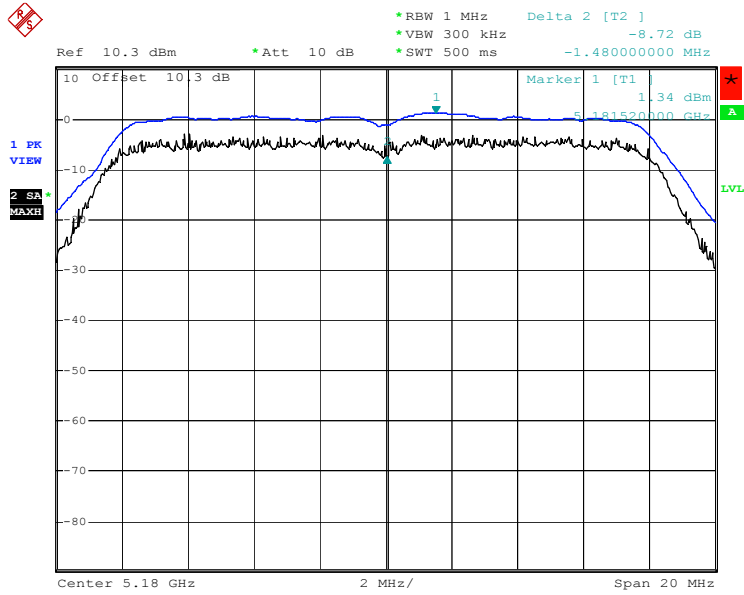
Date: 17.NOV.2005 22:45:41

7-4



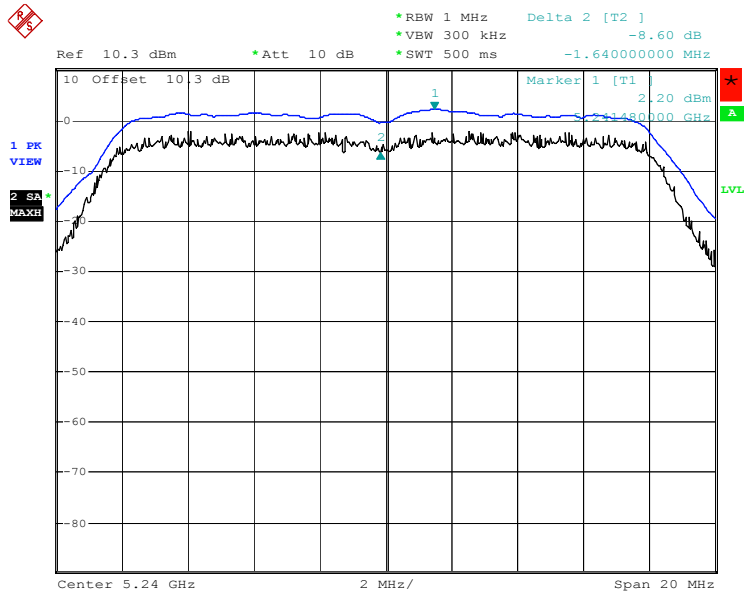
Date: 17.NOV.2005 22:44:20

8-1



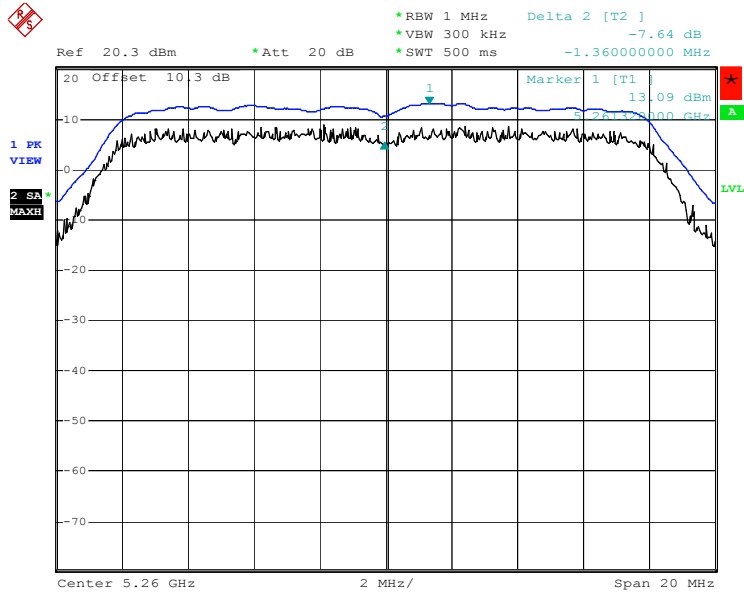
Date: 17.NOV.2005 22:04:38

8-2



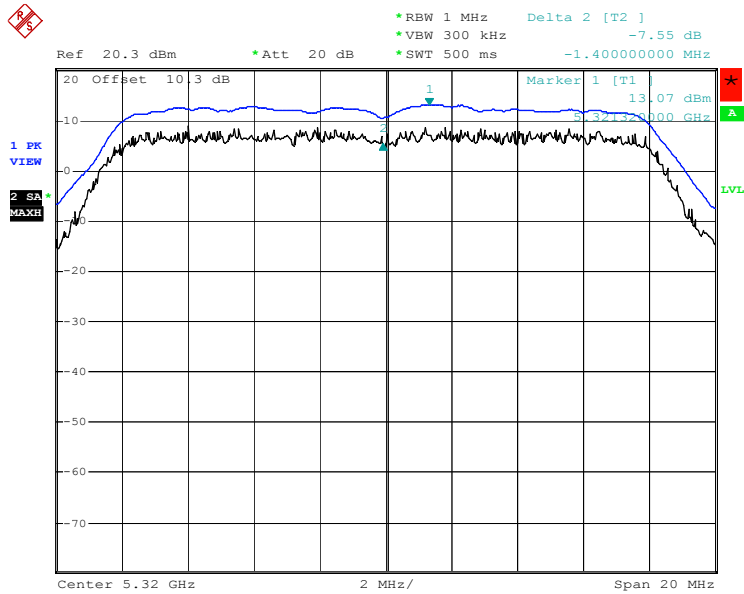
Date: 17.NOV.2005 22:11:52

8-3



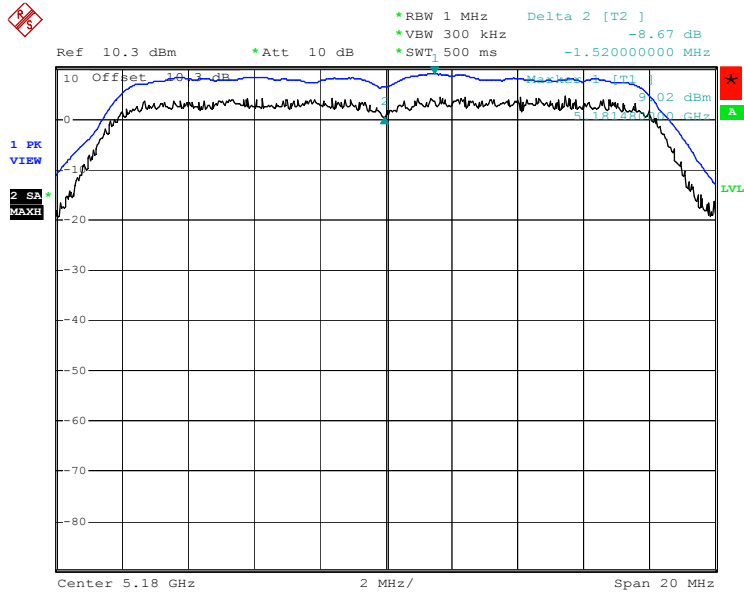
Date: 17.NOV.2005 22:13:25

8-4



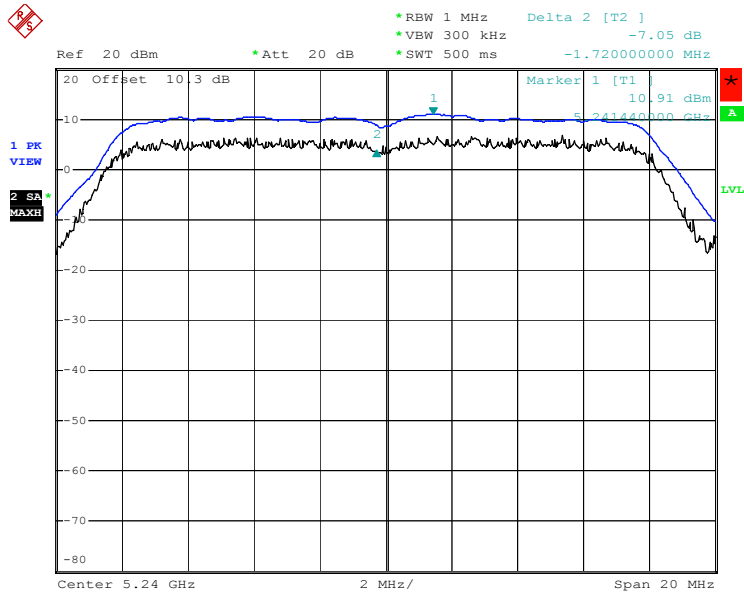
Date: 17.NOV.2005 22:23:12

9-1



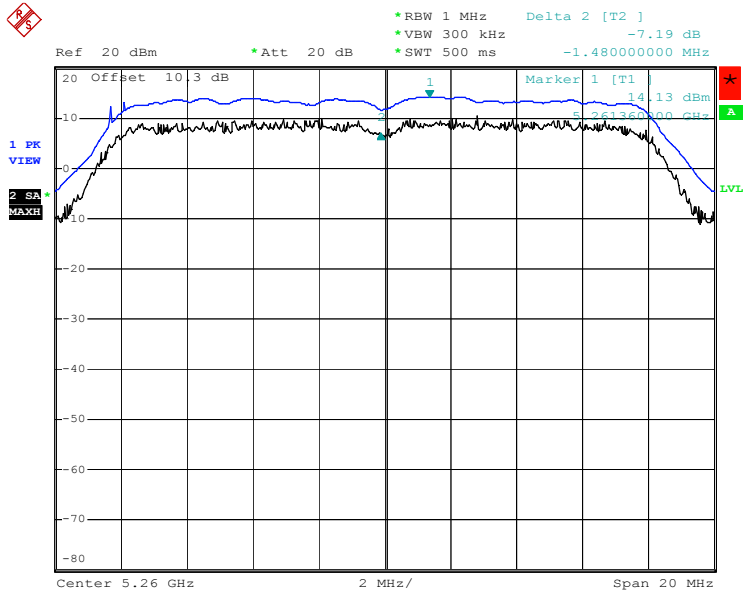
Date: 17.NOV.2005 21:06:54

9-2



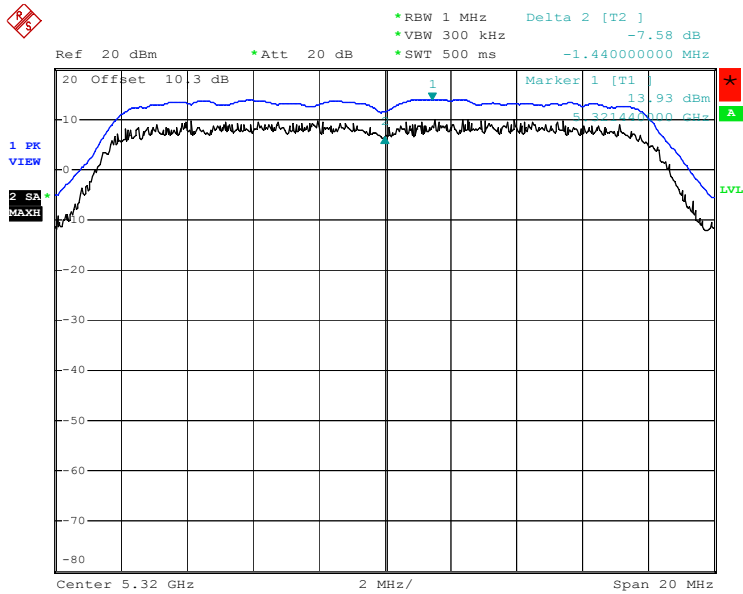
Date: 17.NOV.2005 21:19:00

9-3



Date: 17.NOV.2005 21:21:34

9-4



Date: 17.NOV.2005 21:34:45

5.9 Frequency Stability

Referring to the theory of operation, the crystal used to set the frequency has a temperature coefficient of +/- 20 ppm. For a transmitter fundamental frequency of 5320MHz, this corresponds to +/- 106.4 kHz.

During band edge testing, it was determined that the smallest margin (along the frequency axis) to the band edge occurred at the upper band (5350MHz) edge , using peak detection, with the antenna horizontal polarized. In this configuration, with the transmitter set to the highest channel, the envelope of the modulation sideband intercepted the 74 dBuV/m limit at 5346 MHz. Adding the maximum peak -to-peak deviation due to the crystal (0.16 MHz) yields 5346.16 MHz, which remains within the authorized band of 5150 to 5350 MHz.

At the lower band (5180MHz) edge, the smallest margin (along the frequency axis) occurred in the base mode, using peak detection, with the antenna vertically polarized. In this configuration, with the transmitter set to the lowest channel, the envelope of the modulation sideband intercepted the 74 dBuV/m limit at 5154 MHz.

Subtracting the maximum peak-to-peak deviation due to the crystal (0.16 MHz) yields 5163.84 MHz, which remains within the authorized band of 5150 to 5350MHz.

Frequency(MHz)	Polarity	Intercepted Point frequency (MHz)	maximum peak-to-peak deviation due to the crystal(MHz)	Deviation Frequency (MHz)	Result
5180	V	5164	0.16	5163.84	Pass
5240	V	5224	0.16	8223.84	Pass
5260	V	5288	0.16	5288.16	Pass
5320	V	5346	0.16	5346.16	Pass

5.10 Automatically discontinue transmission

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving .The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission .

5.11 Automatically discontinue transmission

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving .The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission .

5.12 Antenna Requirements

The EUT meets antenna requirement of FCC for the following reasons.

5.12.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2), if transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.12.2 Antenna Connected Construction

The EUT use a detachable antenna via reverse SMA connector for metallic housing. These antennas are considered to comply with antenna requirement.

6 List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	Oct. 19, 2005	Oct. 19, 2006	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Apr. 26, 2005	Apr. 26, 2006	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Apr. 20, 2005	Apr. 20, 2006	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 23, 2004	Dec. 23, 2005	Conduction (CO01-HY)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Jul. 25, 2005	Jul. 24, 2006	Radiation (03CH06-HY)
Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jun. 28, 2005	Jun. 27, 2006	Radiation (03CH06-HY)
Controller	CT	SC100	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 22, 2004	Nov. 22, 2005	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 22, 2005	Feb. 22, 2006	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	Dec. 17, 2004	Dec. 17, 2005	Radiation (03CH06-HY)
Amplifier	MITEQ	AMF-6F	997165	26G - 40G	Jul. 21, 2005	Jul. 20, 2006	Radiation (03CH06-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

7 Uncertainty of Test Site

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	1.13		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of x_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72				